

LIGAND PHARMACEUTICALS INC

Form S-4/A

November 06, 2009

Table of Contents

As filed with the Securities and Exchange Commission on November 6, 2009

Registration No. 333-162238

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

**AMENDMENT NO. 1
TO
FORM S-4
REGISTRATION STATEMENT**

Under

The Securities Act of 1933

LIGAND PHARMACEUTICALS INCORPORATED

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

2834
(Primary Standard Industrial
Classification Code Number)

77-0160744
(I.R.S. Employer
Identification Number)

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

10275 Science Center Drive

San Diego, California 92121-1117

(858) 550-7500

(Address including zip code, and telephone number, including area code, of registrant's principal executive offices)

John L. Higgins

President and Chief Executive Officer

Ligand Pharmaceuticals Incorporated

10275 Science Center Drive

San Diego, California 92121-1117

(858) 550-7500

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

Michael J. Brown, Esq.

Stradling Yocca Carlson & Rauth

4365 Executive Drive, Suite 1500

San Diego, California 92121

(858) 926-3000

Stephen R. Davis

President and Chief Executive Officer

Neurogen Corporation

45 NE Industrial Road

Branford, CT 06405

Telephone: (203) 488-8201

Robert S. Reder, Esq.

Milbank, Tweed, Hadley & McCloy LLP

One Chase Manhattan Plaza

New York, NY 10005

(212) 530-5000

Approximate date of commencement of proposed sale to the public:

As soon as practicable after the effectiveness of this registration statement and the satisfaction or waiver of all other conditions under the merger agreement described herein.

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

If the securities being registered on this Form are being offered in connection with the formation of a holding company and there is compliance with General Instruction G, please check the following box. "

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. "

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. "

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of large accelerated filer, accelerated filer and smaller reporting company in Rule 12b-2 of the Exchange Act.

Large accelerated filer " Accelerated filer Non-accelerated filer " Smaller reporting company "

(Do not check if a smaller reporting company)

If applicable, place an X in the box to designate the appropriate rule provision relied upon in conducting this transaction:

Exchange Act Rule 13e-4(i) (Cross-Border Issuer Tender Offer) "

Exchange Act Rule 14d-1(d) (Cross-Border Third-Party Tender Offer) "

Table of Contents

MERGER PROPOSAL YOUR VOTE IS VERY IMPORTANT

Dear Fellow Stockholder:

The board of directors of Neurogen Corporation has approved a merger agreement that provides for the merger of Neon Signal, LLC, a wholly owned subsidiary of Ligand Pharmaceuticals Incorporated, with and into Neurogen. As a result of the merger, Neurogen will become a wholly owned subsidiary of Ligand.

As is more fully described in the accompanying proxy statement/prospectus, in connection with the merger, Neurogen stockholders will receive in the aggregate shares of Ligand common stock valued at approximately \$11 million, subject to (a) adjustment based on Neurogen's final cash position compared to its target cash amount of \$7.9 million as of September 30, 2009 (decreasing daily by \$5,000) and (b) a 4.2 million share maximum. Neurogen stockholders will also be entitled to receive in the merger net proceeds from the sale, if any, of Neurogen's Aplindore program for the treatment of Restless Leg Syndrome and Parkinson's disease and from the sale of its real estate holdings, if such assets are sold by Neurogen before the effective time of the merger. In addition, Neurogen stockholders will receive up to four contingent value rights that will provide the opportunity to receive cash or other payments in connection with (i) the sale or license of Neurogen's H3 antagonist program, (ii) the achievement of a milestone in its partnership with Merck, Sharpe & Dohme Limited for a vanilloid receptor subtype 1 antagonist drug, (iii) the sale of the Aplindore program, and (iv) the sale of its real estate holdings (if the Aplindore program and real estate holdings are not sold by Neurogen before the effective time of the merger).

We describe in detail the terms of the merger, including the contingent value rights, in the accompanying proxy statement/prospectus under the caption "Certain Terms of the Merger Agreement" beginning on page 75, which we urge you to read carefully. The common stock of Ligand is quoted on the Nasdaq Global Market under the symbol "LGND". The common stock of Neurogen is quoted on the Nasdaq Global Market under the symbol "NRGN".

The merger cannot be completed unless Neurogen stockholders adopt the merger agreement and approve the merger contemplated by the merger agreement at the special meeting of Neurogen stockholders to be held on December 18, 2009. We describe in detail the special meeting of Neurogen stockholders in the accompanying proxy statement/prospectus under the caption "The Special Meeting of Neurogen Stockholders" beginning on page 40, which we urge you to read carefully. More information about Ligand, Neurogen and the merger is contained in the accompanying proxy statement/prospectus. **We encourage you to read the proxy statement/prospectus and to carefully consider the risk factors beginning on page 20 of the accompanying proxy statement/prospectus before voting.**

Your vote is very important. Whether or not you plan to attend the special meeting of Neurogen stockholders, please take the time to vote your shares. You may vote your shares by completing, signing, dating and returning the enclosed proxy card as promptly as possible in the enclosed postage-prepaid envelope.

Thank you for your continued support.

Sincerely,

/s/ Stephen R. Davis

Stephen R. Davis

President and Chief Executive Officer

Neurogen Corporation

NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED OF THE SECURITIES TO BE ISSUED IN CONNECTION WITH THE MERGER, OR DETERMINED WHETHER THIS PROXY STATEMENT/PROSPECTUS IS ACCURATE OR COMPLETE. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

This proxy statement/prospectus is dated November 6, 2009, and is first being mailed to Neurogen stockholders on or about that date.

Table of Contents

NEUROGEN CORPORATION

45 NORTHEAST INDUSTRIAL ROAD

BRANFORD, CONNECTICUT 06405

NOTICE OF SPECIAL MEETING OF STOCKHOLDERS

TO BE HELD ON DECEMBER 18, 2009

To the Stockholders of Neurogen Corporation:

We will hold a special meeting of the stockholders of Neurogen Corporation, a Delaware corporation, on December 18, 2009 at 10:00 a.m., local time, at Neurogen Corporation, at 45 NE Industrial Road, Branford, CT 06405, to consider and vote upon the following matters:

1. A proposal to adopt the Agreement and Plan of Merger, dated as of August 23, 2009, by and among Ligand Pharmaceuticals Incorporated, Neon Signal, LLC, a wholly owned subsidiary of Ligand Pharmaceuticals, and Neurogen, as amended by the Amendment to Agreement and Plan of Merger, dated as of September 18, 2009, and Amendment No. 2 to Agreement and Plan of Merger, dated as of November 2, 2009, and approve the merger contemplated by such merger agreement. A copy of the merger agreement is attached as *Annex A* to the proxy statement/prospectus accompanying this notice and the form of CVR agreements are attached as *Annex B*, *Annex C*, *Annex D* and *Annex E* to the proxy statement/prospectus accompanying this notice;
2. A proposal to adjourn the special meeting to a later date or dates, if necessary, to permit further solicitation of proxies if there are not sufficient votes at the time of the special meeting to adopt the merger agreement and approve the merger; and
3. To transact such other business as may properly come before the special meeting and any adjournments or postponements thereof. The Neurogen board of directors has unanimously adopted the merger agreement and approved the merger, and recommends that the stockholders vote **FOR** the adoption of the merger agreement and approval of the merger and **FOR** the proposal to adjourn the special meeting to a later date, if necessary.

The close of business on October 28, 2009 has been fixed by the Neurogen board of directors as the record date for the determination of stockholders entitled to notice of and to vote at the special meeting or any adjournment or postponement thereof. Only holders of record of Neurogen common stock at the close of business on the record date may attend and vote at the special meeting. A list of such stockholders will be available for inspection at the principal offices of Neurogen, located at 45 Northeast Industrial Road, Branford, CT 06405, during ordinary business hours for the ten-day period before the special meeting.

All stockholders entitled to vote are cordially invited to attend the special meeting in person. However, to ensure your representation at the special meeting, you are urged to complete, sign and return the enclosed proxy card as promptly as possible in the enclosed postage-prepaid envelope. You may revoke your proxy in the manner described in the accompanying proxy statement/prospectus at any time before it is voted at the special meeting. Executed proxies with no instructions indicated thereon will be voted **FOR** the adoption of the merger agreement and approval of the merger, **FOR** the proposal to adjourn the special meeting to a later date, if necessary, and, in the discretion of the proxy holders, on any other proposals that may properly come before the special meeting.

If you plan on attending the special meeting and your shares are held in the name of a broker, trust, bank or other nominee, you should bring with you a proxy or letter from the broker, trustee, bank or nominee confirming your beneficial ownership of the shares. If you plan to vote via proxy and your shares are held in your broker's name, please note that your broker will not be permitted to vote on the adoption of the merger agreement and the approval of the merger or the proposal to adjourn the special meeting to a later date, if necessary, or on any other proposal that properly comes before the special meeting unless you provide your broker with instructions on how to vote.

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

By Order of the Board of Directors,

/s/ Stephen R. Davis

Stephen R. Davis

President and Chief Executive Officer

New York, NY

November 6, 2009

Table of Contents

THIS PROXY STATEMENT/PROSPECTUS INCORPORATES ADDITIONAL INFORMATION

This proxy statement/prospectus incorporates important business and financial information about Ligand from documents that are not included in or delivered with this proxy statement/prospectus. This information is available to you without charge upon written or oral request. For a more detailed description of the information incorporated by reference into this proxy statement/prospectus and how you may obtain it, see *Where You Can Find More Information* beginning on page 110 of this proxy statement/prospectus.

Ligand will provide you with copies of this information relating to Ligand (excluding all exhibits unless Ligand has specifically incorporated by reference an exhibit in this proxy statement/prospectus) without charge, upon written or oral request to:

Ligand Pharmaceuticals Incorporated

10275 Science Center Drive

San Diego, California 92121

Attn: Investor Relations

(858) 550-7500

This proxy statement/prospectus incorporates important business and financial information about Neurogen from documents that are delivered with this proxy statement/prospectus. Additional copies of this information is available to you without charge upon written or oral request. For a more detailed description of the information incorporated by reference into this proxy statement/prospectus and how you may obtain additional copies, see *Where You Can Find More Information* beginning on page 110 of this proxy statement/prospectus.

Neurogen will provide you with additional copies of this information relating to Neurogen (excluding all exhibits unless Neurogen has specifically incorporated by reference an exhibit in this proxy statement/prospectus), without charge, upon written or oral request to:

Neurogen Corporation

45 NE Industrial Road

Branford, CT 06405

Attn: Secretary

(203) 488-8201

In order to receive timely delivery of the documents before the special meeting, you must make your requests no later than December 11, 2009.

ABOUT THIS PROXY STATEMENT/PROSPECTUS

This proxy statement/prospectus, which forms a part of a registration statement on Form S-4 filed with the Securities and Exchange Commission, or SEC, by Ligand, constitutes a prospectus of Ligand under Section 5 of the Securities Act of 1933, as amended, or the Securities Act, with respect to the shares of Ligand common stock to be issued to Neurogen stockholders in connection with the merger. This document also constitutes a proxy statement under Section 14(a) of the Securities Exchange Act of 1934, as amended, or the Exchange Act, and the rules thereunder, and a notice of meeting with respect to the special meeting of Neurogen stockholders to consider and vote upon the proposal to adopt the merger agreement and approve the merger.

Except as otherwise provided herein, all descriptions of and calculations with respect to the terms of the merger agreement and the transactions contemplated by the merger agreement, including the merger, assume that no Neurogen stockholders exercise their appraisal rights under Delaware law.

Table of Contents

TABLE OF CONTENTS

	Page
<u>QUESTIONS AND ANSWERS ABOUT THE MERGER</u>	iii
<u>SUMMARY</u>	1
<u>COMPARATIVE PER SHARE MARKET PRICE AND DIVIDEND DATA</u>	11
<u>LIGAND PHARMACEUTICALS INCORPORATED SELECTED HISTORICAL CONSOLIDATED FINANCIAL INFORMATION</u>	13
<u>NEUROGEN CORPORATION SELECTED HISTORICAL CONSOLIDATED FINANCIAL INFORMATION</u>	15
<u>SELECTED UNAUDITED PRO FORMA CONDENSED COMBINED FINANCIAL INFORMATION</u>	17
<u>COMPARATIVE PER SHARE DATA</u>	18
<u>RECENT NEUROGEN DEVELOPMENTS</u>	19
<u>RISK FACTORS</u>	20
<u>CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING STATEMENTS</u>	38
<u>THE COMPANIES</u>	39
<u>THE SPECIAL MEETING OF NEUROGEN STOCKHOLDERS</u>	40
<u>General</u>	40
<u>Date, Time and Place</u>	40
<u>Purpose of the Meeting</u>	40
<u>Quorum Required</u>	40
<u>Voting Rights</u>	40
<u>Proxies</u>	40
<u>Revocation of Proxies</u>	41
<u>Neurogen Votes Required</u>	41
<u>Recommendation of Neurogen's Board of Directors</u>	41
<u>Voting in Person</u>	42
<u>Adjournments and Postponements</u>	42
<u>Stock Certificates</u>	42
<u>Solicitation of Proxies</u>	42
<u>Questions and Additional Information</u>	43
<u>Availability of Documents</u>	43
<u>THE MERGER</u>	44
<u>General</u>	44
<u>General Description of the Merger</u>	44
<u>Background of the Merger</u>	45
<u>Neurogen's Reasons for the Merger; Recommendation of Neurogen Board of Directors</u>	51
<u>Opinion of Neurogen's Financial Advisor</u>	54
<u>Ligand's Reasons for the Merger</u>	63
<u>Interests of Neurogen's Executive Officers and Directors in the Merger</u>	64
<u>Regulatory Filings and Approvals Required to Complete the Merger</u>	66
<u>Listing of Shares of Ligand Common Stock Issued in Merger on Nasdaq</u>	66
<u>Delisting and Deregistration of Neurogen Common Stock</u>	66
<u>Sales of Shares of Ligand Common Stock Received in Merger</u>	66
<u>Material United States Federal Income Tax Consequences of the Merger</u>	67
<u>Anticipated Accounting Treatment</u>	70

Table of Contents

TABLE OF CONTENTS

(continued)

	Page
<u>Litigation Challenging the Merger</u>	71
<u>Appraisal Rights of Dissenting Neurogen Stockholders</u>	71
<u>CERTAIN TERMS OF THE MERGER AGREEMENT</u>	75
<u>The Merger</u>	75
<u>Effective Time of the Merger</u>	75
<u>Manner and Basis of Converting Shares</u>	75
<u>Neurogen Stock Options and Warrants</u>	77
<u>Representations and Warranties</u>	78
<u>Neurogen's Interim Operations</u>	78
<u>Ligand's Interim Operations</u>	80
<u>Covenants</u>	81
<u>Limitation on Neurogen's Ability to Consider Other Acquisition Proposals</u>	84
<u>Obligations of the Neurogen Board of Directors with Respect to its Recommendation and Holding a Meeting of Stockholders</u>	85
<u>Conditions to the Merger</u>	86
<u>Termination of the Merger Agreement</u>	89
<u>Termination Fee</u>	91
<u>Fees and Expenses</u>	91
<u>Amendment</u>	91
<u>CVR Agreements</u>	91
<u>Voting Agreements</u>	95
<u>SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS OF NEUROGEN</u>	96
<u>UNAUDITED PRO FORMA CONDENSED COMBINED FINANCIAL INFORMATION</u>	99
<u>COMPARATIVE RIGHTS OF LIGAND STOCKHOLDERS AND NEUROGEN STOCKHOLDERS</u>	107
<u>EXPERTS</u>	109
<u>LEGAL MATTERS</u>	109
<u>STOCKHOLDER PROPOSALS</u>	109
<u>Inclusion in Next Year's Proxy Statement</u>	109
<u>Presentation at Meeting</u>	109
<u>WHERE YOU CAN FIND MORE INFORMATION</u>	110
<u>INCORPORATION BY REFERENCE</u>	111
ANNEXES:	

Annex A	<u>Agreement and Plan of Merger, as amended</u>	Annex A-1
Annex B	<u>Form of Aplindore Contingent Value Rights Agreement</u>	Annex B-1
Annex C	<u>Form of H3 Contingent Value Rights Agreement</u>	Annex C-1
Annex D	<u>Form of Merck Contingent Value Rights Agreement</u>	Annex D-1
Annex E	<u>Form of Real Estate Contingent Value Rights Agreement</u>	Annex E-1
Annex F	<u>Section 262 of the General Corporation Law of the State of Delaware</u>	Annex F-1
Annex G	<u>Opinion of MTS Securities, LLC</u>	Annex G-1

Table of Contents

QUESTIONS AND ANSWERS ABOUT THE MERGER

Q: Why am I receiving this proxy statement/prospectus?

A: Ligand Pharmaceuticals Incorporated, or Ligand, has agreed to acquire Neurogen Corporation, or Neurogen, under the terms of an Agreement and Plan of Merger, dated August 23, 2009, as amended by the Amendment to Agreement and Plan of Merger, dated as of September 18, 2009, and Amendment No. 2 to Agreement and Plan of Merger, dated as of November 2, 2009, or the merger agreement, that is described in this proxy statement/prospectus. Please see the sections entitled *The Merger* and *Certain Terms of the Merger Agreement* beginning on pages 44 and 75, respectively, of this proxy statement/prospectus. A copy of the merger agreement is attached to this proxy statement/prospectus as *Annex A*.

In order to complete the transactions contemplated by the merger agreement, including Ligand's acquisition of Neurogen, Neurogen stockholders must adopt the merger agreement by the affirmative vote of the holders of a majority of the shares of Neurogen common stock outstanding on the record date for the special meeting and all other conditions to the merger must be satisfied or waived. You are receiving this proxy statement/prospectus because you have been identified as a Neurogen stockholder as of October 28, 2009, the record date for the special meeting, and thus you are entitled to vote at the special meeting. This document serves as both a proxy statement of Neurogen, used to solicit proxies for the special meeting, and as a prospectus of Ligand, used to offer shares of Ligand common stock in exchange for shares of Neurogen common stock pursuant to the terms of the merger agreement. This document contains important information about the merger and the special meeting, and you should read it carefully.

Q: When and where is the special meeting of Neurogen stockholders?

A: The special meeting of Neurogen stockholders will be held on December 18, 2009, starting at 10:00 a.m., local time, at Neurogen Corporation, at 45 NE Industrial Road, Branford, CT 06405.

Q: On what matters am I being asked to vote on?

A: Neurogen stockholders are being asked to consider and vote on the following items:

the adoption of the merger agreement and approval of the merger; and

a proposal to adjourn the special meeting to a later date, if necessary, to solicit additional proxies in the event there are insufficient votes at the time of the special meeting to adopt the merger agreement and approve the merger.

Q: What is the merger?

A: Under the terms of the merger agreement, Neon Signal, LLC, a wholly-owned subsidiary of Ligand, or Merger Sub, will merge with and into Neurogen, with Neurogen continuing as the surviving entity. The merger of Merger Sub with and into Neurogen is referred to as the merger. Upon completion of the merger, each outstanding share of Neurogen common stock will be converted into the right to receive a combination of shares of Ligand common stock and contingent value rights and, in some situations involving the sale of certain Neurogen assets before the merger, other consideration, as described below. For a more complete description of the merger, please see the section entitled *The Merger* beginning on page 44 of this proxy statement/prospectus.

Q: *As a Neurogen stockholder, what will I receive in the merger?*

A: If the merger agreement is adopted by Neurogen's stockholders and the other conditions to the merger is satisfied or waived, then upon completion of the merger, Ligand would issue to each Neurogen stockholder a number of Ligand shares equal to approximately \$11 million (subject to dollar for dollar adjustments for any difference between Neurogen's targeted and actual net cash as of the third trading day before the date of

Table of Contents

the Neurogen special meeting of stockholders) divided by the average of the daily volume weighted average prices of Ligand's common stock over the 20 day trading period ending three trading days before the Neurogen stockholders meeting with respect to the merger, which result is then divided by the number of shares of Neurogen stock outstanding immediately before the merger. The number of Ligand shares to be issued in the merger is subject to a 4,200,000 share maximum, unless Ligand waives such maximum. Ligand may issue a number of Ligand shares equal to less than \$11 million if either or both of the following conditions exist: (a) such number is adjusted downward because as of the third trading day before the date of the special meeting of Neurogen stockholders, Neurogen's actual net cash is less than an agreed upon targeted net cash or (b) the average of the daily volume weighted average prices of Ligand's common stock over the 20 day trading period ending three trading days before the special meeting of Neurogen stockholders is less than approximately \$2.62 and the 4,200,000 share maximum is not waived. The average of the daily volume weighted average prices of Ligand's common stock over the 20 day trading period ending on October 28, 2009 was \$2.12. 4,200,000 Ligand shares times \$2.12 would equate to approximately \$8.9 million.

If Neurogen's program for the development of Aplindore for the treatment of Restless Legs Syndrome, or RLS, and Parkinson's disease is sold by Neurogen before the merger, Neurogen stockholders will also receive in the merger a pro-rata share of the cash and/or number of shares of third-party stock, as the case may be, paid pre-merger by the buyer for the program. In addition, if the real properties currently owned by Neurogen are sold by Neurogen before the merger, the pre-merger net cash proceeds from the sale shall also be paid in the merger to the Neurogen stockholders. Please see section entitled "Recent Neurogen Developments" beginning on page 19 of this proxy statement/prospectus for recent developments relating to Aplindore and Neurogen's real properties.

Neurogen's stockholders will also receive up to four CVR agreements, if the Aplindore program and the real properties are not sold by Neurogen before the merger.

Please see the sections entitled "The Merger - General" and "Certain Terms of the Merger Agreement - CVR Agreements" beginning on pages 40 and 86, respectively, of this proxy statement/prospectus for a description of the merger consideration.

Q: What is required to consummate the merger?

A: To consummate the merger, Neurogen stockholders must adopt the merger agreement, which requires the affirmative vote of the holders of a majority of the voting power of the shares of Neurogen common stock outstanding on the record date for the special meeting. In addition to obtaining Neurogen stockholder approval, each of the other closing conditions set forth in the merger agreement must be satisfied or waived. For a more complete description of the closing conditions under the merger agreement, please see the section entitled "Certain Terms of the Merger Agreement - Conditions to the Merger" beginning on page 86 of this proxy statement/prospectus.

Q: How does Neurogen's board of directors recommend that I vote?

A: After careful consideration, Neurogen's board of directors approved the merger agreement and the merger and unanimously declared that the merger agreement and the merger, upon the terms and subject to the conditions set forth in the merger agreement, are advisable and in the best interests of Neurogen and its stockholders. Accordingly, Neurogen's board of directors unanimously recommends that you vote **FOR** the proposal to adopt the merger agreement and approve the merger, and **FOR** the proposal to adjourn the special meeting to a later date or dates, if necessary, to solicit additional proxies in the event there are insufficient votes at the time of the special meeting to adopt the merger agreement and approve the merger. To review the background of the merger and Neurogen's board of directors' reasons for recommending the merger in greater detail, see the sections entitled "The Merger - Background of the Merger" and "The Merger - Neurogen's Reasons for the Merger; Recommendation of Neurogen's Board of Directors" beginning on pages 45 and 51, respectively, of this proxy statement/prospectus.

Table of Contents

Q: What risks should I consider in deciding whether to vote in favor of the merger?

A: You should carefully review the section of this proxy statement/prospectus entitled *Risk Factors* beginning on page 20 of this proxy statement/prospectus, which sets forth certain risks and uncertainties related to the merger, risks and uncertainties to which the combined company's business will be subject and risks and uncertainties to which Ligand, as an independent company, is subject.

Q: When do the parties expect to complete the merger?

A: The parties are working towards completing the merger as quickly as possible. The merger is expected to close during the fourth calendar quarter of 2009. However, because completion of the merger is subject to various conditions, Ligand and Neurogen cannot predict the exact timing of the merger or whether the merger will occur at all.

Q: Am I entitled to appraisal rights?

A: Under Delaware law, holders of Neurogen common stock are entitled to appraisal rights in connection with the merger pursuant to Section 262(d) of the Delaware General Corporation Law. Failure to take any of the steps required under Section 262(d) of the Delaware General Corporation Law on a timely basis may result in a loss of those appraisal rights. The provisions of the Delaware General Corporation Law that grant appraisal rights and govern such procedures are attached as *Annex F* to this proxy statement/prospectus. For a more complete description of your appraisal rights, see the section entitled *The Merger Appraisal Rights of Dissenting Neurogen Stockholders* on page 71 of this proxy statement/prospectus.

Q: What will happen to any options or warrants to acquire Neurogen common stock in the merger?

A: Neurogen's board of directors, by operation of existing agreements or by resolution, will take all requisite actions such that immediately before the effective time of the merger each holder of outstanding Neurogen options shall be entitled to exercise in full all Neurogen options held by such holder by paying the exercise price therefor in exchange for shares of Neurogen common stock in accordance with the applicable Neurogen equity plan or arrangement. All outstanding Neurogen options not exercised, other than any unexercised Neurogen options remaining outstanding under Neurogen's 1993 Omnibus Incentive Plan, shall be terminated and canceled at the time of the merger without any payment or liability on the part of Neurogen. No replacement options will be issued.

If any Neurogen warrant or any option issued under Neurogen's 1993 Omnibus Incentive Plan prior to the effective time of the merger remains outstanding after the effective time of the merger and the holder thereof exercises such Neurogen warrant or option, as the case may be, before its expiration or termination date, then Ligand shall issue and pay in respect of each exercised Neurogen warrant or option, as the case may be, in exchange for the payment of the applicable exercise price, on a per-exercised-share basis, equivalent consideration to the consideration (or the proceeds thereof) as was paid in respect of each issued and outstanding share of Neurogen common stock in the merger; provided that any such payment in respect of options shall be made in compliance with Section 409A of the Internal Revenue Code, or Code.

See the section entitled *Certain Terms of the Merger Agreement Neurogen Stock Options and Warrants* beginning on page 77 of this proxy statement/prospectus.

Q: Will my rights as a Neurogen stockholder change as a result of the merger?

A: Yes. You will become a Ligand stockholder and a holder of Ligand CVRs as a result of the merger and will have rights after the completion of the merger that are governed by Delaware law and Ligand's amended and restated certificate of incorporation and amended and restated bylaws and the CVR agreements. For further information regarding your rights as a Ligand stockholder following the merger,

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

please see Comparative Rights of Ligand Stockholders and Neurogen Stockholders beginning on page 107 of this proxy statement/prospectus.

v

Table of Contents

Q: As a Neurogen stockholder, will I be able to trade the Ligand common stock and CVRs that I receive in connection with the merger?

A: The shares of Ligand common stock issued to Neurogen stockholders in connection with the merger will be freely tradable. The CVRs issued to Neurogen stockholders in connection with the merger will not be marketable or listed on any securities exchange and will be subject to general transfer restrictions with limited exceptions.

Q: What are the United States federal income tax consequences of the merger?

A: The receipt of the merger consideration by a U.S. holder in exchange for Neurogen shares will be a taxable transaction for United States federal income tax purposes. The amount of gain or loss a U.S. holder recognizes, and the timing of such gain or loss, depends in part on the United States federal income tax treatment of the CVRs, with respect to which there is substantial uncertainty. A Neurogen stockholder's gain or loss will also be determined by the stockholder's tax basis in his shares of Neurogen common stock. For a more complete description of the tax consequences of the merger, see the section entitled "The Merger - Material United States Federal Income Tax Consequences of the Merger" beginning on page 67 of this proxy statement/prospectus.

Tax matters are very complicated, and the tax consequences of the merger to a particular stockholder will depend in part on such stockholder's circumstances. Accordingly, you are urged to consult your own tax advisor for a full understanding of the tax consequences of the merger to you, including the applicability and effect of federal, state, local and foreign income and other tax laws.

Q: What should I do now?

A: You should carefully read this proxy statement/prospectus, including its annexes and the documents incorporated by reference, and consider how the merger will affect you. Ligand and Neurogen urge you to then respond by voting your shares through one of the following means:

by mail, by completing, signing, dating and mailing each proxy card (if you are a registered stockholder, meaning that you hold your stock in your name) or voting instruction card (if your shares are held in street name, meaning that your shares are held in the name of a broker, bank or other nominee) and returning it in the envelope provided;

via the Internet, at the address provided on each proxy card or voting instruction card (if your bank, broker or nominee makes Internet voting available);

via telephone, using the toll-free number listed on each proxy card or voting instruction card (if your bank, broker or nominee makes telephone voting available); or

in person, by attending the special meeting and submitting your vote in person (special requirements apply if your shares are held in street name and you wish to vote in person).

Q: What happens if I do not return a proxy card or otherwise vote?

A: The failure to return your proxy card, vote using the telephone or via the Internet or vote in person at the special meeting will have the same effect as voting **AGAINST** adoption of the merger agreement and approval of the merger, and will have no effect on the proposal for

possible adjournment of the special meeting.

Q: *What happens if I return a signed and dated proxy card but do not indicate how to vote my proxy?*

A: If you do not include instructions on how to vote your properly signed and dated proxy, your shares will be voted **FOR** adoption of the merger agreement and approval of the merger, and **FOR** approval of possible adjournment, if any, of the special meeting.

vi

Table of Contents

Q: May I vote in person at the special meeting?

A: If your shares of Neurogen common stock are registered directly in your name with Neurogen's transfer agent, you are considered, with respect to those shares, the stockholder of record, and the proxy materials and proxy card are being sent directly to you by Neurogen. If you are a Neurogen stockholder of record, you may attend the special meeting and vote your shares in person, rather than signing and returning your proxy card or otherwise voting by Internet or telephone.

If your shares of Neurogen common stock are held in a brokerage account or by another nominee, you are considered the beneficial owner of shares held in street name, and the proxy materials are being forwarded to you together with a voting instruction card. As the beneficial owner, you are also invited to attend the special meeting. Since a beneficial owner is not the stockholder of record, you may not vote these shares in person at the special meeting unless you obtain a legal proxy from the broker, trustee or nominee that holds your shares, giving you the right to vote the shares at the special meeting.

Q: May I change my vote after I have mailed my signed and dated proxy card or otherwise voted?

A: Yes. If you have submitted a proxy, you may change your vote at any time before your proxy is voted at the Neurogen special meeting of stockholders. You can do this one of four ways. First, you can send a written, dated notice to the Corporate Secretary of Neurogen stating that you would like to revoke your proxy. Second, you can complete, sign, date and submit (in time to reach Neurogen before the beginning of the special meeting) a new later-dated proxy card. Third, you can submit another proxy via the Internet or telephone. Fourth, if you are a stockholder of record or you obtain a legal proxy from your broker, trustee or nominee, you can attend the special meeting and vote in person. Your attendance at the special meeting alone will not revoke your proxy.

If you have instructed a broker to vote your shares, you must follow the directions received from your broker to change those instructions.

Q: If my shares are held in street name by my broker, will my broker automatically vote my shares for me?

A: No. Your broker will not be able to vote your shares without instructions from you. Therefore, you should provide your broker with instructions on how to vote your shares, following the procedure provided by your broker. The failure to provide such voting instructions to your broker will have the same effect as voting **AGAINST** adoption of the merger agreement and approval of the merger, and will have no effect on the proposal for possible adjournment of the special meeting.

Q: Should I send in my Neurogen stock certificates now?

A: No. If you are a Neurogen stockholder, after the merger is completed a letter of transmittal will be sent to you informing you where to deliver your Neurogen stock certificates in order to receive the merger consideration. You should not send in your Neurogen common stock certificates before receiving the letter of transmittal.

Q: Who is soliciting this proxy?

A: Neurogen is conducting this proxy solicitation and will bear the cost of soliciting proxies. In addition, Neurogen may reimburse brokers, banks and other custodians, nominees and fiduciaries representing beneficial owners of shares for their expenses in forwarding soliciting materials to such beneficial owners. Neurogen's directors, officers and employees may also solicit proxies by personal interview, mail, e-mail, telephone, facsimile or other means of communication. These persons will not be paid additional remuneration for their efforts.

Table of Contents

Q: Who can help answer my additional questions?

A: Neurogen stockholders who would like additional copies, without charge, of this proxy statement/prospectus or have additional questions about the merger, including the procedures for voting their shares of Neurogen common stock, should contact:

Neurogen Corporation

45 NE Industrial Road

Branford, CT 06405

Attn: Secretary

(203) 488-8201

viii

Table of Contents

SUMMARY

*This summary highlights selected information contained or incorporated by reference in this proxy statement/prospectus. You should read carefully this entire proxy statement/prospectus and the documents referred to in this proxy statement/prospectus for a more complete description of the terms of the merger and related transactions. The merger agreement is attached as Annex A to this proxy statement/prospectus, and the forms of CVR agreements are attached as Annex B, Annex C, Annex D and Annex E to this proxy statement/prospectus. Additional documents and information, including important business and financial information about Ligand and Neurogen, are incorporated by reference into this proxy statement/prospectus. You are encouraged to read the merger agreement as it is the legal document that governs the merger, as well as the forms of CVR agreements and the additional documents incorporated by reference. In this proxy statement/prospectus, unless the context otherwise requires, *Ligand* refers to Ligand Pharmaceuticals Incorporated and its subsidiaries, *Neurogen* refers to Neurogen Corporation and its subsidiary, and *Merger Sub* refers to Neon Signal, LLC, a wholly-owned subsidiary of Ligand.*

The Companies

Ligand Pharmaceuticals Incorporated

Ligand Pharmaceuticals Incorporated (NASDAQ: LGND), a Delaware corporation, is a biotechnology company that focuses on discovering and developing new drugs that address critical unmet medical needs in the areas of thrombocytopenia, anemia, cancer, hormone related diseases, osteoporosis and inflammatory diseases. Ligand aims to develop drugs that are more effective and/or safer than existing therapies, that are more convenient to administer and that are cost effective. Ligand plans to build a profitable company by generating income from research, milestone and royalty and co-promotion revenues resulting from its collaborations with pharmaceutical partners.

Ligand was incorporated in Delaware in 1987. Ligand's principal executive offices are located at 10275 Science Center Drive, San Diego, California, 92121. Ligand's telephone number is (858) 550-7500.

Neon Signal, LLC

Neon Signal, LLC, or Merger Sub, is a Delaware limited liability company and a wholly-owned subsidiary of Ligand organized on August 13, 2009. Merger Sub does not engage in any operations and exists solely to facilitate the merger. Its principal executive offices have the same address and telephone number as Ligand.

Neurogen Corporation

Neurogen Corporation (NASDAQ: NRGN) is a development company which has historically focused on new small molecule drugs to improve the lives of patients suffering from psychiatric and neurological disorders, including RLS and Parkinson's disease. Small molecule drugs typically are suitable for oral administration as a pill, while large molecule drugs are typically administered by injection.

Neurogen was incorporated in Delaware in 1987. Neurogen's principal executive offices are located at 45 Northeast Industrial Road, Branford, CT 06405. Neurogen's telephone number is (203) 488-8201.

Special Meeting of Neurogen Stockholders

General. Neurogen is furnishing this proxy statement/prospectus to Neurogen stockholders in connection with the solicitation of proxies by the Neurogen board of directors for use at the special meeting of stockholders, including any adjournment or postponement of the special meeting.

Table of Contents

Date, Time and Place. Neurogen will hold its special meeting on December 18, 2009 at 10:00 a.m., local time, at Neurogen Corporation, at 45 NE Industrial Road, Branford, CT 06405.

Purpose of the Meeting. At the special meeting, the Neurogen stockholders will be asked to consider and vote upon the following matters:

1. A proposal to adopt the Agreement and Plan of Merger, dated as of August 23, 2009, by and among Ligand Pharmaceuticals Incorporated, Neon Signal, LLC, a wholly owned subsidiary of Ligand Pharmaceuticals, and Neurogen, as amended by Amendment to Agreement and Plan of Merger, dated as of September 18, 2009, and Amendment No. 2 to Agreement and Plan of Merger, dated as of November 2, 2009, and approve the merger contemplated by the merger agreement. A copy of the merger agreement is attached as *Annex A* to this proxy statement/prospectus accompanying this notice and the form of CVR agreements are attached as *Annex B*, *Annex C*, *Annex D* and *Annex E* to this proxy statement/prospectus accompanying this notice;
2. A proposal to adjourn the special meeting to a later date or dates, if necessary, to permit further solicitation of proxies if there are not sufficient votes at the time of the special meeting to adopt the merger agreement and approve the merger; and
3. To transact such other business as may properly come before the special meeting and any adjournments or postponements thereof.

Quorum Required. Neurogen's bylaws provide that the holders of a majority of the shares of Neurogen common stock issued and outstanding and entitled to vote at the special meeting, present in person or represented by proxy, shall constitute a quorum for the transaction of business at the special meeting. Abstentions and broker non-votes will be counted as present for the purpose of determining the presence of a quorum.

Voting Rights. Neurogen common stock is the only type of security entitled to vote at the special meeting. On October 28, 2009, the record date for determination of stockholders entitled to vote at the special meeting, there were 69,038,691 shares of Neurogen common stock outstanding. Each Neurogen stockholder of record on October 28, 2009 is entitled to one vote for each share of Neurogen common stock held by such stockholder on that date. All votes will be tabulated by the inspector of election appointed for the meeting, who will separately tabulate affirmative and negative votes, abstentions and broker non-votes.

Proxies. Whether or not you are able to attend Neurogen's special meeting of stockholders, you are urged to complete and return the enclosed proxy, which is solicited by Neurogen's board of directors and which will be voted as you direct on your proxy card when properly completed. In the event no directions are specified, such proxies will be voted **FOR** the adoption of the merger agreement and approval of the merger, **FOR** the proposal to adjourn the special meeting to permit further solicitation of proxies if there are not sufficient votes to adopt the merger agreement and approve the merger, and in the discretion of the proxy holders as to any other matters that may properly come before the special meeting. All shares represented by a valid proxy received before the special meeting will be voted.

Revocation of Proxies. You may also revoke or change your proxy at any time before the special meeting. To do this, send a written notice of revocation or another signed proxy with a later date to the Secretary at Neurogen's principal executive offices in time to arrive before the beginning of the special meeting. If you are a stockholder of record or you obtain a legal proxy from your broker, trustee or nominee, you may also revoke your proxy by attending the special meeting and voting in person.

Neurogen Votes Required. The affirmative vote of the holders of record of a majority of the outstanding shares of Neurogen common stock is required to adopt the merger agreement and approve the merger, and the affirmative vote of the holders of record of a majority of the shares of Neurogen common stock present and entitled to vote at the special meeting is required to adopt the proposal to adjourn the special meeting, if

Table of Contents

necessary, to permit further solicitation of proxies. If a broker or other nominee holding shares of Neurogen common stock or a holder of Neurogen common stock fails to vote on the adoption of the merger agreement and the approval of the merger or responds to that proposal with an abstain vote, it will have the same effect as a vote against that proposal. If a broker or other nominee holding shares of Neurogen common stock or a holder of Neurogen common stock responds to the proposal to adjourn the special meeting, if necessary, to permit further solicitation of proxies with an abstain vote, it will have the same effect as a vote against that proposal. If a broker or other nominee holding Neurogen common stock or a holder of Neurogen common stock fails to vote on the proposal to adjourn the special meeting, if necessary, to permit further solicitation of proxies, it will have no effect on the outcome of the vote for that proposal.

As of October 28, 2009, (i) the directors and executive officers of Neurogen beneficially owned 10,637,130 shares of Neurogen common stock entitled to vote, representing approximately 15.4% of the outstanding shares of Neurogen common stock entitled to vote at the special meeting and (ii) Ligand and its affiliates beneficially owned 21,938,454 shares of Neurogen common stock entitled to vote, representing approximately 32.0% of the outstanding shares of Neurogen common stock entitled to vote at the special meeting. However, due to the voting agreements described below, approximately 12.1% of the outstanding shares of Neurogen common stock are included in both groups; and so, the aggregate total beneficially owned is 35.1%.

The President and Chief Executive Officer of Neurogen, Stephen R. Davis, who owns less than 1% of the outstanding shares of Neurogen common stock, along with various stockholders of Neurogen who collectively own approximately 32% of the outstanding shares of Neurogen common stock, have entered into voting agreements with Ligand Pharmaceuticals pursuant to which Mr. Davis and the various stockholders have agreed, among other things, to vote the shares of common stock of Neurogen owned by them in favor of adopting the merger agreement and approving the merger. For a description of the voting agreements, see Certain Terms of the Merger Agreement Voting Agreements beginning on page 95 of this proxy statement/prospectus.

Solicitation of Proxies. Neurogen will bear the cost of this solicitation, including the printing and mailing of this proxy statement/prospectus, the proxy and any additional soliciting material furnished to the Neurogen stockholders. Copies of solicitation material will be furnished to brokerage houses, fiduciaries and custodians holding shares in their names that are beneficially owned by others so that they may forward this solicitation material to such beneficial owners. In addition, Neurogen may reimburse such persons for their costs of forwarding the solicitation material to such beneficial owners. The original solicitation of proxies by mail may be supplemented by solicitation by telephone, email, facsimile or other means by directors, officers, employees or agents of Neurogen. No additional compensation will be paid to these individuals for any such services.

Risk Factors

You should carefully review the section of this proxy statement/prospectus entitled Risk Factors beginning on page 20 of this proxy statement/prospectus, which sets forth certain risks and uncertainties related to the merger, risks and uncertainties to which the combined company's business will be subject and risks and uncertainties to which Ligand, as an independent company, is subject. These risk factors should be considered along with any additional risk factors in the reports of Ligand or Neurogen filed with the Securities and Exchange Commission, or SEC, and any other information included in or incorporated by reference into this proxy statement/prospectus.

Recommendation to Neurogen's Stockholders

Neurogen's board of directors has unanimously adopted the merger agreement and approved the merger. The board of directors of Neurogen recommends that Neurogen stockholders vote **FOR** the adoption of the merger agreement and approval of the merger, and **FOR** the approval of the proposal to adjourn the special meeting, if necessary, to solicit additional proxies if there are not sufficient votes in favor of the adoption of the merger agreement and approval of the merger, at the time of the special meeting.

Table of Contents

Merger Structure; Merger Consideration

In the merger, Merger Sub will merge with and into Neurogen, with Neurogen continuing as the surviving entity. Upon completion of the merger, Ligand would issue to each Neurogen stockholder a number of Ligand shares equal to approximately \$11 million (subject to dollar for dollar adjustments for any difference between Neurogen's targeted and actual net cash as of the third trading day before the date of the Neurogen special meeting of stockholders) divided by the average of the daily volume weighted average prices of Ligand's common stock over the 20 day trading period ending three trading days before the Neurogen stockholders meeting with respect to the merger, which result is then divided by the number of shares of Neurogen stock outstanding immediately before the merger. The number of Ligand shares to be issued in the merger is subject to a 4,200,000 share maximum, unless Ligand waives such maximum. Ligand may issue a number of Ligand shares equal to less than \$11 million if such number is adjusted downward because either or both of the following conditions exist: (a) as of the third trading day before the date of the special meeting of Neurogen stockholders, Neurogen's actual net cash is less than an agreed upon targeted net cash or (b) the average of the daily volume weighted average prices of Ligand's common stock over the 20 day trading period ending three trading days before the special meeting of Neurogen stockholders is less than approximately \$2.62 and the 4,200,000 share maximum is not waived. The average of the daily volume weighted average prices of Ligand's common stock over the 20 day trading period ending on October 28, 2009 was \$2.12. 4,200,000 Ligand shares times \$2.12 would equate to approximately \$8.9 million.

If Neurogen's program for the development of Aplindore for the treatment of RLS and Parkinson's disease is sold by Neurogen before the merger, Neurogen stockholders will also receive in the merger a pro-rata share of the cash and/or number of shares of third-party stock, as the case may be, paid pre-merger by the buyer for the program. In addition, if the real properties currently owned by Neurogen are sold by Neurogen before the merger, the pre-merger net cash proceeds from the sale shall also be paid in the merger to the Neurogen stockholders.

Each share of Ligand common stock that is issued in connection with the merger will be accompanied by an associated right under Ligand's stockholder rights plan.

At the closing of the merger, Ligand, Neurogen and a rights agent will also enter into four contingent value rights agreements, or CVR agreements, attached to this proxy statement/prospectus as *Annex B*, *Annex C*, *Annex D* and *Annex E*. The CVR agreements set forth the rights that former Neurogen stockholders will have with respect to each CVR to be held by them after the closing of the merger. Each Neurogen stockholder will receive one CVR under each of the four CVR agreements for each share of Neurogen stock held. The CVRs will not be marketable or listed on any securities exchange and will be subject to general transfer restrictions subject to limited exceptions.

Aplindore CVR. If the Aplindore program is not sold or cancelled before the merger, each Neurogen stockholder shall be issued, for each Neurogen share that they own, one Aplindore CVR entitling them to receive (i) if the Aplindore program is sold before the six month anniversary of the merger, a pro-rata share of the cash and/or number of shares of third-party stock received by Ligand from the buyer of the Aplindore program less the reasonable costs and expenses of sale, plus any amount remaining in an operating expense reserve account, or (ii) if the Aplindore program is not sold before the six month anniversary of the merger, a pro-rata share of any amount remaining in the operating expense reserve account. See *Recent Neurogen Developments* on page 19.

H3 CVR. The H3 CVR agreement provides for the payment of a pro rata portion of (i) \$4 million in cash if Ligand licenses the Neurogen antagonist program intended to create an H3 receptor drug on or before the third anniversary of the merger, (ii) 50% of the net cash proceeds from a sale of such program if Ligand sells the program before the third anniversary of the merger or (iii) 50% of the net proceeds if an option agreement to either license or sell the H3 antagonist program is entered into, in each case before the third anniversary of the merger. If any such option to license is exercised, the CVR holders would receive a pro rata portion of an additional amount up to \$4 million (taking into account the option proceeds previously received by the CVR).

Table of Contents

holders) or if any such option to sell is exercised, the CVR holders would receive a pro rata portion of 50% of the net sale proceeds.

Merck CVR. The Merck CVR agreement provides for the payment of a pro rata portion of (i) \$3 million if a milestone payment from Merck is received upon the initiation of a Phase 3 clinical trial of a vanilloid receptor subtype 1, or VR1, antagonist drug for the treatment of pain, or (ii) 50% of the net proceeds if such program is sold back to Merck before the milestone payment is made.

Real Estate CVR. If the real estate is not sold before the merger, each Neurogen stockholder will be issued one real estate CVR. The real estate CVR agreement provides for the payment of a pro rata portion of the cash paid by any buyer of the real estate currently owned by Neurogen and received by Ligand on or before the six month anniversary of the merger, less any costs and expenses reasonably incurred by Ligand in connection with such sale. See *Recent Neurogen Developments* on page 19.

For a description of the CVR agreements, see *Certain Terms of the Merger Agreement CVR Agreements* beginning on page 91 of this proxy statement/prospectus.

Treatment of Stock Options and Warrants

Neurogen's board of directors will take all requisite actions such that each holder of outstanding Neurogen options shall be entitled to exercise in full all Neurogen options held by such holder immediately before the effective time of the merger. All outstanding Neurogen options not exercised, other than any unexercised Neurogen options remaining outstanding under Neurogen's 1993 Omnibus Incentive Plan, shall be terminated and canceled without any payment by Neurogen.

If any Neurogen warrant or option remains outstanding after the effective time of the merger and the holder thereof exercises such Neurogen warrant or option before its expiration or termination date, then Ligand shall issue and pay in respect of each such exercised Neurogen warrant or option, on a per-exercised-share basis, equivalent consideration to the consideration (or the proceeds thereof) as was paid in respect of each issued and outstanding share of Neurogen common stock in the merger; provided that any such payment in respect of options shall be made in compliance with Section 409A of the Code.

See the section entitled *Certain Terms of the Merger Agreement Neurogen Stock Options and Warrants* beginning on page 77 of this proxy statement/prospectus.

Ownership of Ligand After the Merger

Ligand will issue a maximum of 4.2 million shares of common stock to Neurogen stockholders in the merger (unless Ligand agrees to waive such maximum). See the section entitled *Certain Terms of the Merger Agreement Manner and Basis of Converting Shares* beginning on page 75 of this proxy statement/prospectus. Assuming Ligand does not waive such share maximum, Neurogen stockholders will own approximately 3.6% of the outstanding Ligand common stock after the merger. The above calculation is based on the number of shares of Ligand common stock and Neurogen common stock outstanding on the record date and the price of Ligand common stock as of such record date and assume that no Neurogen stock options or warrants will be exercised on a cashless basis, but does not take into account stock options or warrants of Ligand.

Neurogen's Reasons for the Merger

After careful consideration, Neurogen's board of directors adopted the merger agreement and approved the merger and unanimously declared that the merger agreement and the merger, upon the terms and subject to the conditions set forth in the merger agreement, are advisable and in the best interests of Neurogen and its stockholders. Neurogen's board of directors consulted with Neurogen's senior management, as well as Neurogen's financial advisor and legal counsel, in reaching its decision to approve the merger.

Table of Contents

Neurogen's board of directors recommends that you vote **FOR** the adoption of the merger agreement and approval of the merger, and **FOR** the adjournment of the special meeting, if necessary, to solicit additional proxies. Please see the section entitled "The Merger Neurogen's Reasons for the Merger; Recommendation of Neurogen Board of Directors" beginning on page 51 of this proxy statement/prospectus for a full discussion of the factors that Neurogen's board of directors considered in reaching its decision to approve the merger.

Opinion of Neurogen's Financial Advisor

On August 20, 2009, MTS Securities, LLC, or MTS, an affiliate of MTS Health Partners, L.P., or MTS Health Partners, rendered its opinion to Neurogen's board of directors that, as of August 20, 2009, and based upon and subject to the factors and assumptions set forth therein, the merger consideration to be received by the holders of Neurogen common stock, other than Ligand, Merger Sub, and their affiliates, pursuant to the merger agreement is fair from a financial point of view to such holders.

The full text of the written opinion of MTS, dated August 20, 2009, which sets forth assumptions made, procedures followed, matters considered and limitations on the review undertaken in connection with the opinion, is attached as Annex G to this proxy statement/prospectus and is incorporated by reference herein. MTS provided its opinion for the information and assistance of Neurogen's board of directors in connection with its consideration of the merger. The MTS opinion is not a recommendation as to how any holder of Neurogen common stock should vote with respect to the merger or any other matter.

Ligand's Reasons for the Merger

Ligand believes that the merger will enable Ligand to enhance its portfolio of partnerships, pipeline assets and drug discovery resources and increase its cash position, allowing the combined company to increase the potential revenue earned from partnerships, and build long-term stockholder value.

However, there can be no assurance that the benefits of the potential growth, synergies or opportunities considered by Ligand's board of directors will be achieved through completion of the merger. Achieving Ligand's objectives is subject to particular risks which are discussed in the section entitled "Risk Factors" beginning on page 20 of this proxy statement/prospectus.

Interests of Neurogen's Officers and Directors in the Merger

In considering the recommendation of Neurogen's board of directors that you vote to adopt the merger agreement, you should be aware that some of Neurogen's executive officers and directors may have economic interests in the merger that are different from, or in addition to, those of Neurogen's stockholders generally. See "The Merger Interests of Neurogen's Executive Officers and Directors in the Merger" beginning on page 64 of this proxy statement/prospectus.

Neurogen's board of directors was aware of and considered these interests, among other matters, in approving the merger agreement and the merger, and in making its recommendation that Neurogen's stockholders vote to adopt the merger agreement and approve the merger.

Conditions to the Merger

The obligations of Ligand, Merger Sub and Neurogen to consummate and effect the merger are subject to the satisfaction, at or before the effective time of the merger, of a number of conditions, including, among others, the following:

the merger agreement shall have been approved by Neurogen's stockholders;

there shall be no order or injunction in effect, nor any law, statute or regulation enacted or adopted, preventing completion of the merger;

Table of Contents

the registration statement on Form S-4 (of which this proxy statement/prospectus forms a part) shall have been declared effective by the SEC; and

the shares of Ligand common stock issuable to the Neurogen stockholders in the merger shall have been approved for listing on The NASDAQ Global Market, or Nasdaq, subject to official notice of issuance.

In addition to the conditions above, the merger agreement provides that the obligations of Ligand and Merger Sub to consummate and effect the merger are subject to the satisfaction, at or before the effective time of the merger, of the following conditions, among others:

the representations and warranties of Neurogen in the merger agreement must be accurate, subject to exceptions that would not have a material adverse effect;

Neurogen shall have performed or complied in all material respects with all covenants required to be performed by it;

since the date of the merger agreement, there shall not have occurred and be continuing any event or development which, individually or in the aggregate (and subject to defined exceptions), has had or would reasonably be expected to have a material adverse effect on Neurogen; and

no more than 6,800,000 shares of Neurogen common stock shall be eligible to assert dissenters' rights.

The merger agreement also provides that the obligation of Neurogen to consummate and effect the merger is subject to the satisfaction, at or before the effective time of the merger, of the following conditions, among others:

the representations and warranties of Ligand and Merger Sub in the merger agreement must be accurate, subject to exceptions that would not have a material adverse effect;

Ligand and Merger Sub shall have performed or complied in all material respects with all covenants required to be performed by them; and

since the date of the merger agreement, there shall not have occurred and be continuing any event or development which, individually or in the aggregate (and subject to defined exceptions), has had or would reasonably be expected to have a material adverse effect on Ligand.

Either Ligand or Neurogen may choose to waive the conditions to its obligation to complete the merger, provided that any such waiver is in compliance with applicable law.

Termination of the Merger Agreement

Each of Ligand and Neurogen may terminate the merger agreement by mutual consent or if:

the Neurogen stockholders do not approve the merger agreement;

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

the merger has not been consummated by December 24, 2009, unless the terminating party's failure to comply with the merger agreement is the cause of the failure of the merger to occur on or before this date; or

a final, permanent legal prohibition prevents the consummation of the merger, unless the terminating party has failed to use its reasonable best efforts to prevent or resolve such legal prohibition or such legal prohibition is attributable to the failure of such party to comply with the merger agreement.

Ligand may terminate the merger agreement if:

a change in recommendation of the Neurogen board of directors has occurred within five business days before such termination (as described under "Certain Terms of the Merger Agreement - Termination of the Merger Agreement" beginning on page 89 of this proxy statement/prospectus);

Table of Contents

Neurogen breaches its representations and warranties set forth in the merger agreement, unless such breaches would not have a material adverse effect or impair Neurogen's ability to perform its obligations under the merger agreement; or

Neurogen breaches or fails to perform its obligations pursuant to the merger agreement, subject to Neurogen's ability to timely cure such breaches as provided in the merger agreement.

Neurogen may terminate the merger agreement if:

Ligand or Merger Sub breach their representations and warranties set forth in the merger agreement, unless such breaches would not have a material adverse effect or impair Ligand's ability to perform its obligations under the merger agreement;

Ligand or Merger Sub breach or fail to perform their obligations pursuant to the merger agreement, subject to their ability to timely cure such breaches as provided in the merger agreement;

if the Neurogen board of directors authorizes Neurogen, subject to complying with the terms of the merger agreement, to accept a superior proposal (as described under Certain Terms of the Merger Agreement Termination of the Merger Agreement beginning on page 89 of this proxy statement/prospectus); or

if the result that would be obtained by multiplying (A) the sum of (x) the total number of shares of Ligand common stock issuable, after giving effect to the application of the 4.2 million maximum number of shares and assuming that there are no dissenting shares, plus (y) the excess shares which are a result of fractional shares not being issued, by (B) the volume weighted average price of Ligand common stock on the trading day immediately preceding the third trading day preceding the special meeting is less than \$11 million, as adjusted based on the difference between Neurogen's targeted and actual net cash amount. However, if on the business day next following the day on which Ligand receives actual notice in writing from Neurogen of termination for this reason, Ligand agrees to irrevocably waive in full the application of the 4.2 million maximum share amount, the termination shall be nullified.

Limitation on Neurogen's Ability to Consider Other Acquisition Proposals

Neurogen has agreed that it will not, shall cause all of its subsidiaries not to and shall use its reasonable best efforts to cause Neurogen's and Neurogen's subsidiaries' directors, officers, employees, investment bankers, attorneys and other agents or representatives not to, directly or indirectly, subject to specified exceptions:

solicit, initiate, knowingly encourage or knowingly induce the making, submission or announcement of an acquisition proposal (as defined in the section entitled Certain Terms of the Merger Agreement Limitation on Neurogen's Ability to Consider Other Acquisition Proposals beginning on page 84 of this proxy statement/prospectus);

furnish any non-public information relating to Neurogen in response to or in connection with an acquisition proposal;

participate or engage in discussions or negotiations with respect to an acquisition proposal;

approve, endorse or recommend to the stockholders of Neurogen any acquisition proposal; or

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

withdraw or modify the recommendation of the board of directors of Neurogen that Neurogen stockholders vote to adopt the merger agreement.

See Certain Terms of the Merger Agreement Limitation on Neurogen's Ability to Consider Other Acquisition Proposals beginning on page 84 of this proxy statement/prospectus.

Table of Contents

Termination Fee

The merger agreement provides that Neurogen shall pay a \$475,000 termination fee to Ligand if the Neurogen board of directors authorizes Neurogen to accept a superior proposal (as defined under Certain Terms of the Merger Agreement Limitation on Neurogen's Ability to Consider Other Acquisition Proposals beginning on page 84 of this proxy statement/prospectus).

The merger agreement also provides that Neurogen shall pay a \$475,000 termination fee to Ligand if:

- (i) Ligand or Neurogen terminates the merger agreement as a result of the Neurogen stockholder approval not having been obtained,
- (ii) Ligand or Neurogen terminates the merger agreement as a result of the merger not being consummated by December 24, 2009 or
- (iii) Ligand terminates the merger agreement as a result of a breach by Neurogen of its representations and warranties, which would reasonably be expected to have a material adverse effect on Neurogen, or a material breach by Neurogen of its obligations, agreements or covenants contained in the merger agreement;

neither Ligand nor Merger Sub shall have materially breached any of its representations, warranties or covenants contained in the merger agreement; and

at or before the time of any such termination of the merger agreement an acquisition proposal shall have been made (and such acquisition proposal shall not have been withdrawn before the time of the termination of the merger agreement) and within twelve (12) months after the date of termination of the merger agreement, Neurogen or any Neurogen subsidiary consummates an acquisition transaction (as defined in the section entitled Certain Terms of the Merger Agreement Limitation on Neurogen's Ability to Consider Other Acquisition Proposals beginning on page 84 of this proxy statement/prospectus) or enters into an agreement to consummate an acquisition transaction that is subsequently consummated, provided, however if the acquisition transaction is for less than 50% of the assets, voting securities or equity interests of Neurogen, the termination fee shall be \$362,500.

The merger agreement further provides that Neurogen shall pay a \$225,000 termination fee, instead of a \$475,000 termination fee, to Ligand if Neurogen terminates the merger agreement because the value of the stock consideration to be received by Neurogen stockholders in the merger is less than \$11 million, as adjusted, and Ligand does not nullify the termination by waiving the 4.2 million maximum share amount.

Fees and Expenses

The merger agreement provides that, regardless of whether the merger is consummated, each party will pay its own expenses incident to preparing for, entering into and carrying out the merger agreement and the transactions contemplated by the merger agreement. Neurogen's expenses of this kind would reduce Neurogen's net cash and thus would reduce the number of shares of Ligand common stock payable in the merger to Neurogen stockholders.

Tax Matters

The receipt of the merger consideration by a United States holder in exchange for Neurogen common stock should be a taxable transaction for United States federal income tax purposes. The amount of gain or loss a United States holder recognizes, and the timing and potentially the character of a portion of such gain or loss, depends on the United States federal income tax treatment of the CVRs, with respect to which there is substantial uncertainty. A Neurogen stockholder's gain or loss will also be determined by the stockholder's tax basis in his shares of Neurogen common stock. For a more complete description of the tax consequences of the merger, see the section entitled The Merger Material United States Federal Income Tax Consequences of the Merger beginning on page 67 of this proxy statement/prospectus.

Table of Contents

Tax matters are very complicated, and the tax consequences of the merger to a particular stockholder will depend in part on such stockholder's circumstances. Accordingly, you are urged to consult your own tax advisor for a full understanding of the tax consequences of the merger to you, including the applicability and effect of federal, state, local and foreign income and other tax laws.

Anticipated Accounting Treatment

Ligand will account for the merger under the acquisition method of accounting in accordance with Statement of Financial Accounting Standards No. 141 (revised 2007), Business Combinations. See *The Merger Anticipated Accounting Treatment* beginning on page 70 of this proxy statement/prospectus.

Regulatory Filings and Approvals

Neither Ligand nor Neurogen is aware of any material governmental or regulatory requirements that must be complied with regarding the merger, other than the effectiveness of the registration statement of which this proxy statement/prospectus is a part and compliance with applicable provisions of Delaware law.

Ligand Will List Shares of Ligand Common Stock issued in the Merger on Nasdaq

If the merger is completed, Neurogen stockholders will be able to trade the shares of Ligand common stock they receive in the merger on Nasdaq, subject to restrictions on affiliates of Ligand as of the effective time of the merger as described in the section entitled *The Merger Sales of Shares of Ligand Common Stock Received in the Merger* beginning on page 66 of this proxy statement/prospectus.

If Ligand and Neurogen complete the merger, Neurogen stock will no longer be listed for trading on Nasdaq or any other market or exchange. See *The Merger Delisting and Deregistration of Neurogen Common Stock* beginning on page 66 of this proxy statement/prospectus. CVRs issued in the merger will not be marketable or listed on any securities exchange and will be subject to general transfer restrictions with limited exceptions.

Appraisal Rights

Holders of Neurogen common stock are entitled to appraisal rights under Delaware law. See the section entitled *The Merger Appraisal Rights of Dissenting Neurogen Stockholders* beginning on page 71 of this proxy statement/prospectus.

Material Differences in Rights of Neurogen Stockholders and Ligand Stockholders

When the merger is completed, Neurogen stockholders will automatically become Ligand stockholders and holders of CVRs. The rights of Ligand stockholders differ from the rights of Neurogen stockholders in certain important ways. See the section entitled *Comparative Rights of Ligand Stockholders and Neurogen Stockholders* beginning on page 107 of this proxy statement/prospectus.

Table of Contents**COMPARATIVE PER SHARE MARKET PRICE AND DIVIDEND DATA**

Ligand common stock is listed on Nasdaq under the symbol LGND. Neurogen common stock is listed on Nasdaq under the symbol NRGN.

The table below sets forth, for the periods indicated, the high and low closing sale prices per share of Ligand common stock as reported on Nasdaq and the high and low closing sale prices per share of Neurogen common stock as reported on Nasdaq.

	Ligand Common Stock		Neurogen Common Stock	
	High	Low	High	Low
Year ended December 31, 2007				
First Quarter	\$ 9.74	\$ 7.49	\$ 6.76	\$ 5.75
Second Quarter ⁽¹⁾	\$ 7.56	\$ 6.43	\$ 8.51	\$ 6.39
Third Quarter	\$ 7.24	\$ 5.19	\$ 6.84	\$ 4.23
Fourth Quarter	\$ 5.98	\$ 3.90	\$ 4.75	\$ 2.78
Year ended December 31, 2008				
First Quarter	\$ 4.86	\$ 3.39	\$ 3.41	\$ 1.46
Second Quarter	\$ 4.52	\$ 2.30	\$ 2.43	\$ 0.71
Third Quarter	\$ 3.73	\$ 2.65	\$ 1.02	\$ 0.23
Fourth Quarter	\$ 2.94	\$ 1.27	\$ 0.30	\$ 0.07
Year ending December 31, 2009				
First Quarter	\$ 3.15	\$ 1.99	\$ 0.24	\$ 0.12
Second Quarter	\$ 3.12	\$ 2.56	\$ 0.36	\$ 0.15
Third Quarter	\$ 3.15	\$ 2.29	\$ 0.27	\$ 0.18
Fourth Quarter (through October 28, 2009)	\$ 2.21	\$ 1.87	\$ 0.22	\$ 0.17

(1) In March 2007, Ligand declared a cash dividend on its common stock of \$2.50 per share, and, in April 2007, paid an aggregate amount of \$252.7 million to stockholders of record as of April 5, 2007 in connection with such special dividend.

As of the record date, there were approximately 4,600 record holders of Neurogen common stock. Neurogen has never declared or paid any cash dividends on its common stock. Other than the 2007 cash dividend referenced above, Ligand has never declared or paid any cash dividends on its capital stock. Ligand does not intend to pay any additional cash dividends in the foreseeable future and currently intends to retain future earnings, if any, to finance future growth. Following completion of the merger, Ligand common stock will continue to be listed on Nasdaq, and there will be no further market for Neurogen common stock.

The following table sets forth the per share closing sale price of Ligand common stock as reported on Nasdaq, the per share closing sale price of Neurogen common stock as reported on Nasdaq, and the estimated equivalent per share price, as explained below, of Neurogen common stock if the merger occurred on August 21, 2009, the last full trading day before the public announcement of the proposed merger and if the merger occurred on October 28, 2009, the latest practicable date before the date of this proxy statement/prospectus.

The estimated equivalent Neurogen per share price does not give effect to any possible sale of Neurogen's Aplindore program or real properties before closing or any CVR payments.

	Ligand Common Stock	Neurogen Common Stock	Estimated Equivalent Neurogen Per Share Price
August 21, 2009	\$ 2.76	\$ 0.20	\$ 0.16 ^(a)
October 28, 2009	\$ 1.87	\$ 0.18	\$ 0.13 ^(b)

Table of Contents

- (a) The estimated equivalent price per share reflects the value of Ligand common stock that Neurogen stockholders would receive in exchange for each share of Neurogen common stock if the merger was priced and completed on August 21, 2009, the last full trading day before the public announcement of the merger agreement, and the amount of Neurogen's actual net cash equaled its targeted net cash on the applicable determination date.

- (b) The estimated equivalent price per share reflects the value of Ligand common stock that Neurogen stockholders would receive in exchange for each share of Neurogen common stock if the merger was priced and completed on October 28, 2009, the latest practicable date before the date of this proxy statement/prospectus, and the amount of Neurogen's actual net cash equaled its targeted net cash on the applicable determination date.

Table of Contents**LIGAND PHARMACEUTICALS INCORPORATED****SELECTED HISTORICAL CONSOLIDATED FINANCIAL INFORMATION**

The following selected historical consolidated financial information are qualified by reference to, and should be read in conjunction with, Ligand's consolidated financial statements and the related notes thereto and the sections entitled "Management's Discussion and Analysis of Financial Condition and Results of Operations" from Ligand's annual report on Form 10-K and quarterly reports on Form 10-Q, which are incorporated by reference in this proxy statement/prospectus. Ligand's selected statement of operations data set forth below for each of the five years ended December 31, 2008, 2007, 2006, 2005, and 2004 and the balance sheet data as of December 31, 2008, 2007, 2006, 2005, and 2004 are derived from Ligand's consolidated financial statements, and for the six-month period ended June 30, 2009 and 2008 as derived from Ligand's unaudited interim consolidated financial statements.

The unaudited interim consolidated financial statements include, in Ligand's opinion, all adjustments, consisting of normal recurring adjustments, necessary for a fair presentation of the results of the unaudited periods. You should not rely on these interim results as being indicative of results Ligand may expect for the full year or any other interim period. Historical results are not necessarily indicative of the results to be obtained in the future. In August 2009, Ligand entered into a lease termination agreement for its corporate facility in San Diego. Under the terms of the agreement, Ligand will pay a termination fee of \$14.3 million as follows: \$4.5 million upon signing, \$4.5 million in July 2010 and \$5.3 million in April 2011. In addition, Ligand entered into a new lease for a period of 27 months commencing October 2009, for premises consisting of office and lab space located in San Diego to serve as its new corporate headquarters.

	Years Ended December 31,				
	2008	2007	2006 ⁽²⁾	2005	2004
	(in thousands, except share data)				
Consolidated Statement of Operations Data:					
Royalties	\$ 20,315	\$ 11,409	\$	\$	\$
Sale of royalty rights, net					31,342
Collaborative research and development and other revenues	7,000	1,485	3,977	10,217	11,300
Research and development expenses	30,770	44,623	41,546	30,710	30,742
General and administrative expenses	23,785	30,410	43,908	23,134	12,580
Write-off of acquired in-process research and development	72,000				
Gain on sale leaseback	1,964	1,964	3,397		
Loss from operations	(97,276)	(60,175)	(78,080)	(43,627)	(680)
Income (loss) from continuing operations	(97,460)	(34,759)	(56,590)	(36,035)	2,684
Discontinued operations ⁽¹⁾	(654)	316,447	24,847	(364)	(47,825)
Net income (loss)	(98,114)	281,688	(31,743)	(36,399)	(45,141)
Basic per share amounts:					
Income (loss) from continuing operations	\$ (1.02)	\$ (0.35)	\$ (0.70)	\$ (0.49)	\$ 0.04
Discontinued operations ⁽¹⁾	(0.01)	3.22	0.31		(0.65)
Net income (loss)	\$ (1.03)	\$ 2.87	\$ (0.39)	\$ (0.49)	\$ (0.61)
Weighted average number of common shares					
	95,505,421	98,124,731	80,618,528	74,019,501	73,692,987
Diluted per share amounts:					
Income (loss) from continuing operations	\$ (1.02)	\$ (0.35)	\$ (0.70)	\$ (0.49)	\$ 0.03
Discontinued operations ⁽¹⁾	(0.01)	3.22	0.31		(0.48)
Net income (loss)	\$ (1.03)	\$ 2.87	\$ (0.39)	\$ (0.49)	\$ (0.45)
	95,505,421	98,124,731	80,618,528	74,019,501	100,402,063

Weighted average number of common
shares

Table of Contents

	Six months ended June 30,	
	2009	2008
	Unaudited	
Royalties	\$ 4,736	\$ 9,678
Collaborative research and development and other revenues	12,328	
Research and development expenses	19,824	13,542
General and administrative expenses	9,755	14,650
Write-off of acquired in-process research and development	441	
Loss from operations	(11,974)	(17,532)
Loss from continuing operations	(11,957)	(14,606)
Discontinued operations	5,173	4,244
Net loss:	\$ (6,784)	\$ (10,362)
Basic and diluted per share amounts:		
Loss from continuing operations	\$ (0.11)	\$ (0.15)
Discontinued operations	0.05	0.04
Net income (loss)	\$ (0.06)	\$ (0.11)
Weighted average number of common shares	113,132,893	95,051,672

	As of June 30, 2009 (unaudited)	2008	2007	As of December 31, 2006 (in thousands)			2005	2004
Consolidated Balance Sheet Data:								
Cash, cash equivalents, short-term investments and restricted cash and investments	\$ 56,851	\$ 82,012	\$ 95,819	\$ 212,488	\$ 88,756	\$ 114,870		
Working capital (deficit) ⁽³⁾	21,268	23,315	58,975	64,747	(102,244)	(48,505)		
Total assets	129,176	171,448	173,278	326,053	314,619	332,466		
Current portion of deferred revenue, net	10,259	10,301		57,981	157,519	152,528		
Current portion of deferred gain	1,964	1,964	1,964	1,964				
Long-term obligations (excludes long-term portions of deferred revenue, net and deferred gain)	54,158	58,743	53,048	85,780	173,280	174,214		
Long-term portion of deferred revenue, net	8,421	16,819	2,546	2,546	4,202	4,512		
Long-term portion of deferred gain	22,310	23,292	25,256	27,220				
Common stock subject to conditional redemption	8,344	12,345	12,345	12,345	12,345	12,345		
Accumulated deficit	(686,387)	(679,626)	(581,512)	(862,802)	(831,059)	(794,660)		
Total stockholders' equity (deficit)	(12,259)	(10,365)	29,115	27,352	(110,419)	(75,317)		

- (1) Ligand sold its Oncology Product Line, or Oncology, on October 25, 2006 and its AVINZA Product Line, or AVINZA, on February 26, 2007. The operating results for Oncology and AVINZA have been presented in Ligand's consolidated statements of operations as Discontinued Operations.
- (2) Effective January 1, 2006, Ligand adopted Statement of Financial Accounting Standards 123(R), *Share-Based Payment*, or SFAS 123(R), using the modified prospective transition method. The implementation of SFAS123(R) resulted in additional employee stock compensation expense of \$4.8 million in 2006.
- (3) Working capital (deficit) includes deferred product revenue recorded under the sell-through revenue recognition method.

Table of Contents**NEUROGEN CORPORATION****SELECTED HISTORICAL CONSOLIDATED FINANCIAL INFORMATION**

The following selected historical consolidated financial information should be read in conjunction with Neurogen's financial statements and the related notes thereto and the sections entitled, "Management's Discussion and Analysis of Financial Condition and Results of Operations" from Neurogen's annual report on Form 10-K and quarterly reports on Form 10-Q, which are incorporated by reference in, and delivered with, this proxy statement/prospectus. Neurogen's selected consolidated Statement of Operations data set forth below for each of the five years ended December 31, 2008, 2007, 2006, 2005, and 2004 and the Balance Sheet data as of December 31, 2008, 2007, 2006, 2005, and 2004 are derived from Neurogen's consolidated financial statements, and for the six-month period ended June 30, 2009 and 2008 as derived from Neurogen's unaudited interim condensed consolidated financial statements.

The unaudited interim condensed consolidated financial statements include, in Neurogen's opinion, all adjustments, consisting of normal recurring adjustments, necessary for a fair presentation of the results of the unaudited periods. You should not rely on these interim results as being indicative of results Neurogen may expect for the full year or any other interim period. Historical results are not necessarily indicative of the results to be obtained in the future.

	2008	Years Ended December 31,			2004
		2007	2006	2005	
		(in thousands, except share data)			
Consolidated Statement of Operations Data:					
License fees	\$	\$ 10,872	\$ 4,467	\$ 3,632	\$ 8,890
Research and development revenue		4,565	5,346	3,926	10,290
Sale of compound library	3,000				
Research and development expenses	31,643	60,973	55,853	38,487	31,279
General and administrative expenses	7,118	12,772	11,560	9,628	9,115
Restructuring and asset impairment charges	16,078				
Gain on warrants to purchase common stock	16,700				
Other income, net	625	2,326	2,519	3,044	2,313
Loss before income taxes	(34,514)	(55,982)	(55,081)	(37,513)	(18,901)
Income tax benefit	238	276	1,305	393	308
Deemed preferred dividends	(30,620)				
Net loss attributable to common stockholders	\$ (64,896)	\$ (55,706)	\$ (53,776)	\$ (37,120)	\$ (18,593)
Basic and diluted loss per share attributable to common stockholders	\$ (1.22)	\$ (1.33)	\$ (1.55)	\$ (1.08)	\$ (0.63)
Shares used in calculation of basic and diluted loss per share					
attributable to common stockholders	53,357	41,864	34,789	34,318	29,703

Table of Contents

	Six Months Ended June 30, 2009 2008 (unaudited)	
Consolidated Statement of Operations Data:		
Revenues:		
Sale of patent estates	\$ 2,650	\$
Total revenues	2,650	
Operating costs and expenses:		
Research and development	6,051	20,049
General and administrative	3,314	2,919
Asset impairment charges	9,176	7,200
Restructuring of workforce	2,677	5,130
Total operating costs and expenses	21,218	35,298
Loss from operations	(18,568)	(35,298)
Gain on warrants to purchase common stock		11,954
Other income (expense):		
Investment and other income	352	627
Interest expense	(176)	(281)
Total other income, net	176	346
Loss before income taxes	(18,392)	(22,998)
Income tax benefit	45	46
Loss from continuing operations	(18,347)	(22,952)
Deemed preferred dividends		(5,407)
Net loss attributable to common stockholders	\$ (18,347)	\$ (28,359)
Basic and diluted loss per share attributable to common stockholders	\$ (0.27)	\$ (0.67)
Shares used in calculation of basic and diluted loss per share attributable to common stockholders	68,490	42,062

	As of June 30, 2009 (unaudited)	2008	2007	As of December 31, 2006 2005 2004 (in thousands)		
Consolidated Balance Sheet Data:						
Cash, cash equivalents, restricted cash and marketable securities	\$ 22,058	\$ 31,073	\$ 42,589	\$ 107,571	\$ 115,360	\$ 151,785
Other current assets, net	3,774	6,563	3,214	3,022	3,049	2,810
Total assets	\$ 25,867	\$ 44,768	\$ 71,370	\$ 137,739	\$ 146,764	\$ 183,823
Total current liabilities	8,207	9,247	13,622	17,455	12,946	10,392
Long-term obligations (excludes unearned revenue and loans payable)	121					
Long-term portion of unearned revenue				6,768	8,880	10,845
Long-term portion of loans payable	2,630	2,807	3,141	8,976	10,430	11,864
Common stock	1,724	1,701	1,050	1,044	865	862
Accumulated deficit	(340,771)	(322,424)	(288,148)	(232,442)	(178,666)	(141,546)
Total stockholders' equity	14,909	32,714	54,607	104,540	114,508	150,722

Table of Contents**SELECTED UNAUDITED PRO FORMA CONDENSED COMBINED FINANCIAL INFORMATION**

The selected unaudited pro forma condensed combined financial information presented below is based on, and should be read together with, the historical information that Ligand and Neurogen have presented in their respective filings with the SEC and the pro forma information that appears elsewhere in this proxy statement/prospectus. See the sections entitled "Unaudited Pro Forma Condensed Combined Financial Information" and "Where You Can Find More Information" beginning on pages 99 and 110, respectively, of this proxy statement/prospectus.

The selected unaudited pro forma condensed combined balance sheet as of June 30, 2009 gives effect to the proposed merger as if it had occurred on June 30, 2009, and combines the historical balance sheets of Ligand and Neurogen as of June 30, 2009. The selected unaudited pro forma condensed combined statements of operations for the year ended December 31, 2008 and for the six months ended June 30, 2009 are presented as if the proposed merger had occurred on January 1, 2008, and combines the historical results of Ligand and Neurogen for the year ended December 31, 2008 and for the six months ended June 30, 2009, respectively.

The pro forma adjustments related to the merger are based on a preliminary purchase price allocation whereby the estimated cost to acquire Neurogen was allocated to the assets acquired and the liabilities assumed based upon their estimated fair values. A final purchase price allocation will be performed using fair value as of the date of completion of the merger. Differences between the preliminary and final purchase price allocations could have a material impact on the accompanying unaudited pro forma condensed combined financial statement information and Ligand's future results of operations and financial position.

The selected unaudited pro forma condensed combined financial statements do not reflect the realization of potential cost savings or synergistic advantages, or any related restructuring or integration costs. Certain cost savings or synergistic advantages may result from the merger, however, there can be no assurance that these cost savings or synergistic advantages will be achieved.

The selected unaudited pro forma condensed combined financial information is presented for illustrative purposes only and is not necessarily indicative of the combined financial positions or results of operations in future periods or the results that actually would have been realized if the proposed merger had been completed as of the dates indicated.

	Unaudited Pro Forma Combined (in thousands, except per share data)	
	Six Months Ended June 30, 2009	Year Ended December 31, 2008
Earnings Data:		
Revenue	\$ 19,714	\$ 30,315
Expenses	51,208	181,319
Operating loss	(30,512)	(149,040)
Other income	110	16,919
Loss before income taxes	(30,402)	(132,121)
Income tax (expense) benefit	45	293
Loss from continuing operations	(30,357)	(131,828)
Basic and diluted per share amounts:		
Continuing operations	\$ (0.26)	\$ (1.32)

	Unaudited Pro Forma Combined (in thousands, except per share data)	
	June 30, 2009	
Balance Sheet Data:		
Total assets	\$	148,609
Total liabilities		140,099
Ligand common stock subject to redemption		8,344
Total stockholders' equity		166

Table of Contents**COMPARATIVE PER SHARE DATA**

The tables below reflect:

the historical net income (loss) and book value per share of Ligand common stock and the historical net income (loss) and book value per share of Neurogen common stock;

the combined Ligand and Neurogen unaudited pro forma net income and book value per share after giving effect to the merger on a purchase basis if the merger had been priced and consummated on August 21, 2009 (the last full trading day before the public announcement of the merger agreement);

the equivalent unaudited pro forma net income and book value per share attributable to .06 of a share of Ligand common stock, which is the fraction of a Ligand share which would be received for each share of Neurogen common stock if the merger had been priced and consummated on August 21, 2009 (the last full trading day before the public announcement of the merger agreement); and

the equivalent unaudited pro forma net income and book value per share attributable to .06 of a share of Ligand common stock, which is the maximum fraction of a Ligand share which would be received for each share of Neurogen common stock pursuant to the merger agreement (assuming no waiver of the 4.2 million maximum number of Ligand shares).

The following tables further assume that the amount of Neurogen's targeted net cash equaled its actual net cash on the applicable determination date.

The following tables should be read in conjunction with the historical consolidated financial statements and related notes of Ligand which are incorporated by reference in this proxy statement/prospectus and the historical consolidated financial statements and related notes of Neurogen, which are elsewhere included or incorporated by reference in, and delivered with, this proxy statement/prospectus.

The unaudited pro forma data are presented for illustrative purposes only and are not necessarily indicative of actual or future financial position or results of operation that would have been realized if the proposed merger had been completed as of the date indicated or will be realized upon completion of the proposed merger. See the section entitled "Unaudited Pro Forma Condensed Combined Financial Information" beginning on page 99 of this proxy statement/prospectus.

Ligand	Six Months Ended June 30, 2009	Year Ended December 31, 2008
Historical per common share data (basic and diluted):		
Continuing operations	\$ (0.11)	\$ (1.02)
Discontinued operations	\$ 0.05	\$ (0.01)
Net income (loss)	\$ (0.06)	\$ (1.03)
Book value (based on basic weighted average shares outstanding)	\$ (0.11)	\$ (0.11)

Neurogen	Six Months Ended June 30, 2009	Year Ended December 31, 2008
Historical per common share data (basic and diluted):		
Net income (loss)	\$ (0.27)	\$ (1.22)
Book value (based on basic weighted average shares outstanding)	\$ 0.22	\$ 0.61

Table of Contents

	Six Months Ended June 30, 2009	Year Ended December 31, 2008
Combined Ligand and Neurogen		
Combined pro forma per Ligand common share data, calculated assuming the closing occurred on August 21, 2009:		
Net loss from continuing operations basic and diluted	\$ (0.26)	\$ (1.32)
Book value (based on basic weighted average shares outstanding)	\$ (0.02)	\$
Combined pro forma per Neurogen equivalent share data, calculated assuming the closing occurred on August 21, 2009:		
Net loss from continuing operations basic and diluted	\$ (0.01)	\$ (0.08)
Book value (based on basic weighted average shares outstanding)	\$ (0.00)	\$
Combined pro forma per Neurogen equivalent share data, calculated assuming the maximum number of Ligand shares were issued (assuming no waiver of the 4.2 million maximum number of Ligand shares):		
Net loss from continuing operations basic and diluted	\$ (0.01)	\$ (0.07)
Book value (based on basic weighted average shares outstanding)	\$ (0.00)	\$

RECENT NEUROGEN DEVELOPMENTS

On September 18, 2009, Ligand, Merger Sub and Neurogen entered into a first amendment to the merger agreement, pursuant to which the parties clarified the definition of Target Net Cash Amount in the merger agreement. On November 2, 2009, Ligand, Merger Sub and Neurogen entered into a second amendment to the merger agreement, pursuant to which the parties extended the outside date by which the merger must be consummated or abandoned to December 24, 2009. If the merger is not consummated by December 24, 2009, either Ligand or Neurogen may terminate the merger agreement.

On November 5, 2009, Neurogen entered into an agreement to sell its real estate holdings, including all laboratory and office facilities, to a commercial real estate developer for a cash purchase price of \$3.5 million. Neurogen expects that net proceeds from the sale, after adjustments, will be approximately \$3.1 million, and closing of the sale will occur in the first quarter of 2010. Pursuant to the real estate CVR agreement, assuming the closing of the sale occurs on or before the six month anniversary following the merger, each Neurogen stockholder will be entitled to receive in cash a proportionate share of the net proceeds from the sale, less any costs and expenses reasonably incurred by Ligand in connection with the closing of the sale.

On November 6, 2009, Neurogen announced its analysis of results from the previously suspended Phase 2 study of Aplindore for the treatment of Restless Legs Syndrome, or RLS, and Parkinson's disease. In its announcement, Neurogen stated that while there were indications of efficacy in the RLS study of Aplindore, Neurogen's analysis of both efficacy and tolerability in the context of observations from similar clinical studies with drugs currently on the market suggests that the partial agonist profile of Aplindore would not be differentiated from the full agonists, which either are or will be generic by the time Aplindore could be launched.

Table of Contents

RISK FACTORS

If the merger is completed, Ligand and Neurogen will operate as a combined company in a market environment that is difficult to predict and that involves significant risks, many of which will be beyond the combined company's control. In addition to information regarding Ligand and Neurogen contained in, or incorporated by reference into, this proxy statement/prospectus, you should carefully consider the risks described below before voting your shares. Additional risks and uncertainties not presently known to Ligand and Neurogen or that they do not currently believe are important to an investor, if they materialize, also may adversely affect the merger, Ligand, Neurogen and the combined company. A discussion of additional risks and uncertainties regarding Ligand and Neurogen can be found in the information that is incorporated by reference in this proxy statement/prospectus and referred to in the section entitled "Where You Can Find More Information" beginning on page 110 of this proxy statement/prospectus. If any of the events, contingencies, circumstances or conditions described in the following risks actually occur, Ligand's and Neurogen's respective businesses, financial condition or their results of operations (both separately and as combined) could be seriously harmed. If that happens, the trading price of Ligand common stock or Neurogen common stock could decline and you may lose part or all of the value of any Ligand shares or Neurogen shares held by you.

Risks Related to the Merger and the Combined Company

The number of shares of Ligand common stock that Neurogen stockholders will receive in connection with the merger will fluctuate.

The number of shares and precise value of the merger consideration to be received by Neurogen stockholders at the effective time of the merger cannot be determined at the present time. The exchange ratio, which determines the number of shares of Ligand common stock that Neurogen stockholders will receive in connection with the merger, will not be determined until shortly before the special meeting of Neurogen stockholders.

Based on the terms of the merger agreement, Ligand would issue common stock valued at approximately \$11 million, subject to adjustment based on the final net cash position of Neurogen measured against a target net cash amount of \$7.9 million as of September 30, 2009, with a \$5,000 daily reduction after September 30, 2009, and further subject to a 4.2 million maximum number of shares of Ligand common stock to be issued in the merger. Ligand would also issue CVRs in the merger. Please see the sections entitled "The Merger" and "Certain Terms of the Merger Agreement" beginning on pages 44 and 75, respectively, of this proxy statement/prospectus.

The price of Ligand common stock at the closing of the merger may vary from its price on the date the merger agreement was executed, on the date of this proxy statement/prospectus and on the date of the special meeting of Neurogen stockholders. Stock price changes may result from a variety of factors beyond Ligand's control, including general economic and market conditions. In addition, there will be a period of time between completion of the merger and the time at which former Neurogen stockholders actually receive stock certificates evidencing the Ligand common stock. Until stock certificates are received, former Neurogen stockholders may not be able to sell their Ligand shares in the open market and, therefore, may not be able to avoid losses from any decrease in the trading price of Ligand common stock during that period.

The value of Ligand common stock could fluctuate for a variety of reasons between the date of the merger agreement and the date of the special meeting of Neurogen stockholders. Under the merger agreement, Ligand is required to issue no more than 4.2 million shares of Ligand common stock. In the event declines in the value of Ligand common stock, combined with the 4.2 million share maximum, would result in Neurogen stockholders receiving in the aggregate less than \$11 million (as adjusted by Neurogen's net cash position as provided in the merger agreement), Neurogen has the right to terminate the merger agreement and pay Ligand a termination fee of \$225,000. If Neurogen decides not to terminate the merger agreement for reasons determined by the Neurogen board of directors at the time, Neurogen stockholders will receive in the aggregate less than \$11 million (as

Table of Contents

adjusted). The average of the daily volume weighted average prices of Ligand's common stock over the 20 day trading period ending on October 28, 2009 was \$2.12. 4,200,000 Ligand shares times \$2.12 would equate to approximately \$8.9 million. If Neurogen exercises such termination right, Ligand can waive application of the share maximum and nullify such termination, but Ligand is under no obligation to do so. In the event Ligand chooses not to waive application of the share maximum under those circumstances, there would be no merger with Ligand.

Unless certain events occur, no payments will be made under the CVRs.

The CVR agreements set forth the rights of the Neurogen stockholders to receive payments thereunder.

Aplindore CVR. In order for a Neurogen stockholder to receive consideration under an Aplindore CVR agreement, the Aplindore program must be sold before the six month anniversary of the merger; however, if the Aplindore program is not sold before the six month anniversary of the merger, any amount remaining in the operating expense reserve account will be paid to the CVR holders. The beginning balance of the operating expense reserve account will be \$350,000, and it is likely that most or all of this will be expended. See "Recent Neurogen Developments" on page 19.

Under the terms of the Aplindore CVR agreement, Ligand shall attempt to sell the Aplindore program, but shall have sole discretion and decision making authority, which shall be exercised in good faith and with commercial reasonableness, over any continued operation of, development of or investment in the Aplindore program and when, if ever, to consummate the sale of all or any portion of the Aplindore program to any purchaser, and, subject to limited exceptions, upon what terms and conditions.

H3 CVR. In order for a Neurogen stockholder to receive consideration under the H3 CVR agreement, Ligand must license the Neurogen antagonist program intended to create an H3 receptor drug on or before the third anniversary of the merger, sell such program before the third anniversary of the merger and before licensing the program and/or enter into an option agreement to either license or sell the H3 antagonist program before the third anniversary of the merger.

Under the terms of the H3 CVR agreement, Ligand shall have sole discretion and decision making authority over any continued operation of, development of or investment in the H3 antagonist program and over when, if ever, and whether to pursue, or enter into, a licensing agreement and/or sale agreement and/or similar transfer agreement and/or agreement for the grant of an option to enter into any such transaction with respect to a drug candidate or technology or intellectual property from the H3 antagonist program, and upon what terms and conditions.

Merck CVR. In order for a Neurogen stockholder to receive consideration under the Merck CVR agreement, Ligand must receive a milestone payment from Merck Sharpe & Dohme Limited from Merck's initiation of a Phase 3 clinical trial of a vanilloid receptor subtype 1, or VR1, antagonist drug for the treatment of pain, as specified in a 2003 partnering agreement between Merck and Neurogen, or sell to Merck the VR1 program before the initiation of any such Phase 3 trial.

Under the terms of the Merck CVR agreement, Ligand shall have sole discretion and decision making authority over any continuation by Ligand of involvement in the VR1 program and over when, if ever, to consummate the sale, conveyance, relinquishment or other transfer of the VR1 program rights to Merck, and, subject to limited exceptions, upon what terms and conditions. Merck will control the operations of the VR1 program and when, if ever, to initiate the VR1 Phase 3 trial. Merck may not wish to buy the VR1 program, even if Ligand wishes to sell it.

Real Estate CVR. In order for a Neurogen stockholder to receive consideration under the real estate CVR agreement, Ligand must receive cash from a buyer of the real estate currently owned by Neurogen on or before the six month anniversary of the merger.

Under the terms of the real estate CVR agreement, Ligand shall attempt to sell the real estate currently owned by Neurogen, but shall have sole discretion and decision making authority, which shall be exercised in

Table of Contents

good faith and with commercial reasonableness, over when, if ever, to consummate the sale of all, or any parcel of such real estate, to any purchaser, and upon what terms and conditions. See Recent Neurogen Developments on page 19.

The events that result in contingent payments may not occur due to numerous factors. For the CVR agreements with stated timeframes, the CVR will expire and no payments will be made in connection with such CVR if the trigger event for such CVR is not achieved within the required timeframe. Accordingly, the CVRs may ultimately have no value. The CVRs are not transferable other than in certain limited circumstances and accordingly you may not sell them before their termination.

Uncertainty regarding the merger and the effects of the merger could cause each company's licensors, collaborators, suppliers or other strategic partners to delay or defer decisions, which could increase costs of the ongoing business for Ligand and/or Neurogen.

Ligand's and Neurogen's strategy for developing and commercializing many of their potential products includes entering into agreements with licensors, collaborators, suppliers and other strategic partners. These partners, in response to the announcement of the merger, may delay or defer decisions regarding their business relationships with each company, which could increase costs for the business of the subject company and delay, interrupt or terminate the collaborate research, development and commercialization of certain potential products, regardless of whether the merger is ultimately completed. Under specified circumstances, these partners may also terminate their agreements with each company. Any such delay, interruption or termination of the combined company's relationship with any of these partners could materially harm the combined company's business and financial condition, and frustrate any commercialization efforts for its product candidates.

The merger is subject to closing conditions that could result in the completion of the merger being delayed or not consummated, which could negatively impact Ligand's and/or Neurogen's stock price and future business and operations.

Completion of the merger is conditioned upon Ligand and Neurogen satisfying closing conditions, including adoption of the merger agreement by Neurogen's stockholders, all as set forth in the merger agreement. See the section entitled Certain Terms of the Merger Agreement Conditions to the Merger beginning on page 86 for a discussion of the conditions to the completion of the merger. The required conditions to closing may not be satisfied in a timely manner, if at all, or, if permissible, waived, and the merger may not be consummated. Failure to consummate the merger could negatively impact Ligand's and/or Neurogen's stock price, future business and operations, and financial condition. Any delay in the consummation of the merger or any uncertainty about the consummation of the merger may adversely affect the future business, growth, revenue and results of operations of either or both of the companies.

If the merger is not completed for any reason, the ongoing business of Ligand and Neurogen may be adversely affected and will be subject to a number of risks, including:

Neurogen may be required, under some circumstances, to pay Ligand a termination fee of up to \$475,000. See Certain Terms of the Merger Agreement Termination Fee beginning on page 91 of this proxy statement/prospectus;

the diversion of management's attention, the reduction in capital spending and acquisitions, the suspension of planned hiring, the potential employee attrition from Neurogen's small staff and other affirmative and negative covenants in the merger agreement restricting each company's business;

failure to pursue other beneficial opportunities as a result of the focus of management of each of the companies on the merger, without realizing any of the anticipated benefits of the merger;

the market price of Ligand common stock or Neurogen common stock may decline to the extent that the current market price reflects a market assumption that the merger will be completed;

Table of Contents

Ligand and Neurogen may experience negative reactions to the termination of the merger from licensors, collaborators, suppliers, or other strategic partners; and

Ligand's and Neurogen's costs incurred related to the merger, such as legal and accounting fees, must be paid even if the merger is not completed.

If the merger agreement is terminated and Neurogen's board of directors seeks another merger or business combination, Neurogen stockholders cannot be certain that Neurogen will be able to find a party willing to pay a price equivalent to or more attractive than the price Ligand has agreed to pay in the merger.

The pro forma condensed combined financial information is presented for illustrative purposes only and may not be an indication of the combined company's financial condition or results of operations following the merger.

The pro forma financial information contained in this proxy statement/prospectus are presented for illustrative purposes only and may not be an indication of the combined company's financial condition or results of operations following the merger for several reasons. For example, the pro forma financial information has been derived from the historical financial statements of Ligand and Neurogen and certain adjustments and assumptions have been made regarding the combined company after giving effect to the merger. The information upon which these adjustments and assumptions have been made is preliminary, and these kinds of adjustments and assumptions are difficult to make with complete accuracy. Moreover, the pro forma financial information does not reflect all costs that are expected to be incurred by the combined company in connection with the merger. For example, the impact of any incremental costs incurred in integrating the two companies is not reflected in the pro forma financial statements. As a result, the actual financial condition and results of operations of the combined company following the merger may not be consistent with, or evident from, these pro forma financial statements.

In addition, the assumptions used in preparing the pro forma financial information may not prove to be accurate, and other factors may affect the combined company's financial condition or results of operations following the merger. Any potential decline in the combined company's financial condition or results of operations may cause significant variations in the stock price of the combined company. See the section entitled Unaudited Pro Forma Condensed Combined Financial Information beginning on page 99 of this proxy statement/prospectus.

In the event the merger is completed, Ligand will incur additional expenses in connection with the integration of Neurogen.

In the event the merger is completed, Ligand expects to incur additional expenses in connection with the integration of Neurogen, including integrating accounting systems, vendors and strategic partners of each company and transitioning assets, and may be subject to possible material write downs in assets and charges to earnings, which are expected to include severance pay and other costs. Ligand will not retain Neurogen's Connecticut facilities, and transitioning assets to other locations may be disruptive. In addition, Ligand does not intend to offer employment to any more than one or two Neurogen employees, which may result in a loss of know-how and/or institutional memory.

Neurogen's executive officers and directors have interests different from your interests that may influence them to support or approve the merger.

In considering the recommendation of the Neurogen board of directors to adopt the merger agreement, Neurogen stockholders should recognize that Neurogen's executive officers and directors have interests that differ from those of Neurogen's and Ligand's stockholders because of employment arrangements, severance arrangements, change of control agreements, indemnification and liability insurance and other reasons. These reasons are described in the section entitled The Merger Agreement Interests of Neurogen's Executive Officers and Directors in the Merger.

Table of Contents

The market price of Ligand's common stock may decline as a result of the merger.

The market price of Ligand's common stock may decline as a result of the merger for a number of reasons including the reasons mentioned in the risk factors above and/or if:

the prospective or actual issuance of the Ligand common stock may result in fluctuations in the price of Ligand common stock;

Ligand does not achieve the perceived benefits of the merger as rapidly or to the extent anticipated by financial or industry analysts;

the effect of the merger on Ligand's business and prospects is not consistent with the expectations of financial or biopharmaceutical industry analysts; or

investors react negatively to the effect on Ligand's business and prospects from the merger.

If Neurogen stockholders sell the Ligand common stock received in connection with the merger, they could cause a decline in the market price of Ligand common stock.

Ligand's common stock issued in connection with the merger will be registered with the SEC. As a result, those shares will be immediately available for resale in the public market, except for shares of Ligand common stock that will be subject to additional transfer restrictions because those shares were issued to Neurogen's former stockholders who are affiliates of Ligand upon completion of the merger. Neurogen former stockholders may sell the stock they receive immediately after the merger, except for any shares subject to the additional transfer restrictions described above. If this occurs, or if other holders of Ligand common stock sell significant amounts of Ligand common stock immediately after the merger is completed, the market price of Ligand common stock could decline. These sales may also make it more difficult for Ligand to sell equity securities in the future at a time and at a price that Ligand deems appropriate to raise funds through future offerings of common stock.

Former Neurogen stockholders will have limited ability to influence Ligand's actions and decisions following the merger.

Following the merger, former Neurogen stockholders will hold up to only approximately 3.6% of the outstanding shares of Ligand common stock. As a result, former Neurogen stockholders will have only limited ability to influence Ligand's business. Former Neurogen stockholders will not have separate approval rights with respect to any actions or decisions of Ligand or have separate representation on Ligand's board of directors.

The combined company's stock price is expected to be volatile due to the nature of its business, and the market price of its common stock may drop following the merger.

The market price of the combined company's common stock could be subject to significant fluctuations following the merger. Market prices for securities of pharmaceutical, biotechnology and other life sciences companies have historically been particularly volatile. Some of the factors that may cause the market price of the combined company's common stock to fluctuate include:

the ability of the combined company to obtain regulatory approvals for any of its product candidates, and delays or failures to obtain such approvals;

failure of any of the combined company's product candidates, if approved, to achieve commercial success;

issues in manufacturing the combined company's approved products, if any, or product candidates;

the results of the combined company's current and any future clinical trials of its product candidates;

the entry into, or termination of, key agreements, including key commercial partner agreements;

Table of Contents

the initiation of, material developments in, or conclusion of litigation to enforce or defend any of the combined company's intellectual property rights or defend against the intellectual property rights of others;

developments concerning current or future strategic collaborations;

announcements by commercial partners or competitors of new commercial products, clinical progress or the lack thereof, significant contracts, commercial relationships or capital commitments;

the introduction of technological innovations or new therapies that compete with potential products of the combined company;

additions or departures of key employees;

third-party coverage and reimbursement policies;

changes in estimates or recommendations by securities analysts, if any, who cover the combined company's common stock;

future sales of the combined company's common stock;

general and industry-specific economic conditions that may affect the combined company's research and development expenditures; and

period-to-period fluctuations in the combined company's financial results.

Moreover, the stock markets in general (and the biotechnology market sector in particular) have experienced substantial volatility that has often been unrelated to the operating performance of individual companies. These broad market fluctuations may also adversely affect the trading price of the combined company's common stock.

In the past, following periods of volatility in the market price of a company's securities, stockholders have often instituted class action securities litigation against those companies. Such litigation, if instituted, could result in substantial costs and diversion of management attention and resources, which could significantly harm the combined company's profitability and reputation.

The merger agreement limits Neurogen's ability to pursue alternatives to the merger.

Neurogen has agreed that it will not, shall cause all of its subsidiaries not to and shall use its reasonable best efforts to cause Neurogen's and Neurogen's subsidiaries' directors, officers, employees, investment bankers, attorneys and other agents or representatives not to, directly or indirectly, subject to specified exceptions, solicit, initiate, knowingly encourage or knowingly induce the making, submission or announcement of an acquisition proposal, furnish any non-public information relating to Neurogen in response to or in connection with an acquisition proposal, participate or engage in discussions or negotiations with respect to an acquisition proposal, approve, endorse or recommend to the stockholders of Neurogen any acquisition proposal, or withdraw or modify the recommendation of the board of directors of Neurogen that Neurogen stockholders vote to adopt the merger agreement. Under certain circumstances, the merger agreement also provides that Neurogen will be required to pay a termination fee of up to \$475,000 to Ligand upon termination of the merger agreement. These provisions might discourage a potential competing acquirer that might have an interest in acquiring all or a significant part of Neurogen from considering or proposing an acquisition even if it were prepared to pay consideration with a higher per share market price than that proposed in the merger, or might result in a potential competing acquirer proposing to pay a lower per share price to acquire Neurogen than it might otherwise have proposed to pay.

The United States federal income tax treatment of the CVRs is unclear.

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

There is substantial uncertainty as to the tax treatment of the CVRs. The receipt of the CVRs as part of the merger consideration may be treated as a closed transaction or an open transaction for United States federal income tax purposes, which affects the amount of gain, if any, or loss that may be recognized at the time of

Table of Contents

consummation of the merger. See *The Merger Material United States Federal Income Tax Consequences of the Merger* beginning on page 67 of this proxy statement/prospectus for a more detailed explanation of the United States federal income tax treatment of the CVRs.

Ligand and Neurogen have each been named in a putative class action lawsuit that could prevent or delay the completion of the merger.

On August 31, 2009, a putative class action complaint was filed in the Connecticut Superior Court for the New Haven Judicial District by Gabriel Guzman, one of Neurogen's stockholders, against Neurogen, the members of its board of directors, Ligand and Merger Sub. The complaint generally alleges that Neurogen's board of directors' decision to enter into the proposed transaction with Ligand on the terms contained in the merger agreement constitutes a breach of their fiduciary duties and gives rise to other unspecified state law claims. The complaint also alleges that Ligand and Merger Sub aided and abetted Neurogen's board of directors' breach of their fiduciary duties. In addition, the complaint alleges that the named plaintiff will seek equitable relief, including among other things, an order preliminarily and permanently enjoining the proposed transaction. On October 2, 2009, the plaintiff filed an amended complaint, adding certain claims that the directors had not properly disclosed all relevant information relating to the proposed merger. On October 22, 2009, the director defendants moved to dismiss the amended complaint on the basis that the individual defendants had not been properly served. In addition, Neurogen and the director defendants filed a motion to strike the amended complaint for failure to state a claim upon which relief could be granted. On that same date, Ligand filed a motion to strike the amended complaint for failure to state a claim upon which relief could be granted. Neither Ligand nor Neurogen can provide any assurances as to the outcome of the foregoing legal proceeding and its potential effect on the completion of the merger.

The defense of this or any future legal proceeding could divert management's attention and resources from the needs of their respective businesses. Either Neurogen or Ligand or both of them may be required to make substantial payments or incur other adverse effects in the event of adverse judgments or settlements of any such proceedings. In addition, the merger may be delayed or prohibited as a result of this legal proceeding.

Risks Related to Ligand

Ligand is substantially dependent on AVINZA and PROMACTA royalties for its revenues.

King Pharmaceuticals, or King, is obligated to pay Ligand royalties based on its sales of AVINZA and GlaxoSmithKline, or GSK, is obligated to pay Ligand royalties on its sales of PROMACTA. These royalties represent and will for some time represent substantially all of Ligand's ongoing revenue. Although Ligand may also receive royalties and milestones from its partners in various past and future collaborations, the amount of revenue from such royalties and milestones is unknown and highly uncertain. As a result, any setback that may occur with respect to AVINZA or PROMACTA could significantly impair Ligand's operating results and/or reduce the market price of our stock. Setbacks could include problems with shipping, distribution, manufacturing, product safety, marketing, government licenses and approvals, intellectual property rights, competition with existing or new products and physician or patient acceptance of the products, as well as higher than expected total rebates, returns or discounts.

King and GSK's sales efforts for AVINZA and PROMACTA, respectively, could be affected by a number of factors and decisions regarding their organizations, operations, and activities as well as events both related and unrelated to AVINZA or PROMACTA, including sales force reorganizations and lower than expected sales calls and prescription volumes. AVINZA and PROMACTA could also face stiffer competition from existing or future products. The negative impact on the sales of AVINZA or PROMACTA will negatively affect Ligand's royalties, revenues and earnings.

Sales of AVINZA and PROMACTA may also be negatively impacted by higher than expected discounts (especially pharmacy benefit management/group purchasing organization rebates and Medicaid rebates, which can be substantial), returns and chargebacks and/or slower than expected market penetration. Other setbacks that

Table of Contents

AVINZA could face in the sustained-release opioid market include abuse issues and the inability to obtain sufficient quotas of morphine from the Drug Enforcement Agency to support production requirements.

AVINZA or PROMACTA could also face regulatory action and product safety issues. For example, the FDA previously requested expanded warnings on the AVINZA label to alert doctors and patients to the dangers of using AVINZA with alcohol. Changes were subsequently made to the label. The FDA also requested clinical studies to investigate the risks associated with taking AVINZA with alcohol. Any additional warnings, studies and any further regulatory action could have significant adverse effects on AVINZA sales.

On September 10, 2007, King reported that Actavis, a manufacturer of generic pharmaceutical products headquartered in Iceland, had filed with the FDA an Abbreviated New Drug Application, or ANDA, with a Paragraph IV Certification pertaining to AVINZA, the rights to which were acquired by King from Ligand in February 2007. According to the report, Actavis Paragraph IV Certification sets forth allegations that U.S. Patent No. 6,066,339, or the 339 patent, which pertains to AVINZA, and which is listed in the FDA's Approved Drug Products With Therapeutic Equivalence Evaluations, will not be infringed by Actavis' manufacture, use, or sale of the product for which the ANDA was submitted. The expiration date for this patent is November 2017. King, King Pharmaceuticals Research and Development, Inc., Elan Corporation, plc and Elan Pharma International Ltd. jointly filed suit in federal district court in New Jersey on October 18, 2007 against Actavis, Inc. and Actavis Elizabeth LLC for patent infringement under the 339 patent. The lawsuit seeks a judgment that would, among other things, prevent Actavis from commercializing its proposed morphine product until after expiration of the 339 patent.

On July 21, 2009, King, King Pharmaceuticals Research and Development, Inc., Elan Corporation, plc and Elan Pharma International Ltd. jointly filed suit in federal district court in New Jersey against Sandoz Inc., or Sandoz, for patent infringement under the 339 patent. According to the complaint, Sandoz filed an ANDA for morphine sulfate extended release capsules and, in connection with the ANDA filing, Sandoz provided written certification to the FDA alleging that the claims of the 339 patent are invalid, unenforceable and/or will not be infringed by the manufacture, use or sale of Sandoz's proposed morphine product. Similar to the lawsuit against Actavis, this lawsuit seeks a judgment that would, among other things, prevent Sandoz from commercializing its proposed morphine product until after expiration of the 339 patent.

AVINZA was licensed from Elan Corporation, or Elan, which is its sole manufacturer. Any problems with Elan's manufacturing operations or capacity could reduce sales of AVINZA, as could any licensing or other contract disputes with Elan, raw materials suppliers, or others.

Further, pursuant to the agreement with King, beginning in 2009 Ligand is no longer entitled to receive AVINZA royalties on a quarterly basis, but will collect royalties on an annual basis, which may adversely impact Ligand's cash flows.

Ligand's product candidates face significant regulatory hurdles which could delay or prevent sales.

Before Ligand obtains the approvals necessary to sell any of its potential products, it must show through preclinical studies and human testing that the product is safe and effective. Ligand and its partners have a number of products moving toward or currently awaiting regulatory action, including bazedoxifene, lasofoxifene, PS433540 and PS178990. Failure to show any product's safety and effectiveness could delay or prevent regulatory approval of a product and could adversely affect Ligand's business. The clinical trials process is complex and uncertain. For example, the results of preclinical studies and initial clinical trials may not necessarily predict the results from later large-scale clinical trials. In addition, clinical trials may not demonstrate a product's safety and effectiveness to the satisfaction of the regulatory authorities. Recently, a number of companies have suffered significant setbacks in advanced clinical trials or in seeking regulatory approvals, despite promising results in earlier trials. The FDA may also require additional clinical trials after regulatory approvals are received. Such additional trials may be expensive and time-consuming, and failure to successfully conduct those trials could jeopardize continued commercialization of a product.

Table of Contents

The rate at which Ligand and its collaborative partners complete clinical trials depends on many factors, including, but not limited to, its ability to obtain adequate supplies of the products to be tested and patient enrollment. Patient enrollment is a function of many factors, including the size of the patient population, the proximity of patients to clinical sites and the eligibility criteria for the trial. Delays in patient enrollment for Ligand's trials may result in increased costs and longer development times. For example, the trial entitled "Eltrombopag To Reduce The Need For Platelet Transfusion In Subjects With Chronic Liver Disease And Thrombocytopenia Undergoing Elective Invasive Procedures (ELEVATE)" was suspended in October 2009 in accordance with an IDMC Recommendation. In addition, Ligand's collaborative partners have rights to control product development and clinical programs for products developed under the collaborations. As a result, these collaborative partners may conduct these programs more slowly or in a different manner than expected. Moreover, even if clinical trials are completed, Ligand or its collaborative partners still may not apply for FDA approval in a timely manner or the FDA still may not grant approval.

Ligand relies heavily on collaborative relationships, and any disputes or litigation with its collaborative partners or termination or breach of any of the related agreements could reduce the financial resources available to it, including milestone payments and future royalty revenues.

Ligand's strategy for developing and commercializing many of its potential products, including products aimed at larger markets, includes entering into collaborations with corporate partners and others. These collaborations have provided Ligand with funding and research and development resources for potential products for the treatment of a variety of diseases. These agreements also give Ligand's collaborative partners significant discretion when deciding whether or not to pursue any development program. Ligand's existing collaborations may not continue or be successful, and Ligand may be unable to enter into future collaborative arrangements to develop and commercialize its product candidates.

In addition, Ligand's collaborators may develop drugs, either alone or with others that compete with the types of drugs they are developing with Ligand. This would result in increased competition for Ligand's programs. If products are approved for marketing under Ligand's collaborative programs, revenues it receives will depend on the manufacturing, marketing and sales efforts of its collaborative partners, who generally retain commercialization rights under the collaborative agreements. Generally, Ligand's current collaborative partners also have the right to terminate their collaborations under specified circumstances. If any of Ligand's collaborative partners breach or terminate their agreements with Ligand or otherwise fail to conduct their collaborative activities successfully, Ligand's product development under these agreements will be delayed or terminated. Disputes or litigation may also arise with Ligand's collaborators, including disputes or litigation over ownership rights to intellectual property, know-how or technologies developed with its collaborators. Such disputes or litigation could adversely affect Ligand's rights to one or more of its product candidates, including its PS433540, PS178990 and LGD-4665 and other small-molecule TPO mimetic compounds. Any such dispute or litigation could delay, interrupt or terminate the collaborative research, development and commercialization of certain potential products, create uncertainty as to ownership rights of intellectual property, or could result in litigation or arbitration. The occurrence of any of these problems could be time-consuming and expensive and could adversely affect Ligand's business.

If Ligand consumes cash more quickly than expected, and if it is unable to raise additional capital, it may be forced to curtail operations.

Ligand's operations have consumed substantial amounts of cash since inception. Clinical and preclinical development of drug candidates is a long, expensive and uncertain process. Also, Ligand may acquire companies, businesses or products and the consummation of such acquisitions may consume additional cash. For example, as part of the consideration for Ligand's recent acquisition of Pharmacoepia Ligand distributed approximately \$9.3 million in cash to Pharmacoepia stockholders. Security holders of Pharmacoepia also received contingent value rights under which Ligand could be required to make an aggregate cash payment of \$15.0 million to such security holders under certain circumstances.

Table of Contents

Ligand believes that its capital resources, including its currently available cash, cash equivalents, and short-term investments as well as its current and future royalty revenues, will be adequate to fund its operations at their current levels at least for the next twelve months. However, changes may occur that would cause Ligand to consume available capital resources before that time. Examples of relevant potential changes that could impact Ligand's capital resources include:

the costs associated with Ligand's drug research and development activities, and additional costs Ligand may incur if its development programs are delayed or are more expensive to implement than Ligand currently anticipates;

changes in existing collaborative relationships, including the funding Ligand receives in connection with those relationships;

the progress of Ligand's milestone and royalty producing activities;

acquisitions of other businesses or technologies;

the termination of Ligand's lease agreements;

the purchase of additional capital equipment;

cash payments or refunds Ligand may be required to make pursuant to certain agreements with third parties;

competing technological and market developments; and

the cost of filing, prosecuting, defending and enforcing patent claims and other intellectual property rights, and the outcome of related litigation.

Additional capital may not be available on favorable terms, or at all. If additional capital is not available, Ligand may be required to curtail operations significantly or to obtain funds by entering into arrangements with partners or other third parties that may require Ligand to relinquish rights to certain of its technologies, products or potential markets that it would not otherwise relinquish.

If, as the result of a merger, or otherwise, Ligand's collaborative partners were to change their strategy or the focus of their development and commercialization efforts with respect to Ligand's alliance products, the success of Ligand's alliance products could be adversely affected.

Ligand's collaborative partners may change the focus of their development and commercialization efforts as the result of a merger. Pharmaceutical and biotechnology companies have historically re-evaluated their priorities from time to time, including following mergers and consolidations which are common in these industries, and two of Ligand's collaborative partners have recently entered into merger agreements. In October 2009, Wyeth, a collaborative partner of Ligand, and Pfizer announced that Pfizer had completed its acquisition of Wyeth in a cash and stock transaction. Furthermore, in March 2009, Schering-Plough Corporation, another of Ligand's collaborative partners, and Merck & Co., Inc., or Merck, announced that their boards of directors unanimously approved a definitive merger agreement pursuant to which Merck and Schering-Plough will combine, under the name Merck, in a stock and cash transaction. As a result of the consummation of these mergers Ligand's collaborative partners may develop and commercialize, either alone or with others, products and services that are similar to or competitive with Ligand's alliance products. Furthermore, the ability of Ligand's alliance products to reach their potential could be limited if its collaborative partners reduce or fail to increase spending related to such products as a result of these mergers.

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

If Ligand's collaborative partners terminate their collaborations with Ligand or do not commit sufficient resources to the development, manufacture, marketing or distribution of Ligand's alliance products, Ligand could be required to devote additional resources to its alliance products, seek new collaborative partners or abandon such alliance products, all of which could have an adverse effect on Ligand's business.

Table of Contents

Third party intellectual property may prevent Ligand or its partners from developing Ligand's potential products and Ligand may owe a portion of any payments it receives from its collaborative partners to one or more third parties.

Ligand's success will depend on its ability and the ability of its collaborative partners to avoid infringing the proprietary rights of others, both in the United States and in foreign countries. In addition, disputes with licensors under Ligand's license agreements may arise which could result in additional financial liability or loss of important technology and potential products and related revenue, if any. Further, the manufacture, use or sale of Ligand's potential products or its collaborative partners' products or potential products may infringe the patent rights of others. This could impact AVINZA, PROMACTA, bazedoxifene, lasofoxifene, LGD-4665, PS433540, PS178990 and any other products or potential products.

Several drug companies and research and academic institutions have developed technologies, filed patent applications or received patents for technologies that may be related to Ligand's business. Others have filed patent applications and received patents that conflict with patents or patent applications Ligand has licensed for our use, either by claiming the same methods or compounds or by claiming methods or compounds that could dominate those licensed to Ligand. In addition, Ligand may not be aware of all patents or patent applications that may impact its ability to make, use or sell any of its potential products. For example, US patent applications may be kept confidential while pending in the United States Patent and Trademark Office and patent applications filed in foreign countries are often first published six months or more after filing.

On March 4, 2008, The Rockefeller University, or Rockefeller, filed suit in the United States District Court for the Southern District of New York, against Ligand alleging, among other things, a breach by Ligand of its September 30, 1992 license agreement with Rockefeller, as well as other causes of action for unjust enrichment, quantum meruit, specific performance to perform an audit and declaratory relief. In February 2009 Ligand reached a settlement with Rockefeller whereby the parties resolved all disputes that have arisen between them, including Rockefeller's primary claim relating to the development of PROMACTA as well as Ligand's counterclaims.

Other possible disagreements or litigation with Ligand's collaborative partners could delay Ligand's ability and the ability of its collaborative partners to achieve milestones or our receipt of other payments. In addition, other possible disagreements or litigation could delay, interrupt or terminate the research, development and commercialization of certain potential products being developed by either Ligand's collaborative partners or by Ligand. The occurrence of any of the foregoing problems could be time-consuming and expensive and could adversely affect Ligand's business.

Third parties have not directly threatened an action or claim against Ligand although it does periodically receive other communications or has other conversations with the owners of other patents or other intellectual property. If others obtain patents with conflicting claims, Ligand may be required to obtain licenses to those patents or to develop or obtain alternative technology. Ligand may not be able to obtain any such licenses on acceptable terms, or at all. Any failure to obtain such licenses could delay or prevent Ligand from pursuing the development or commercialization of its potential products.

In general, litigation claims can be expensive and time consuming to bring or defend against and could result in settlements or damages that could significantly impact Ligand's results of operations and financial condition. Ligand cannot predict or determine the outcome of these matters or reasonably estimate the amount or range of amounts of any fines or penalties that might result from a settlement or an adverse outcome. However, a settlement or an adverse outcome could have a material adverse effect on Ligand's financial position, liquidity and results of operations.

Ligand may not be able to hire and/or retain key employees.

If Ligand is unable to hire and/or retain key employees, it may not have sufficient resources to successfully manage its assets or its business, and it may not be able to perform its obligations under various contracts and commitments. Furthermore, there can be no assurance that Ligand will be able to retain all of its Pharmacopeia's

Table of Contents

key management and scientific personnel. If Ligand fails to retain such key employees, it may not realize the anticipated benefits of the Pharmacoepia merger. Either of these could have substantial negative impacts on Ligand's business and its stock price.

Ligand's stock price has been volatile and could experience a sudden decline in value.

Ligand's common stock has experienced significant price and volume fluctuations and may continue to experience volatility in the future. As a result, stockholders may not be able to sell their shares quickly or at the latest market price if trading in Ligand's stock is not active or the volume is low. Many factors may have a significant impact on the market price of Ligand's common stock, including, but not limited to, the following factors: results of or delays in Ligand's preclinical studies and clinical trials; the success of Ligand's collaboration agreements; publicity regarding actual or potential medical results relating to products under development by Ligand or others; announcements of technological innovations or new commercial products by Ligand or others; developments in patent or other proprietary rights by Ligand or others; comments or opinions by securities analysts or major stockholders; future sales of Ligand's common stock by existing stockholders; regulatory developments or changes in regulatory guidance; litigation or threats of litigation; economic and other external factors or other disaster or crises; the departure of any of Ligand's officers, directors or key employees; period-to-period fluctuations in financial results; and limited daily trading volume.

The Financial Industry Regulatory Authority, or FINRA (formerly the National Association of Securities Dealers, Inc.), Nasdaq and the SEC have adopted certain new rules. If Ligand were unable to continue to comply with the new rules, it could be delisted from trading on Nasdaq, and thereafter trading in its common stock, if any, would be conducted through the over-the-counter market or on the Electronic Bulletin Board of FINRA. As a consequence of such delisting, an investor would likely find it more difficult to dispose of, or to obtain quotations as to the price of, Ligand's common stock. Delisting of Ligand's common stock could also result in lower prices per share of its common stock than would otherwise prevail.

Ligand may not be successful in entering into additional out-license agreements on favorable terms, which may adversely affect Ligand's liquidity or require it to alter development plans on its products.

Ligand has entered into several out-licensing agreements for the development and commercialization of its products. Although Ligand expends considerable resources on internal research and development for its proprietary programs, it may not be successful in entering into additional out-licensing agreements under favorable terms due to several factors including:

the difficulty in creating valuable product candidates that target large market opportunities;

research and spending priorities of potential licensing partners;

willingness of and the resources available to pharmaceutical and biotechnology companies to in-license product candidates for their clinical pipelines; or

differences of opinion with potential partners on the valuation of products we are seeking to out-license.

The inability to enter into out-licensing agreements under favorable terms and to earn milestone payments, license fees and/or upfront fees may adversely affect Ligand's liquidity and may force Ligand to curtail or delay development of some or all of its proprietary programs, which in turn may harm its business and the value of its stock.

Ligand's product development involves a number of uncertainties, and Ligand may never generate sufficient collaborative payments and royalties from the development of products to become profitable.

Ligand was founded in 1987. Ligand has incurred significant losses since its inception. As of June 30, 2009, Ligand's accumulated deficit was \$686.4 million.

Table of Contents

Most of Ligand's products in development will require extensive additional development, including preclinical testing and human studies, as well as regulatory approvals, before they can be marketed. Ligand cannot predict if or when any of the products it is developing or those being developed with its partners will be approved for marketing. There are many reasons why Ligand or its collaborative partners may fail in their efforts to develop their potential products, including the possibility that: preclinical testing or human studies may show that their potential products are ineffective or cause harmful side effects; the products may fail to receive necessary regulatory approvals from the FDA or foreign authorities in a timely manner, or at all; the products, if approved, may not be produced in commercial quantities or at reasonable costs; the products, if approved, may not achieve commercial acceptance; regulatory or governmental authorities may apply restrictions to the products, which could adversely affect their commercial success; or the proprietary rights of other parties may prevent Ligand or its partners from marketing the products.

Any product development failures for these or other reasons, whether with Ligand's products or its partners' products, may reduce Ligand's expected revenues, profits, and stock price.

Any future material weaknesses or deficiencies in Ligand's internal control over financial reporting could harm stockholder and business confidence on its financial reporting, its ability to obtain financing and other aspects of its business.

While no material weaknesses were identified as of June 30, 2009, Ligand cannot assure you that material weaknesses will not be identified in future periods. The existence of one or more material weakness or significant deficiency could result in errors in Ligand's consolidated financial statements. Substantial costs and resources may be required to rectify any internal control deficiencies. If Ligand fails to achieve and maintain the adequacy of its internal controls in accordance with applicable standards, it may be unable to conclude on an ongoing basis that it has effective internal controls over financial reporting. If Ligand cannot produce reliable financial reports, its business and financial condition could be harmed, investors could lose confidence in its reported financial information, or the market price of its stock could decline significantly. In addition, Ligand's ability to obtain additional financing to operate and expand its business, or obtain additional financing on favorable terms, could be materially and adversely affected, which, in turn, could materially and adversely affect its business, its financial condition and the market value of its securities. Moreover, Ligand's reputation with customers, lenders, investors, securities analysts and others may be adversely affected.

Challenges to or failure to secure patents and other proprietary rights may significantly hurt Ligand's business.

Ligand's success will depend on its ability and the ability of its licensors to obtain and maintain patents and proprietary rights for its potential products both in the United States and in foreign countries. Patents may not be issued from any of these applications currently on file, or, if issued, may not provide sufficient protection. Ligand's patent position, like that of many biotechnology and pharmaceutical companies, is uncertain and involves complex legal and technical questions for which important legal principles are unresolved. Ligand may not develop or obtain rights to products or processes that are patentable. Even if Ligand does obtain patents, such patents may not adequately protect the technology Ligand owns or has licensed. In addition, others may challenge, seek to invalidate, infringe or circumvent any patents Ligand owns or licenses and rights Ligand receives under those patents may not provide competitive advantages to Ligand.

Any conflicts resulting from the patent rights of others could significantly reduce the coverage of Ligand's patents and limit its ability to obtain meaningful patent protection. Ligand has had and will continue to have discussions with its current and potential collaborative partners regarding the scope and validity of its patents and other proprietary rights. If a collaborative partner or other party successfully establishes that Ligand's patent rights are invalid, Ligand may not be able to continue its existing collaborations beyond their expiration. Any determination that Ligand's patent rights are invalid also could encourage its collaborative partners to seek early termination of their agreements. Such invalidation could adversely affect Ligand's ability to enter into new collaborations.

Table of Contents

Ligand may also need to initiate litigation, which could be time-consuming and expensive, to enforce its proprietary rights or to determine the scope and validity of others' rights. If litigation occurs, a court may find Ligand's patents or those of its licensors invalid or may find that Ligand has infringed on a competitor's rights. In addition, if any of Ligand's competitors has filed patent applications in the United States which claim technology Ligand also has invented, the United States Patent and Trademark Office may require Ligand to participate in expensive interference proceedings to determine who has the right to a patent for the technology.

Ligand also relies on unpatented trade secrets and know-how to protect and maintain its competitive position. Ligand requires its employees, consultants, collaborative partners and others to sign confidentiality agreements when they begin their relationship with Ligand. These agreements may be breached, and Ligand may not have adequate remedies for any breach. In addition, Ligand's competitors may independently discover its trade secrets.

Ligand will have continuing obligations to indemnify the buyers of its commercial product lines, and may be subject to other liabilities related to the sale of Ligand's commercial product lines.

Ligand has agreed to indemnify Eisai, the purchaser of its Oncology product line, for damages suffered by Eisai arising from any breach of Ligand's representations, warranties, covenants or obligations in the asset purchase agreement. Ligand's obligation to indemnify Eisai extends beyond the closing of the sale of its Oncology product line in October 2006 up to, in some cases, 36 months and, in other cases, until the expiration of the applicable statute of limitations. In a few instances, Ligand's obligation to indemnify Eisai survives in perpetuity.

Under the asset purchase agreements, Ligand's exposure for any indemnification claim brought by Eisai is limited to \$30.0 million. However, in certain matters, Ligand's indemnification obligation is not subject to the foregoing limits on liability. For example, Ligand is obligated to indemnify King, without limitation, for all liabilities arising under certain agreements with Catalent Pharma Solutions related to the manufacture of AVINZA. Similarly, Ligand is obligated to indemnify Eisai, without limitation, for all liabilities related to certain claims regarding promotional materials for the ONTAK and Targretin drug products. Ligand cannot predict the liabilities that may arise as a result of these matters. Any claims related to Ligand's indemnification obligations to Eisai could materially and adversely affect Ligand's financial condition.

As previously disclosed, in connection with the AVINZA sale transaction, King assumed Ligand's obligation to make payments to Organon based on net sales of AVINZA (the fair value of which was \$57.7 million as of June 30, 2009). As Organon did not consent to the legal assignment of the co-promote termination obligation from Ligand to King, Ligand remains liable to Organon in the event King defaults on this obligation. Any requirement to pay a material amount to Organon, could adversely affect Ligand's business and the price of its securities.

The sale of Ligand's commercial product lines does not relieve it of exposure to product liability risks on products it sold before divesting these product lines. For example, such products may need to be recalled to address regulatory issues. A successful product liability claim or series of claims brought against Ligand could result in payment of significant amounts of money and divert management's attention from running Ligand's business.

Ligand believes that it carries reasonably adequate insurance for product liability claims. However, Ligand may not be able to maintain its insurance on commercially reasonable terms, or its insurance may not provide adequate protection in the case of a product liability claim. To the extent that product liability insurance, if available, does not cover potential claims, Ligand will be required to self-insure the risks associated with such claims.

If Ligand's partners do not reach the market with Ligand's alliance products before Ligand's competitors offer products for the same or similar uses, or if Ligand's partners are not effective in marketing Ligand's alliance products, Ligand's revenues from product sales, if any, will be reduced.

Ligand faces intense competition in its development activities. Ligand's competitors might succeed in obtaining regulatory approval for competitive products more rapidly than Ligand's partners can for Ligand's

Table of Contents

products. In addition, competitors might develop technologies and products that are less expensive and perceived to be safer or more effective than those being developed by Ligand or its partners, which could impair Ligand's product development and render its technology obsolete.

Ligand uses hazardous materials, which may expose it to significant liability.

In connection with Ligand's research and development activities, Ligand handles hazardous materials, chemicals and various radioactive compounds. To properly dispose of these hazardous materials in compliance with environmental regulations, Ligand is required to contract with third parties. Ligand believes that it carries reasonably adequate insurance for toxic tort claims. However, Ligand cannot eliminate the risk or predict the exposure of accidental contamination or injury from the handling and disposing of hazardous materials, whether by Ligand or its third-party contractors. Any accident in the handling and disposing of hazardous materials may expose Ligand to significant liability.

Ligand's shareholder rights plan and charter documents may hinder or prevent change of control transactions.

Ligand's shareholder rights plan and provisions contained in its certificate of incorporation and bylaws may discourage transactions involving an actual or potential change in Ligand's ownership. In addition, Ligand's board of directors may issue shares of preferred stock without any further action by the stockholders. Such restrictions and issuances may have the effect of delaying or preventing a change in Ligand's ownership. If changes in Ligand's ownership are discouraged, delayed or prevented, it would be more difficult for Ligand's current board of directors to be removed and replaced, even if Ligand's stockholders believe that such actions are in the best interests of Ligand and its stockholders.

Ligand may lose some or all of the value of some of its short term investments.

Ligand engages one or more third parties to manage some of its cash consistent with an investment policy that allows a range of investments and maturities. The investments are intended to maintain safety of principal while providing liquidity adequate to meet projected cash requirements. Risks of principal loss are to be minimized through diversified short and medium term investments of high quality, but the investments are not in every case guaranteed or fully insured. As a result of recent changes in the credit market, one of Ligand's short term investments in commercial paper is in default. Ligand intends to pursue collection efforts, but it might not recoup some or all of its investment in the commercial paper. In addition, from time to time Ligand may suffer other losses on its short term investment portfolio.

Ligand may require additional money to run its business and may be required to raise this money on terms which are not favorable to it or which reduce its stock price.

Ligand may need to complete additional equity or debt financings to fund its operations. Ligand's inability to obtain additional financing could adversely affect its business. Financings may not be available at all or on terms favorable to Ligand. In addition, these financings, if completed, may not meet Ligand's capital needs and could result in substantial dilution to its stockholders.

If adequate funds are not available, Ligand may be required to delay, reduce the scope of or eliminate one or more of its research or drug development programs. Ligand may also be required to liquidate its business or file for bankruptcy protection. Alternatively, Ligand may be forced to attempt to continue development by entering into arrangements with collaborative partners or others that require it to relinquish some or all of its rights to technologies or drug candidates that it would not otherwise relinquish.

Ligand's drug development programs will require substantial additional future funding which could hurt its operational and financial condition.

Ligand's drug development programs require substantial additional capital to successfully complete them, arising from costs to: conduct research, preclinical testing and human studies; establish pilot scale and commercial scale manufacturing processes and facilities; and establish and develop quality control, regulatory, marketing, sales and administrative capabilities to support these programs.

Table of Contents

Ligand's future operating and capital needs will depend on many factors, including: the pace of scientific progress in Ligand's research and development programs and the magnitude of these programs; the scope and results of preclinical testing and human studies; the time and costs involved in obtaining regulatory approvals; the time and costs involved in preparing, filing, prosecuting, maintaining and enforcing patent claims; competing technological and market developments; Ligand's ability to establish additional collaborations; changes in Ligand's existing collaborations; the cost of manufacturing scale-up; and the effectiveness of Ligand's commercialization activities.

Ligand expects its research and development expenditures over the next three years to continue to be significant. However, Ligand bases its outlook regarding the need for funds on many uncertain variables. Such uncertainties include regulatory approvals, the timing of events outside Ligand's direct control such as product launches by partners and the success of such product launches, negotiations with potential strategic partners, possible sale of assets or other transactions and other factors. Any of these uncertain events can significantly change Ligand's cash requirements.

While Ligand expects to fund its research and development activities primarily from cash generated from AVINZA and PROMACTA royalties and royalties and milestones from Ligand's partners in various past and future collaborations to the extent possible, if Ligand is unable to do so, it may need to complete additional equity or debt financings or seek other external means of financing. These financings could depress Ligand's stock price. If additional funds are required to support Ligand's operations and it is unable to obtain them on terms favorable to Ligand, Ligand may be required to cease or reduce further development or commercialization of its products, to sell some or all of its technology or assets or to merge with another entity.

Significant returns of products Ligand sold before selling its commercial businesses could harm its operating results.

Under Ligand's agreements to sell its commercial businesses, Ligand remains financially responsible for returns of its products sold before those businesses were transferred to their respective buyers. Consequently, if returns of those products are higher than expected, Ligand could incur substantial expenses for processing and issuing refunds for those returns which, in turn, could negatively impact Ligand's financial results. The amount of returns could be affected by a number of factors including, but not limited to, ongoing product demand, product rotation at distributors and wholesalers, and product stability issues.

Ligand's results of operations and liquidity needs could be materially negatively affected by market fluctuations and economic downturn.

Ligand's results of operations could be materially negatively affected by economic conditions generally, both in the U.S. and elsewhere around the world. Continuing concerns over inflation, energy costs, geopolitical issues, the availability and cost of credit, the U.S. mortgage market and a declining residential real estate market in the U.S. have contributed to increased volatility and diminished expectations for the economy and the markets going forward. These factors, combined with volatile oil prices, declining business and consumer confidence and increased unemployment, have precipitated an economic recession and fears of a possible depression. Domestic and international equity markets continue to experience heightened volatility and turmoil. These events and the continuing market upheavals may have an adverse effect on Ligand. In the event of a continuing market downturn, Ligand's results of operations could be adversely affected by those factors in many ways, including making it more difficult for Ligand to raise funds if necessary, and Ligand's stock price may further decline.

Ligand's investment securities consist primarily of money market funds, corporate debt obligations and U.S. government agency securities. Ligand does not have any auction rate securities. Recently, there has been concern in the credit markets regarding the value of a variety of mortgage-backed securities and the resultant effects on various securities markets. Ligand cannot provide assurance that its investments are not subject to adverse changes in market value. If Ligand's investments experience adverse changes in market value, Ligand may have less capital to fund its operations.

Table of Contents

Ligand may be unable to successfully integrate the business of Pharmacoepia and realize the anticipated benefits of the merger.

In December 2008, Ligand completed its merger with Pharmacoepia. The success of the merger will depend, in part, on Ligand's ability to realize the anticipated synergies, growth opportunities and cost savings from integrating Pharmacoepia's business with Ligand's business. Ligand's success in realizing these benefits and the timing of this realization depend upon the successful integration of the operations of Pharmacoepia. The integration of two independent companies is a complex, costly and time-consuming process. It is possible that the integration process could result in the loss of key employees, diversion of each company's management's attention, the disruption or interruption of, or the loss of momentum in, each company's ongoing business or inconsistencies in standards, controls, procedures and policies, any of which could adversely affect either company's ability to maintain relationships with licensors, collaborators, partners, suppliers and employees or Ligand's ability to achieve the anticipated benefits of the merger, or could reduce Ligand's earnings or otherwise adversely affect the business and financial results of the combined company and, as a result, adversely affect the market price of Ligand's common stock.

Ligand expects to incur significant costs and commit significant management time integrating Pharmacoepia's business operations, technology, development programs, products and personnel with those of Ligand. If Ligand does not successfully integrate the business of Pharmacoepia, the expenditure of these costs will reduce Ligand's cash position.

Impairment charges pertaining to goodwill, identifiable intangible assets or other long-lived assets from the merger with Pharmacoepia could have an adverse impact on Ligand's results of operations and the market value of Ligand's common stock.

The total purchase price pertaining to Ligand's merger with Pharmacoepia has been allocated to Pharmacoepia's net tangible assets, identifiable intangible assets, in process research and development and goodwill. To the extent the value of goodwill or identifiable intangible assets or other long-lived assets become impaired, Ligand will be required to incur material charges relating to the impairment. Any impairment charges could have a material adverse impact on Ligand's results of operations and the market value of its common stock.

Ligand may undertake strategic acquisitions in the future and any difficulties from integrating such acquisitions could adversely affect Ligand's stock price, operating results and results of operations.

Ligand may acquire companies, businesses and products that complement or augment Ligand's existing business. Ligand may not be able to integrate any acquired business successfully or operate any acquired business profitably. Integrating any newly acquired business could be expensive and time-consuming. Integration efforts often take a significant amount of time, place a significant strain on managerial, operational and financial resources and could prove to be more difficult or expensive than Ligand predicts. The diversion of Ligand's management's attention and any delay or difficulties encountered in connection with any future acquisitions Ligand may consummate could result in the disruption of Ligand's on-going business or inconsistencies in standards and controls that could negatively affect Ligand's ability to maintain third-party relationships. Moreover, Ligand may need to raise additional funds through public or private debt or equity financing, or issue additional shares, to acquire any businesses or products, which may result in dilution for stockholders or the incurrence of indebtedness.

As part of Ligand's efforts to acquire companies, business or product candidates or to enter into other significant transactions, Ligand conducts business, legal and financial due diligence with the goal of identifying and evaluating material risks involved in the transaction. Despite Ligand's efforts, it ultimately may be unsuccessful in ascertaining or evaluating all such risks and, as a result, might not realize the intended advantages of the transaction. If Ligand fails to realize the expected benefits from acquisitions it may

Table of Contents

consummate in the future, whether as a result of unidentified risks, integration difficulties, regulatory setbacks and other events, Ligand's business, results of operations and financial condition could be adversely affected. If Ligand acquires product candidates, it will also need to make certain assumptions about, among other things, development costs, the likelihood of receiving regulatory approval and the market for such product candidates. Ligand's assumptions may prove to be incorrect, which could cause it to fail to realize the anticipated benefits of these transactions.

In addition, Ligand will likely experience significant charges to earnings in connection with its efforts, if any, to consummate acquisitions. For transactions that are ultimately not consummated, these charges may include fees and expenses for investment bankers, attorneys, accountants and other advisors in connection with Ligand's efforts. Even if Ligand's efforts are successful, it may incur, as part of a transaction, substantial charges for closure costs associated with elimination of duplicate operations and facilities and acquired in-process research and development charges. In either case, the incurrence of these charges could adversely affect Ligand's results of operations for particular quarterly or annual periods.

Ligand has agreed to commit cash resources for its Metabasis acquisition.

Ligand has announced an agreement to acquire Metabasis Therapeutics, Inc., on terms which include the payment of over \$3.2 million to or for Metabasis stockholders and creditors and a commitment to spend at least \$8.0 million on Metabasis drug development programs.

The drug research and development industry is highly competitive and subject to technological change, and Ligand may not have the resources necessary to compete successfully.

Many of Ligand's competitors have access to greater financial, technical, research, marketing, sales, reputation, distribution, service and other resources than Ligand does. Moreover, the pharmaceutical and biotechnology industries are characterized by continuous technological innovation. Ligand anticipates that it will face increased competition in the future as new companies enter the market and its competitors make advanced technologies available. Technological advances or entirely different approaches that Ligand or one or more of its competitors develop may render Ligand's products, services and expertise obsolete or uneconomical. Additionally, the existing approaches of Ligand's competitors or new approaches or technologies that its competitors develop may be more effective than those Ligand develops. Ligand may not be able to compete successfully with existing or future competitors.

Ligand has excess space available for sublease at our facilities and it may not be able to find qualified sublease tenants.

Ligand has entered into long-term, non-cancellable real estate arrangements for space which, as a result of reductions in its workforce and its acquisition of Pharmacopeia, are considered to be in excess of Ligand's current requirements. Ligand currently has a tenant who is subleasing one of its facilities and it is actively looking for additional sublease tenants to sublease up to approximately 80,000 square feet of vacant space or space that could be made available through changes in the current layout of Ligand's operations. Ligand will continue to be responsible for all carrying costs of these facilities until such time as it can sublease these facilities or terminate the applicable leases based on the contractual terms of the lease agreements. However, the commercial real estate market conditions in the United States have resulted in a surplus of business facilities making it difficult to sublease properties. If Ligand is unable to find additional sublease tenants it may not meet its expected estimated levels of sublease income or it may be required to terminate these leases at a substantial cost, and, accordingly, its results of operations could be materially and adversely affected.

Table of Contents

CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING STATEMENTS

This proxy statement/prospectus and the documents incorporated by reference into this proxy statement/prospectus contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 that involve risks and uncertainties, as well as assumptions, that, if they never materialize or prove incorrect, could cause the results of Ligand, Neurogen or the combined company to differ materially from those expressed or implied by such forward-looking statements. Forward-looking statements generally are identified by the words may, will, project, might, expects, anticipates, believes, intends, estimates, should, could, would, strategy, p negative of these words or other words or expressions of similar meaning. All statements other than statements of historical fact are statements that could be deemed forward-looking statements. For example, forward-looking statements include statements about Ligand s and Neurogen s future financial and operating results, plans, expectations for potential research and development payments, cash burn rates, timing of achieving positive cash flow, potential revenue and profits of a combined company, costs and expenses, interest rates, outcome of contingencies, business strategies and cost savings; any statements of the plans, strategies and objectives of management for future operations, including the execution of integration and restructuring plans and the anticipated timing of filings, approvals and the closing related to the merger; any statements concerning Ligand s and Neurogen s product candidates and product development; any statements regarding future economic conditions or performance; statements of belief and any statement of assumptions underlying any of the foregoing. The risks, uncertainties and assumptions referred to above include the risk that the merger may not close, including the risk that the required Neurogen stockholder approval for the merger and related transactions may not be obtained; the possibility that expected synergies and cost savings will not be obtained or that litigation may delay the merger; the difficulty of integrating the business of the two companies; as well as the reliance on collaborative partners for milestone and royalty payments, regulatory hurdles facing product candidates, uncertain product development costs, disputes regarding ownership of intellectual property, and the commercial success of any approved products; and other risks and uncertainties described in the section entitled Risk Factors and in the documents that are incorporated by reference into this proxy statement/prospectus. You should note that the discussion of Ligand s and Neurogen s reasons for the merger and the description of Neurogen s financial advisor s opinion contain forward-looking statements that describe beliefs, assumptions and estimates as of the indicated dates and those forward-looking expectations may have changed as of the date of this proxy statement/prospectus.

If any of these risks or uncertainties materialize or any of these assumptions prove incorrect, the results of Ligand, Neurogen or the combined company could differ materially from the expectations in these statements. The forward-looking statements included in this proxy statement/prospectus are made only as of the date of this proxy statement/prospectus, and neither Ligand nor Neurogen is under any obligation to update their respective forward-looking statements and neither party intends to do so.

Table of Contents

THE COMPANIES

Ligand Pharmaceuticals Incorporated

Ligand Pharmaceuticals Incorporated (NASDAQ: LGND), a Delaware corporation, is a biotechnology company that focuses on discovering and developing new drugs that address critical unmet medical needs in the areas of thrombocytopenia, anemia, cancer, hormone related diseases, osteoporosis and inflammatory diseases. Ligand aims to develop drugs that are more effective and/or safer than existing therapies, that are more convenient to administer and that are cost effective. Ligand plans to build a profitable company by generating income from research, milestone and royalty and co-promotion revenues resulting from its collaborations with pharmaceutical partners.

Additional information regarding Ligand is contained in Ligand's filings with the SEC.

Ligand was incorporated in Delaware in 1987. Ligand's principal executive offices are located at 10275 Science Center Drive, San Diego, California, 92121. Ligand's telephone number is (858) 550-7500.

Neon Signal, LLC

Neon Signal, LLC, or Merger Sub, is a Delaware limited liability company and a wholly-owned subsidiary of Ligand organized on August 13, 2009. Merger Sub does not engage in any operations and exists solely to facilitate the merger. Its principal executive offices have the same address and telephone number as Ligand.

Neurogen Corporation

Neurogen Corporation (NASDAQ: NRGN) is a development company focusing on new small molecule drugs to improve the lives of patients suffering from psychiatric and neurological disorders, including RLS and Parkinson's disease. Small molecule drugs typically are suitable for oral administration as a pill, while large molecule drugs are typically administered by injection.

Additional information regarding Neurogen is contained in Neurogen's filings with the SEC.

Neurogen was incorporated in Delaware 1987. Neurogen's principal executive offices are located at 45 Northeast Industrial Road, Branford, Connecticut 06405. Neurogen's telephone number is (203) 488-8201.

Table of Contents

THE SPECIAL MEETING OF NEUROGEN STOCKHOLDERS

General

Neurogen is furnishing this proxy statement/prospectus to Neurogen stockholders in connection with the solicitation of proxies by the Neurogen board of directors for use at the special meeting of stockholders, including any adjournment or postponement of the special meeting.

Date, Time and Place

Neurogen will hold its special meeting on December 18, 2009 at 10:00 a.m., local time, at Neurogen Corporation, at 45 NE Industrial Road, Branford, CT 06405.

Purpose of the Meeting

At the special meeting, the Neurogen stockholders will be asked to consider and vote upon the following matters:

A proposal to adopt the Agreement and Plan of Merger, dated as of August 23, 2009, by and among Ligand Pharmaceuticals Incorporated, Neon Signal, LLC, a wholly owned subsidiary of Ligand Pharmaceuticals, and Neurogen, as amended by Amendment to Agreement and Plan of Merger, dated as of September 18, 2009, and Amendment No. 2 to Agreement and Plan of Merger, dated as of November 2, 2009, and approve the merger contemplated by the merger agreement. A copy of the merger agreement is attached as *Annex A* to this proxy statement/prospectus accompanying this notice;

A proposal to adjourn the special meeting to a later date or dates, if necessary, to permit further solicitation of proxies if there are not sufficient votes at the time of the special meeting to adopt the merger agreement and approve the merger; and

To transact such other business as may properly come before the special meeting and any adjournments or postponements thereof.

Quorum Required

Neurogen's bylaws provide that the holders of a majority of the shares of Neurogen common stock issued and outstanding and entitled to vote at the special meeting, present in person or represented by proxy, shall constitute a quorum for the transaction of business at the special meeting. Abstentions and broker non-votes will be counted as present for the purpose of determining the presence of a quorum. In the event that a quorum is not present at the special meeting, the special meeting may be adjourned or postponed to solicit additional proxies.

Voting Rights

Neurogen common stock is the only type of security entitled to vote at the special meeting. On October 28, 2009, the record date for determination of stockholders entitled to vote at the special meeting, there were 69,038,691 shares of Neurogen common stock outstanding. Each Neurogen stockholder of record on October 28, 2009 is entitled to one vote for each share of Neurogen common stock held by such stockholder on that date. All votes will be tabulated by the inspector of election appointed for the meeting, who will separately tabulate affirmative and negative votes, abstentions and broker non-votes.

Proxies

Whether or not you are able to attend Neurogen's special meeting of stockholders, you are urged to complete and return the enclosed proxy, which is solicited by Neurogen's board of directors and which will be voted as you direct on your proxy card when properly completed. In the event no directions are specified, executed proxies will be voted **FOR** the adoption of the merger agreement and approval of the merger, **FOR** the

Table of Contents

proposal to adjourn the special meeting to permit further solicitation of proxies if there are not sufficient votes to adopt the merger agreement and approve the merger, and, in the discretion of the proxy holders, as to any other matters that may properly come before the special meeting. All shares represented by a valid proxy received before the special meeting will be voted.

Revocation of Proxies

You may also revoke or change your proxy at any time before the special meeting. To do this, send a written notice of revocation or another signed proxy with a later date to the Secretary at Neurogen's principal executive offices in time to be received before the beginning of the special meeting. You may also revoke your proxy by attending the special meeting and voting in person.

Neurogen Votes Required

The affirmative vote of the holders of record of a majority of the outstanding shares of Neurogen common stock is required to adopt the merger agreement and approve the merger, and the affirmative vote of the holders of record of a majority of the shares of Neurogen common stock present and entitled to vote at the special meeting is required to adopt the proposal to adjourn the special meeting, if necessary, to permit further solicitation of proxies. If a broker or other nominee holding shares of Neurogen common stock or a holder of Neurogen common stock fails to vote on the adoption of the merger agreement and the approval of the merger or responds to that proposal with an "abstain" vote, it will have the same effect as a vote against that proposal. If a broker or other nominee holding shares of Neurogen common stock or a holder of Neurogen common stock responds to the proposal to adjourn the special meeting, if necessary, to permit further solicitation of proxies with an "abstain" vote, it will have the same effect as a vote against that proposal. If a broker or other nominee holding Neurogen common stock or a holder of Neurogen common stock fails to vote on the proposal to adjourn the special meeting, if necessary, to permit further solicitation of proxies, it will have no effect on the outcome of the vote for that proposal.

As of October 28, 2009, (i) the directors and executive officers of Neurogen beneficially owned 10,637,130 shares of Neurogen common stock entitled to vote, representing approximately 15.4% of the outstanding shares of Neurogen common stock entitled to vote at the special meeting and (ii) Ligand and its affiliates beneficially owned 21,938,454 shares of Neurogen common stock entitled to vote, representing approximately 32% of the outstanding shares of Neurogen common stock entitled to vote at the special meeting. However, due to the voting agreements described below, approximately 12.1% of the outstanding shares of Neurogen common stock are included in both groups; and so, the aggregate total beneficially owned is approximately 35.1%.

The President and Chief Executive Officer of Neurogen, Stephen R. Davis, who owns less than 1% of the outstanding shares of Neurogen common stock, along with various stockholders of Neurogen who collectively own approximately 32% of the outstanding shares of Neurogen common stock, have entered into voting agreements with Ligand pursuant to which Mr. Davis and the various stockholders have agreed, among other things, to vote the shares of common stock of Neurogen owned by them in favor of adopting the merger agreement and approving the merger. For a description of the voting agreements, see "Certain Terms of the Merger Agreement - Voting Agreements" beginning on page 95 of this proxy statement/prospectus.

Recommendation of Neurogen's Board of Directors

The board of directors of Neurogen has determined and believes that the merger agreement and the merger are advisable for, and in the best interests of, Neurogen and its stockholders and has approved such items. The board of directors of Neurogen unanimously recommends that Neurogen stockholders vote **FOR** adoption of the merger agreement and approval of the merger.

The board of directors of Neurogen unanimously recommends that Neurogen stockholders vote **FOR** approval of the possible adjournment or postponement of the special meeting of Neurogen stockholders.

Table of Contents

Voting in Person

If you plan to attend Neurogen's special meeting and wish to vote in person, you will be given a ballot at the special meeting.

You should submit your completed proxy even if you plan to attend the special meeting. If you are the stockholder of record of your shares of Neurogen common stock, you can change your vote at the special meeting. If you hold shares in street name, you may not vote in person at the special meeting unless you obtain a signed proxy from the record holder giving you the right to vote the shares in person at the meeting.

Your vote is important. Accordingly, please sign and return the enclosed proxy card whether or not you plan to attend the special meeting in person.

Adjournments and Postponements

Although it is not currently expected, the special meeting may be adjourned or postponed to a later date or time, if necessary or appropriate, to solicit additional proxies in the event there are insufficient votes at the time of the special meeting to adopt the merger agreement. Neurogen's bylaws provide that notice need not be given of the adjourned meeting if the time and place of the adjourned meeting are announced at the meeting at which the adjournment is taken. At the adjourned meeting, Neurogen may transact any business that might have been transacted at the original meeting. If the adjournment is for more than thirty days, or if after the adjournment a new record date is fixed for the adjourned meeting, a notice of the adjourned meeting shall be given to each stockholder of record entitled to vote at the meeting.

Any signed proxies received by Neurogen in which no voting instructions are provided on such matter will be voted **FOR** an adjournment of the special meeting to a later date or time, if necessary or appropriate, to solicit additional proxies in the event there are insufficient votes at the time of the special meeting to adopt the merger agreement, and the transactions contemplated by the merger agreement, including the merger. Whether or not a quorum exists, holders of a majority of the shares of Neurogen's common stock present in person or represented by proxy at the special meeting may adjourn the special meeting. Because a majority of the votes represented at the meeting, whether or not a quorum exists, is required to approve the proposal to adjourn the meeting, abstentions will have the same effect on such proposal as a vote **AGAINST** the proposal. Broker non-votes and any shares that are not voted will have no effect on the proposal to adjourn the special meeting. Neurogen stockholders who have already sent in their proxies may revoke them at any time before their use at the special meeting as adjourned or postponed.

Stock Certificates

You should not send in any stock certificates with your proxy card. If you are a Neurogen stockholder, after the merger is completed, a letter of transmittal will be sent to you informing you where to deliver your Neurogen stock certificates in order to receive the merger consideration. You should not send in your Neurogen common stock certificates before receiving this letter of transmittal.

Solicitation of Proxies

Neurogen will bear the cost of this solicitation, including the printing and mailing of this proxy statement/prospectus, the proxy and any additional soliciting material furnished to the Neurogen stockholders. Copies of solicitation material will be furnished to brokerage houses, fiduciaries and custodians holding shares in their names that are beneficially owned by others so that they may forward this solicitation material to such beneficial owners. In addition, Neurogen may reimburse such persons for their costs of forwarding the solicitation material to such beneficial owners. The original solicitation of proxies by mail may be supplemented by solicitation by telephone, email, facsimile or other means by directors, officers, employees or agents of Neurogen. No additional compensation will be paid to these individuals for any such services.

Table of Contents

Questions and Additional Information

Neurogen stockholders who have questions about the merger, including the procedures for voting their shares of Neurogen common stock, or how to submit their proxy, or who need additional copies, without charge, of this proxy statement/prospectus, should contact:

Neurogen Corporation

45 NE Industrial Road

Branford, CT 06405

Attn: Corporate Secretary

(203) 488-8201

Availability of Documents

Neurogen documents incorporated by reference (excluding exhibits to those documents unless the exhibit is specifically incorporated by reference into those documents) are being delivered with this proxy statement/prospectus. Additional copies of documents incorporated by reference (excluding exhibits to those documents unless the exhibit is specifically incorporated by reference into those documents) will be provided by first class mail without charge to each person to whom this proxy statement/prospectus is delivered upon written or oral request of such person to the Corporate Secretary of Neurogen. In addition, a list of stockholders entitled to vote at the special meeting will be available for inspection at Neurogen's principal executive offices at least 10 days before the date of the special meeting and continuing through the special meeting for any purpose germane to the meeting. The list will also be available at the meeting for inspection by any stockholder present in person at the meeting.

Table of Contents

THE MERGER

General

The discussion of the merger in this proxy statement/prospectus and the description of the merger are only summaries of the material features of the proposed merger. Neurogen stockholders can obtain a more complete understanding of the merger by reading the merger agreement and the forms of CVR agreements, copies of which are attached to this proxy statement/prospectus as *Annex A, Annex B, Annex C, Annex D and Annex E*, respectively. Neurogen stockholders are encouraged to read the merger agreement and the other annexes to this proxy statement/prospectus in their entirety.

General Description of the Merger

In the merger, Merger Sub will merge with and into Neurogen, with Neurogen continuing as the surviving entity.

Upon completion of the merger, Ligand would issue to each Neurogen stockholder a number of Ligand shares equal to approximately \$11 million (subject to dollar for dollar adjustments for any difference between Neurogen's targeted and actual net cash as of the third trading day before the date of the Neurogen special meeting of stockholders) divided by the average of the daily volume weighted average price of Ligand's common stock over the 20 day trading period ending three trading days before the Neurogen stockholders meeting with respect to the merger, which result is then divided by the number of shares of Neurogen stock outstanding immediately before the closing. The number of Ligand shares to be issued in the merger is subject to a 4,200,000 share maximum, unless Ligand waives such maximum. Ligand may issue a number of Ligand shares equal to less than \$11 million if such number is adjusted downward because of Neurogen's actual net cash as of the third trading day before the date of the special meeting of Neurogen stockholders or the average of the daily volume weighted average prices of Ligand's common stock over the 20 day trading period ending three trading days before the special meeting of Neurogen stockholders is less than approximately \$2.62 and the 4,200,000 share maximum is not waived. The average of the daily volume weighted average prices of Ligand's common stock over the 20 day trading period ending on October 28, 2009 was \$2.12. 4,200,000 Ligand shares times \$2.12 would equate to approximately \$8.9 million.

If Neurogen's program for the development of Aplindore for the treatment of RLS and Parkinson's disease is sold by Neurogen before the merger, Neurogen stockholders will also receive in the merger a pro-rata share of the cash and/or number of shares of third-party stock, as the case may be, paid pre-merger by the buyer for the program. In addition, if the real properties currently owned by Neurogen are sold by Neurogen before the merger, the net cash pre-merger proceeds from the sale shall also be paid in the merger to the Neurogen stockholders.

Each share of Ligand common stock that is issued in connection with the merger will be accompanied by an associated right under Ligand's stockholder rights plan.

At the closing of the merger, Ligand, Neurogen and a rights agent will also enter into up to four contingent value rights agreements, or CVR agreements, if the Aplindore program and the real properties are not sold by Neurogen before the merger, the forms of which are attached to this proxy statement/prospectus as *Annex B, Annex C, Annex D and Annex E*. The CVR agreements set forth the rights that former Neurogen stockholders will have with respect to each CVR to be held by them after the closing of the merger. Each Neurogen stockholder will receive one CVR under each of the four CVR agreements for each share of Neurogen stock held. The CVRs will not be marketable or listed on any securities exchange and will be subject to general transfer restrictions with limited exceptions.

Aplindore CVR. If the Aplindore program is not sold or cancelled before the merger, each Neurogen stockholder shall be issued one Aplindore CVR entitling them to receive (i) if the Aplindore program is sold before the six month anniversary of the merger, a pro-rata share of the cash and/or number of shares of third-party stock received by Ligand from the buyer of the Aplindore program less the costs and expenses of sale, plus

Table of Contents

any amount remaining in an operating expense reserve account, or (ii) if the Aplindore program is not sold before the six month anniversary of the merger, a pro-rata share of any amount remaining in the operating expense reserve account. See [Recent Neurogen Developments](#) on page 19.

H3 CVR. The H3 CVR agreement provides for the payment of a pro rata portion of (i) \$4 million in cash if Ligand licenses the Neurogen antagonist program intended to create an H3 receptor drug on or before the third anniversary of the merger, (ii) 50% of the net cash proceeds from a sale of such program if Ligand sells the program before the third anniversary of the merger or (iii) 50% of the net proceeds if an option agreement to either license or sell the H3 antagonist program is entered into, in each case before the third anniversary of the merger. If any such option to license is exercised, the CVR holders would receive a pro rata portion of an additional amount up to \$4 million (taking into account the option proceeds previously received by the CVR holders) or if any such option to sell is exercised, the CVR holders would receive a pro rata portion of 50% of the net sale proceeds.

Merck CVR. The Merck CVR agreement provides for the payment of a pro rata portion of \$3 million if a milestone payment from Merck is received upon the initiation of a Phase 3 clinical trial of a vanilloid receptor subtype 1, or VR1, antagonist drug for the treatment of pain, or 50% of the net proceeds if such program is sold back to Merck before the milestone payment is made.

Real Estate CVR. The real estate CVR agreement provides for the payment of a pro rata portion of the cash paid by any buyer of the real estate currently owned by Neurogen and received by Ligand on or before the six month anniversary of the merger, less any costs and expenses reasonably incurred by Ligand in connection with such sale. See [Recent Neurogen Developments](#) on page 19.

For a description of the CVR agreements, see [Certain Terms of the Merger Agreement CVR Agreements](#) beginning on page 91 of this proxy statement/prospectus.

Treatment of Stock Options and Warrants

Neurogen's board of directors will take all requisite actions such that each holder of outstanding Neurogen options shall be entitled to exercise in full all Neurogen options held by such holder immediately before the effective time of the merger. All outstanding Neurogen options not exercised, other than any unexercised Neurogen options remaining outstanding under Neurogen's 1993 Omnibus Incentive Plan, shall be terminated and canceled. No replacement options will be issued.

If any Neurogen warrant or any option issued under Neurogen's 1993 Omnibus Incentive Plan prior to the effective time of the merger remains outstanding after the effective time of the merger and the holder thereof exercises such Neurogen warrant or option before its expiration or termination date, then Ligand shall issue and pay in respect of each such exercised Neurogen warrant or option, on a per-exercised-share basis, equivalent consideration to the consideration (or the proceeds thereof) as was paid in respect of each issued and outstanding share of Neurogen common stock in the merger; provided that any such payment in respect of options shall be made in compliance with Section 409A of the Code.

See the section entitled [Certain Terms of the Merger Agreement Neurogen Stock Options and Warrants](#) beginning on page 77 of this proxy statement/prospectus.

Background of the Merger

Due to dramatic changes in the cost of obtaining capital for the biotech industry in the last two years, particularly for clinical development stage companies such as Neurogen, and the Neurogen board of directors' belief that in the near term the industry will continue to contract and combine, in September 2008 the Neurogen board of directors requested its financial advisor, MTS Health Partners, to start a formal strategic process by contacting potential strategic acquirors. MTS Health Partners was formally retained on September 8, 2008.

Table of Contents

On September 25, 2008, at a regularly scheduled meeting of the Neurogen board of directors, MTS Health Partners made a presentation outlining for the Neurogen board of directors the strategic process to be undertaken to identify potential strategic acquirors. MTS Health Partners and the Neurogen board of directors also discussed potential interim financing possibilities in the range of \$10 million to \$15 million, and the Neurogen board of directors subsequently instructed MTS Health Partners to explore the feasibility of obtaining such financing on attractive terms.

Thereafter, MTS Health Partners contacted approximately 80 mid to large capitalization potential acquirors, as well as 28 smaller public and private biotechnology companies, including Ligand, that might have had an interest in a merger with Neurogen. Neurogen's management entered into confidential disclosure agreements with 32 of those companies and conducted meetings with 15 of them. MTS Health Partners requested indications of interest from the contacted companies by January 26, 2009.

During the same period, MTS Health Partners reached out to four venture capital firms in connection with providing interim financing to Neurogen, and Neurogen's management conducted preliminary meetings with three of these four firms. However, as a result of the continuous decline in the value of Neurogen's stock and the likelihood that potential financing terms would be relatively unattractive, leading to significant dilution for Neurogen stockholders, the Neurogen board of directors ultimately decided against proceeding with any financing transaction at that time.

On January 26, 2009, one of the companies with whom Neurogen's management had met, a large European pharmaceutical company, or Bidder A, sent Neurogen an initial non-binding indication of interest to acquire all of the issued and outstanding equity of Neurogen for a cash payment of \$10 million plus the balance of Neurogen's cash less all liabilities. Neurogen did not receive any other indication of interest at that time.

On February 4, 2009, Neurogen entered into a confidential disclosure agreement with Ligand for purposes of facilitating further discussions regarding a potential transaction.

On February 5, 2009, at a regularly scheduled meeting of the Neurogen board of directors, MTS Health Partners and Neurogen's President and Chief Executive Officer, Stephen R. Davis, reported on the status of due diligence being conducted by Bidder A. MTS Health Partners then summarized for the Neurogen board of directors the status of discussions with other potential acquirors. On March 3, 2009, Bidder A informed MTS Health Partners that it had decided not to participate further in the process due to an influx of acquisition opportunities and an internal portfolio reorganization.

Around the same time, MTS Health Partners and Neurogen's management contacted 34 additional small market capitalization companies to gauge their interest in Neurogen's clinical and preclinical development assets, its net cash and/or tax assets.

On March 13, 2009, the Neurogen board of directors held a special telephonic meeting, with MTS Health Partners present, to discuss the potential implications of Bidder A's decision, and Neurogen's strategic options, including continuing to pursue a sale of Neurogen or its assets, the possibility for partnering the Aplindore program, or a liquidation of Neurogen. The Neurogen board of directors explored the feasibility and expected timeline of each option, and subsequently instructed Neurogen's management to continue discussions with potential acquirors.

Neurogen's management continued to engage in discussions with the companies that MTS Health Partners had contacted throughout the first half of 2009. On April 16, 2009, Neurogen received an initial offer from Ligand for 100% of the issued and outstanding equity of Neurogen. The respective managements of Neurogen and Ligand engaged in several discussions regarding the offer and, on April 27, 2009, Ligand submitted a revised offer reflecting those discussions. The revised offer provided for Ligand to purchase 100% of Neurogen's issued and outstanding equity for \$13 million, payable in Ligand common stock, up to a maximum of 5,200,000 shares.

Table of Contents

In addition, Ligand would issue two contingent value rights to Neurogen stockholders, one of which would entitle Neurogen stockholders to receive the net cash proceeds, if any, in excess of \$4 million (with Ligand retaining all amounts below \$4 million) from the sale of Neurogen's real properties in Branford, Connecticut, or the real estate, and the second of which would entitle Neurogen stockholders to receive the net proceeds from the sale or license of the Aplindore program. The revised offer also provided that Neurogen and Ligand would agree upon an outside date for the sale or license of the Aplindore program.

On the same day, the Neurogen board of directors held a regularly scheduled meeting with representatives of MTS Health Partners, Latham & Watkins LLP, or Latham, legal counsel to Neurogen, and Richards, Layton & Finger, or Richards Layton, Delaware legal counsel to Neurogen present. Mr. Davis and MTS Health Partners updated the Neurogen board of directors on the status of discussions with various potential acquirors. The Neurogen board of directors then analyzed the business, level of interest in Neurogen, market capitalization, stock liquidity and cash position of Ligand, as well as other potential acquirors that had either met with or engaged in telephonic discussions with Neurogen's management. Representatives from Latham and Richards Layton next explained the process of liquidating a public Delaware corporation. The Neurogen board of directors weighed the relative benefits and risks of liquidation versus a sale of the company or its assets, and again instructed Neurogen's management to continue discussions with potential acquirors.

On May 12, 2009, Neurogen issued a press release formally announcing that it was pursuing strategic options, including a sale of the company or a sale of all or substantially all of its assets. In addition, the press release announced that while Neurogen pursued these strategic options, it also had been taking steps to conserve capital, including suspending further enrollment of new patients in its ongoing Phase 2 studies of Aplindore and eliminating approximately 75% of its staff positions since December 31, 2008.

On June 8, 2009, the Neurogen board of directors held a regularly scheduled meeting with MTS Health Partners present. Mr. Davis and MTS Health Partners reviewed Ligand's revised offer of April 27, 2009, as well as indications of interest from two new potential acquirors, or Bidder B and Bidder C, respectively. Bidder B, a Nasdaq listed biotech company with a market capitalization of approximately \$62 million at the time stated in its indication of its interest that it was interested in exploring a transaction in which Bidder B would acquire 100% of Neurogen's outstanding stock for \$20 million in Bidder B stock. Bidder C, a biotech company listed on a non-U.S. exchange with a market capitalization on the foreign exchange of approximately \$30 million, did not submit an indication of interest by the prescribed deadline but gave Neurogen's management a verbal indication that it was interested in merging with Neurogen in a transaction that valued Neurogen close to or possibly at Bidder C's market value. The Neurogen board of directors then discussed the business prospects of each of Bidder B and Bidder C, each of whom were focused primarily on a single product and each of whom would require the sale of their lead product or the infusion of significant additional funds beyond those gained in a combination with Neurogen to achieve the next logical milestone in the development of their respective lead products. The Neurogen board of directors further discussed the merits of a potential transaction with respect to each bidder, including the feasibility of a combined company, the likely ability to raise capital to pursue a combined business plan and the potential rewards of a combined portfolio. Following the discussion, the Neurogen board of directors instructed Neurogen's management to continue discussions with all potential acquirors who had expressed an interest in acquiring or merging with Neurogen and to conduct additional diligence on each company.

On June 19, 2009, MTS Health Partners sent a written notice to each interested party describing the process for submitting proposals with a request for comprehensive bids by June 26, 2009. Bidder B and Ligand submitted bids in response. Bidder B's offer consisted of \$24.2 million in market value of Bidder B stock in exchange for 100% of the issued and outstanding equity of Neurogen. Discussions between the respective managements of Bidder B and Neurogen indicated that Bidder B was attempting to raise between \$10 million to \$15 million, of approximately \$30 million it estimated it needed in order to complete certain ongoing Phase 3 studies and get to its next logical development milestone.

Table of Contents

Ligand's final bid, submitted on June 26, 2009, consisted of a merger in which Ligand would pay Neurogen stockholders approximately \$11 million in market value of Ligand common stock, up to a maximum of 4.2 million shares of Ligand common stock, for 100% of the issued and outstanding equity of Neurogen. In addition, Ligand offered to pay Neurogen stockholders 100% of the net cash proceeds from the sale of Neurogen's real estate and Aplindore program, if the sales were completed before the closing of the transaction with Ligand. Further, Ligand offered two CVRs, one of which related to Neurogen's VR1 program and the other of which related to Neurogen's H3 antagonist program. The proposed CVR relating to Neurogen's VR1 program provided for either (i) \$3 million in cash upon receipt by Ligand of the milestone payment from Merck under a research collaboration and license agreement with Neurogen or (ii) 50% of the net cash proceeds in the event Ligand sells the VR1 program back to Merck. The proposed CVR relating to Neurogen's H3 antagonist program provided for \$4 million in cash if Ligand, in its sole discretion, licensed Neurogen's H3 antagonist program before the third anniversary of the closing date of the transaction with Neurogen.

Subsequent to the bid deadline of June 26th, on June 29, 2009 Bidder C proposed a merger of equals in which Bidder C stockholders would own 59% and Neurogen stockholders would own 41% of the combined company prior to reflecting the effect of a further potential investment in the combined company by existing stockholders of Bidder C. Including such potential further investment, Bidder C hoped to create a combined company with approximately \$30 million in cash to be jointly operated by Neurogen and Bidder C.

On July 8, 2009, four members of the Neurogen board of directors held an informational telephonic call with representatives of MTS Health Partners present, during which each of Bidder B and Bidder C made presentations remotely via the Internet concerning their respective offers. After the presentations, the Neurogen board members discussed the advantages and disadvantages associated with each bid, including Ligand's bid, and concluded that, based on a combination of factors, including the certainty and financial terms of each offer, the relative liquidity of the consideration proposed in each offer, the potential for Neurogen stockholders to recognize any upside relating to the Aplindore program, and the strength of the management team at each company, Ligand's bid was the most attractive offer but that management should continue its efforts to improve each bid. Consistent with prior directions from the Neurogen board of directors, the board members participating in the call instructed management to continue Neurogen's diligence of each bidder and to continue advancing discussions with Ligand in order to attempt to improve certain aspects of Ligand's bid and to continue discussions with Bidder B and Bidder C in order to encourage them to increase their bids.

Following the meeting, Neurogen's and Ligand's respective managements further negotiated the terms of Ligand's offer. The parties agreed that as part of Ligand's offer, Ligand would provide two additional CVRs, one for each of the real estate and the Aplindore program in the event that either was not sold before the closing of the transaction. The CVRs would entitle Neurogen stockholders to receive the net proceeds of any sale of the real estate and the Aplindore program within six months following the closing of the transaction with Ligand. Neurogen management also conducted additional diligence regarding the bidders. With respect to Bidder B, Neurogen management determined that certain regulatory relief would likely be required for Bidder B to complete the planned Phase 3 studies within its forecast budget and timelines. With respect to Bidder C, Neurogen management identified certain concerns relating to Phase 2 results of its lead product candidate.

On July 16, 2009, Mr. Davis again contacted both Bidder B and Bidder C regarding their respective offers. Bidder B reiterated its previous bid and confirmed that it would not raise its offer. Bidder C expressed that it would consider raising its offer. On the morning of July 17, 2009, Bidder C submitted a revised offer for a merger in which Bidder C stockholders would own 59% of the combined company and Neurogen stockholders would own 41% of the combined company, but provided that should Bidder C's stock price drop more than 16%, Bidder C and Neurogen stockholders would own 55% and 45%, respectively. Consistent with its initial proposal, Bidder C's offer also included a proposed further investment in the combined company by Bidder C's largest stockholder with the goal of creating a combined company with approximately \$30 million in cash and thereby reducing the percentage ownership of Neurogen stockholders from the percentages described above.

Table of Contents

On the afternoon of July 17, 2009, the Neurogen board of directors held a special telephonic meeting, with representatives of MTS Health Partners and Latham present, to discuss again the advantages and disadvantages associated with each of the three bids. The Neurogen board of directors discussed specific issues identified by management in its due diligence review of each of the bidders together with the feasibility of, and the potential upside and risks associated with, the combined business plans of each proposal. Latham made a presentation on the legal considerations related to each bid, and MTS Health Partners made a presentation on the financial aspects of each bid. After a lengthy discussion of each bid, the Neurogen board of directors determined that Neurogen should attempt to engage both Ligand and Bidder B in negotiating a merger agreement with the goal of completing a deal with one of the parties. At this time, Neurogen's board of directors determined that it should not advance discussions with Bidder C due to concerns identified by management in its diligence of Bidder C.

On July 19, 2009, Bidder B informed Neurogen that Bidder B's board of directors had become uneasy about the prospect of announcing a deal with Neurogen while simultaneously attempting to close another transaction. Bidder B indicated that it might be interested in moving forward if Neurogen was willing to wait until Bidder B completed the other transaction and if Neurogen was prepared to accept a lower price than that reflected in its final offer reiterated on July 16, 2009. Mr. Davis contacted each of Neurogen's board members individually to inform them of Bidder B's decision and continued to advance discussions with Ligand.

Between July 17, 2009 and July 22, 2009, the respective management of Neurogen and Ligand discussed Ligand's proposal and on July 22, 2009, the parties agreed to move to contract negotiations based upon Ligand's final offer as modified in the parties' intervening discussions.

On July 24, 2009, Neurogen contacted Milbank, Tweed, Hadley & McCloy LLP, or Milbank, to request Milbank's services as legal advisor for the proposed merger with Ligand in place of Latham, and Neurogen subsequently engaged Milbank for such purpose. Milbank had represented Neurogen with respect to a variety of corporate matters from time to time in the past.

On July 28, 2009, Neurogen sent to Ligand a draft of the merger agreement prepared by Milbank, which reflected the negotiations between Neurogen's and Ligand's respective managements since Ligand submitted its final bid. On August 3, 2009, Neurogen and Ligand entered into a mutual confidentiality and exclusivity agreement, pursuant to which Neurogen granted Ligand a period of exclusivity with respect to a merger or acquisition transaction until August 14, 2009. On the same day, Ligand sent Neurogen draft agreements governing the CVRs.

Throughout August 2009, Neurogen's management and Milbank engaged in discussions with Ligand and its legal advisor, Stradling Yocca Carlson & Rauth, or Stradling, regarding various business and legal issues in the merger agreement and the agreements governing the CVRs. Ligand also required that Mr. Davis, along with various investment funds controlled by Julian Baker and Felix Baker, or the Baker funds, and Warburg Pincus Private Equity VIII, L.P., or Warburg, each of which has nominated one member to the Neurogen board of directors and together own approximately 32% of the outstanding shares of Neurogen common stock, to enter into voting agreements with Ligand requiring them, among other things, to vote their shares of Neurogen common stock in favor of the transaction with Ligand. Mr. Davis and these stockholders subsequently agreed to enter into the voting agreements.

On August 10, 2009, Ligand's management sent to each member of the Ligand board of directors, in anticipation of a special meeting of the Ligand board of directors to be held on August 10, 2009, a copy of the draft merger agreement with Neurogen, together with a summary of the material terms of the merger agreement prepared by Stradling.

On August 10, 2009, the Ligand board of directors held a special telephonic meeting to discuss the proposed merger with Neurogen, with six of the seven members of the Ligand board of directors and representatives of an investment bank and Stradling present. Mr. Higgins summarized the background and context for the proposed

Table of Contents

merger, including the proposed valuation of Neurogen. Management then reviewed its primary diligence findings with Ligand's board of directors, including a review of each of Neurogen's primary partnered and un-partnered programs, projects and technologies. Representatives of an investment bank then provided an analysis of the proposed merger, reviewing the transaction structure, pipeline assets, management, directors and owners, stock performance, pro forma ownership, premium, and various other considerations. Representatives of Stradling then reviewed the merger agreement for Ligand's board of directors, including consideration (and adjustments thereto), tax treatment, treatment of options and warrants, interim operations, closing conditions, non-solicitation and fiduciary-out provisions, break-up fee, representations and warranties, indemnification, insurance, and the S-4 registration /proxy statement process. Several questions were asked and answered during each presentation and a full discussion ensued.

At the conclusion of the meeting, Mr. Higgins indicated that final negotiations on contract language would take place with Neurogen, and that it was anticipated that both the Neurogen board of directors and the Ligand board of directors would be asked to consider approval of a final merger agreement and the proposed merger in about a week.

On August 14, 2009, Neurogen agreed to extend the period of exclusivity granted to Ligand with respect to a merger or acquisition transaction until August 22, 2009. On August 22, 2009 this period of exclusivity was extended again until August 26, 2009.

On August 17, 2009, Neurogen's management sent to each member of the Neurogen board of directors, in anticipation of a special meeting of the Neurogen board of directors to be held on August 18, 2009, a presentation prepared by MTS regarding its fairness opinion, and draft resolutions to be considered by the Neurogen board of directors. Before the meeting on August 18, 2009, Neurogen's management sent to each member of the Neurogen board of directors, a copy of the draft merger agreement with Ligand, together with a summary of the material terms of the merger agreement prepared by Milbank.

On August 18, 2009, the Neurogen board of directors held a special telephonic meeting to discuss the proposed merger with Ligand, with all members of the Neurogen board of directors and representatives of MTS Health Partners and Milbank present. Representatives of MTS Health Partners began the meeting by providing an overview of the strategic process undertaken by Neurogen with the assistance of MTS Health Partners which ultimately led Neurogen to negotiate and finalize a merger agreement with Ligand. Representatives of MTS also reviewed for the Neurogen board of directors the financial analysis it performed in connection with its fairness opinion, including the methodologies utilized in evaluating the fairness of the proposed merger consideration, and stated that MTS expected to be in a position to deliver its fairness opinion once the merger agreement is finalized. Members of the Neurogen board of directors then asked various questions regarding MTS Health Partners analysis, including the objective value of the fairness opinion to be delivered by MTS, and MTS Health Partners answered each question to the Neurogen board of directors' satisfaction.

Next, Milbank updated the Neurogen board of directors on its fiduciary duties in relation to the merger with Ligand and, along with Mr. Davis, described for the Neurogen board of directors each material term of the merger agreement, using the summary prepared by Milbank in anticipation of the special meeting. The Neurogen board of directors, Mr. Davis and Milbank then discussed the material terms of the merger agreement, including Ligand's right to terminate the merger agreement if it would be required to issue more than 4.2 million shares of stock in the merger, and Neurogen's obligation to pay a termination fee of \$225,000 upon such termination by Ligand. After a lengthy discussion, the Neurogen board of directors directed management to request a revision to allow Neurogen to terminate the merger agreement in the event application of Ligand's share cap would cause Neurogen stockholders to receive less than \$11 million, as adjusted in accordance with the merger agreement, and pay Ligand the applicable termination fee. Ligand subsequently agreed to the change.

At the conclusion of the meeting, Mr. Davis indicated that final negotiations on contract language would take place with Ligand during the remainder of the week, and that it was anticipated that both the Neurogen board of directors and the Ligand board of directors would be asked to consider approval of a final merger agreement and the proposed merger later in the week.

Table of Contents

During the remainder of the week, Neurogen's management and Milbank negotiated the few outstanding issues in the merger agreement with Ligand and Stradling, including the formula for determining Neurogen's cash position at closing, and finalized the merger agreement and the CVR agreements. The parties also continued to work on finalizing the Neurogen disclosure letter.

On August 18, 2009, the Ligand board of directors approved, by unanimous written consent, the merger agreement and the transactions contemplated thereby, including the merger.

On August 20, 2009, MTS delivered to the Neurogen board of directors its opinion that, subject to the various assumptions and qualifications set forth in its opinion, the merger consideration is fair to Neurogen stockholders from a financial point of view. The full text of the written opinion of MTS, which sets forth, among other things, the procedures followed, assumptions made, matters considered and limitations on the review undertaken in connection with such opinion is set forth as *Annex G* to this proxy statement/prospectus. On the same day, the Neurogen board of directors approved, by unanimous written consent, the merger agreement, and deemed the merger agreement and the transactions contemplated thereby, including the merger, to be advisable and in the best interests of Neurogen and its stockholders, and recommended that Neurogen stockholders adopt the merger agreement and approve the merger.

On August 23, 2009, the parties finalized the Neurogen disclosure letter and executed the merger agreement. Mr. Davis, Warburg, the Baker funds, Julian Baker and Ligand executed the voting agreements.

On August 24, 2009, before the opening of the markets, Ligand and Neurogen issued a joint press release announcing the execution of the merger agreement and the transactions contemplated thereby, including the merger. On the same day, Neurogen and Ligand each filed a Current Report on Form 8-K in connection with their execution of the merger agreement.

Neurogen's Reasons for the Merger; Recommendation of Neurogen Board of Directors

Following a meeting of the Neurogen board of directors on August 18, 2009, by unanimous written consent dated August 20, 2009, the members of the Neurogen board of directors declared that the merger agreement and the merger, upon the terms and subject to the conditions set forth in the merger agreement, are advisable and in the best interests of Neurogen and its stockholders. The Neurogen board of directors has approved the merger agreement and the merger, and recommends that Neurogen stockholders adopt the merger agreement and approve the merger at the special meeting of Neurogen stockholders.

In reaching its determinations to approve the merger agreement and recommend that Neurogen stockholders adopt the merger agreement and approve the merger, the Neurogen board of directors considered numerous factors discussed with Neurogen's outside legal and financial advisors and senior management, including the following factors and benefits of the merger, each of which the Neurogen board of directors believed supported its determinations:

the Neurogen board of directors' familiarity with the business, operations, properties and assets, financial condition, business strategy and prospects of Neurogen, as well as the risks involved in achieving those prospects (including the risk factors set forth in Neurogen's Annual Report on Form 10-K for the year ended December 31, 2008 and Neurogen's Quarterly Report on Form 10-Q for the quarter ended June 30, 2009);

the nature of the industry in which Neurogen competes, industry trends and economic and market conditions, both on a historical and a prospective basis;

the risk that Neurogen would be unable to partner the Aplindore program on financial and strategic terms that would be acceptable to Neurogen, or at all;

the risk that Neurogen would be unable to obtain financing necessary to continue operating on a stand-alone basis on relatively attractive terms, or at all;

Table of Contents

the fact that Neurogen and MTS have engaged in a comprehensive strategic process to sell Neurogen or its assets since October 2008, including contacting approximately 142 potential acquirors and merger partners, and that the process yielded only two definitive proposals for Neurogen or its assets in addition to the proposal received from Ligand, one of which was subsequently withdrawn and the other came from a company with respect to which Neurogen identified significant due diligence concerns;

publicly available information and information provided by Ligand concerning its businesses, financial condition, operating results and prospects, and the results of Neurogen's due diligence review of Ligand;

the Neurogen board of directors' belief that if Ligand and Neurogen's assets can be effectively and efficiently integrated, the combined company will have better opportunities for future growth;

Neurogen's strategic alternatives, including remaining an independent entity, entering into a sale of the company or a merger, and immediate liquidation, together with an assessment of the risks attendant to each strategic alternative;

the financial analysis prepared by MTS and presented in its opinion to the Neurogen board of directors on August 20, 2009, that subject to the various qualifications and assumptions set forth in its opinion, the merger consideration is fair to Neurogen stockholders from a financial point of view (for a further discussion of the MTS opinion, see "The Merger Opinion of Neurogen's Financial Advisor" beginning on page 54 of this proxy statement/prospectus);

the liquidation scenario prepared by MTS and presented to the Neurogen board of directors on August 18, 2009, which projected a net present value in cash of \$0.15 per share upon a liquidation of Neurogen, as compared to an estimated \$0.20 per share from the merger consideration (assuming net proceeds of approximately \$2,700,000 from the sale of Neurogen's real properties located in Branford, Connecticut), which estimate does not include an additional estimated \$0.19 per share, if any, payable to Neurogen stockholders upon the sale or license, if any, of the assets that are the subject of the other three contingent value rights, including the Aplindore program;

the fact that a significant majority of the merger consideration consists of Ligand common stock, which will provide Neurogen stockholders with the opportunity to share in the future growth and expected synergies of the combined company while allowing them the flexibility of selling all or a portion of those shares;

the fact that Neurogen stockholders will receive the net proceeds, in cash or stock of the acquiror, from the sale, if any, of Neurogen's Aplindore program for the treatment of RLS and Parkinson's disease, either in the merger if Neurogen sells the programs before the effective time of the merger, or pursuant to the contingent value rights to be issued by Ligand if Ligand sells the programs within six months after the merger, and Ligand has agreed to use commercially reasonable efforts in good faith to conduct the sales;

the fact that the Neurogen stockholders will receive the net proceeds in cash from the sale, if any, of Neurogen's real properties located at 15, 35 and 45 NE Industrial Road, Branford, Connecticut 06405, either in the merger if Neurogen sells the real properties before the effective time of the merger, or pursuant to the contingent value rights to be issued by Ligand if Ligand sells the real properties within six months after the merger, and Ligand has agreed to use commercially reasonable efforts in good faith to conduct the sales;

the contingent value rights represent further potential upside to the upfront merger consideration, which if paid, would provide additional value for Neurogen stockholders;

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

the ability of the Neurogen board of directors, under certain circumstances specified in the merger agreement, to consider and respond to an unsolicited bona fide acquisition proposal from a third party before obtaining the approval of Neurogen stockholders of the merger, and the ability of the Neurogen board of directors to terminate the merger agreement to accept a superior proposal (as such term is defined in the merger agreement) upon the payment to Ligand of a termination fee of \$475,000;

Table of Contents

the ability of the Neurogen board of directors, under the merger agreement, to withdraw or modify, in a manner adverse to Ligand, its recommendation in favor of the adoption of the merger agreement and approval of the merger, after providing Ligand five days written notice of its intention to do so, if the Neurogen board of directors concludes in good faith, after the receipt of advice of outside legal counsel that a failure to take such actions would be inconsistent with its fiduciary duties under applicable law, subject to payment of a \$475,000 termination fee to Ligand if, as a result, Ligand terminates the merger agreement within the time specified in the merger agreement;

the financial and other terms and conditions of the merger agreement, and the other transactions contemplated by the merger agreement, were the product of extensive arms-length negotiations between the parties and Neurogen's board of directors' view of the likelihood of closing the transaction;

the fact that completion of the merger and the other transactions contemplated by the merger agreement is not conditioned on Ligand's ability to obtain financing or an affirmative vote of its stockholders; and

the voting agreements entered into by various Neurogen stockholders who collectively own approximately 32% of the outstanding shares of Neurogen common stock, which demonstrated their support for the transaction.

The Neurogen board of directors also identified and considered a number of uncertainties, risks and other potentially negative factors, including the following:

the risks and costs to Neurogen if the transactions contemplated by the merger agreement do not close, including the diversion of management and employee attention, potential employee attrition from Neurogen's small staff, the effect on business relationships and the incurrence of transaction-related expenses;

the potential impact of the restrictions under the merger agreement on Neurogen's ability to take certain actions during the period before the effective time of the merger (which could delay or prevent Neurogen from undertaking business opportunities that may arise pending completion of the merger);

the risk that declines in the value of Ligand Pharmaceutical's stock, combined with a cap of 4.2 million shares to be issued by Ligand in the merger, could cause Neurogen stockholders to receive in the aggregate less than \$11,000,000 (as adjusted in accordance with the merger agreement) in the merger and a per share price less than MTS' projected per share price from a liquidation of Neurogen, if the Neurogen board of directors decides not to exercise Neurogen's termination right in such event and the risk that the Neurogen board of directors does decide to exercise Neurogen's termination right in such event, Neurogen would owe a \$225,000 termination fee and there would be no merger with Ligand;

the risk that the CVRs may yield little or no value for Neurogen stockholders or that sales pursuant to the CVRs do not occur before the applicable outside dates, thereby causing Neurogen stockholders to forfeit any value that may be obtained from the CVRs;

the illiquidity of the CVRs, due to general restrictions on transfer contained in the CVR agreements;

certain provisions of the merger agreement may have the effect of discouraging proposals for alternative acquisition transactions involving Neurogen, including: (i) the restriction on Neurogen's ability to solicit proposals for alternative transactions; and (ii) the requirement that Neurogen pay a termination fee of \$475,000 to Ligand in certain circumstances following the termination of the merger agreement;

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

the risk that certain of Neurogen's directors and executive officers may have interests in the merger as individuals that are in addition to, or that may be different from, the interests of Neurogen's stockholders; and

other risks commonly associated with transactions such as the merger, including risks associated with the business of Ligand, Neurogen and the combined company, including those described in the section of this proxy statement/prospectus entitled "Risk Factors" beginning on page 20 of this proxy statement/prospectus.

Table of Contents

The foregoing discussion of the factors considered by the Neurogen board of directors is not intended to be exhaustive, but rather includes the material factors considered by the Neurogen board of directors in its consideration of the merger agreement and the merger. After considering these factors, the Neurogen board of directors concluded that the positive factors relating to the merger agreement and the merger outweighed the potential negative factors. In view of the wide variety of factors considered by the Neurogen board of directors, and the complexity of these matters, the Neurogen board of directors did not find it practicable to, and did not, quantify or otherwise assign relative weights to the foregoing factors. In addition, individual members of the Neurogen board of directors may have assigned different weights to various factors. The Neurogen board of directors approved and recommends the merger agreement and the merger based upon the totality of the information presented to and considered by it.

Opinion of Neurogen's Financial Advisor

On August 20, 2009, MTS Securities, LLC, or MTS, an affiliate of MTS Health Partners, L.P., or MTS Health Partners, rendered its opinion to Neurogen's board of directors that, as of August 20, 2009, and based upon and subject to the factors and assumptions set forth therein, the merger consideration to be received by the holders of shares of Neurogen common stock, other than Ligand, Merger Sub, and their affiliates, pursuant to the merger agreement is fair from a financial point of view to such holders.

The full text of the written opinion of MTS, dated August 20, 2009, which sets forth assumptions made, procedures followed, matters considered and limitations on the review undertaken in connection with the opinion, is attached as Annex G to this proxy statement and is incorporated by reference herein. MTS provided its opinion for the information and assistance of Neurogen's board of directors in connection with its consideration of the Merger. The MTS opinion is not a recommendation as to how any holder of Neurogen common stock should vote with respect to the Merger or any other matter.

In connection with rendering the opinion described above and performing its related financial analyses, MTS:

reviewed a draft copy of the merger agreement dated August 19, 2009;

reviewed annual reports to stockholders and Annual Reports on Form 10-K of each of Neurogen and Ligand for the year ended December 31, 2008;

reviewed the Quarterly Reports on Form 10-Q of each of Neurogen and Ligand, respectively, for the quarter ended June 30, 2009;

reviewed the Current Reports on Form 8-K of each of Neurogen and Ligand for the period from January 1, 2009 through August 20, 2009;

reviewed certain financial projections concerning Neurogen prepared by Neurogen's management;

reviewed certain public research reports concerning Neurogen prepared by certain research analysts (including the financial projections contained therein) for the years ending December 31, 2007 and 2008 and reviewed and discussed such reports (and financial projections) with management of Neurogen;

reviewed certain financial projections concerning Ligand prepared by Ligand's management;

reviewed certain public research reports concerning Ligand prepared by certain research analysts (including financial projections contained therein) and reviewed and discussed such reports (and financial projections) with management of Ligand;

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

held discussions with members of management of each of Neurogen and Ligand regarding the businesses, operations, financial condition and prospects of their respective companies;

reviewed the historical reported prices and trading multiples of shares of Neurogen common stock and Ligand common stock;

Table of Contents

reviewed publicly available financial data, stock market performance data and trading multiples of certain companies the securities of which are publicly traded, as MTS deemed appropriate;

reviewed the financial terms, to the extent publicly available, of certain recent business combinations that MTS considered to be comparable to the merger;

reviewed the pro forma consolidated financial results, financial condition and capitalization of Ligand after giving effect to the merger;

performed such other financial studies, analyses and investigations as MTS deemed appropriate; and

held discussions with members of Neurogen management and Neurogen's real estate broker regarding the real estate sale process and consideration.

In arriving at its opinion, MTS assumed and relied upon, without independent verification, the accuracy and completeness of all of the financial, legal, regulatory, tax, accounting and other information provided to, discussed with or reviewed by MTS. The MTS opinion does not address any legal, regulatory, tax or accounting matters. MTS did not conduct any independent verification of any financial projections of Neurogen or Ligand. With respect to each of the financial projections prepared by management of Neurogen and Ligand, respectively, MTS assumed, without independent verification, that they were reasonably prepared on bases reflecting the best currently available estimates and judgments of the future financial performance of Neurogen and Ligand, respectively. For purposes of its analysis of Ligand and after discussions with Ligand's management, with the consent of Neurogen, MTS also used and relied on publicly available projections of certain equity research analysts who report on Ligand and assumed, without independent verification, that such projections represent reasonable estimates and judgments as to the future financial performance of Ligand.

MTS did not make any independent evaluations or appraisals of the assets or liabilities of Neurogen or Ligand or any of their respective subsidiaries, and was not furnished with any such evaluations or appraisals. MTS assumed, in all respects material to its analysis, that the representations and warranties of each party contained in the merger agreement are true and correct, that each party will perform all of the covenants and agreements required to be performed by it under the merger agreement and that all conditions to the consummation of the merger will be satisfied without waiver thereof. MTS also assumed that any governmental, regulatory and other consents and approvals contemplated by the merger agreement will be obtained and that, in the course of obtaining any of those consents, no restrictions will be imposed or waivers made that would have an adverse effect on the contemplated benefits of the merger.

The MTS opinion was based on economic, market, financial and other conditions existing, and on the information made available to MTS, as of the date of the opinion and MTS assumed no obligation to update, revise or reaffirm its opinion, unless otherwise mutually agreed to by Neurogen and MTS. The MTS opinion does not address Neurogen's board of directors' underlying business decision to proceed with the merger, the relative merits of the merger compared to all other alternatives available to Neurogen, or whether such alternatives exist. MTS did not express any opinion as to the prices or ranges of prices at which shares of Neurogen common stock or shares of Ligand common stock would trade at any time following the announcement or consummation of the merger. The MTS opinion does not in any manner address the fairness of the amount or nature of compensation to any of Neurogen's officers, directors or employees, or any class of such persons, relative to the compensation to Neurogen's public stockholders. The MTS opinion was reviewed and approved by a fairness committee of MTS Securities, LLC.

The following is a summary of the material financial analyses delivered by MTS to Neurogen's board of directors in connection with rendering the opinion described above. The following summary, however, does not purport to be a complete description of the financial analyses performed by MTS. The order of analyses described does not represent the relative importance or weight given to those analyses by MTS. Some of the summaries of the financial analyses include information presented in tabular format. The tables must be read together with the full text of each summary and are alone not a complete description of MTS' financial analyses.

Table of Contents

Except as otherwise noted, the following quantitative information, to the extent that it is based on market data, is based on market data as it existed on or before August 20, 2009 and is not necessarily indicative of current market conditions.

Historical Stock Price and Implied Offer Premiums Analysis. MTS reviewed the historical trading prices for shares of Neurogen common stock on certain dates and the average trading prices for certain periods. In addition, MTS analyzed the consideration to be received by holders of Neurogen common stock in relation to such trading prices based on consideration of \$0.20 per share and \$0.39 per share. The following table presents the results of this analysis:

Measurement Period	Stock Price	Offer Value of \$13.7 million ⁽¹⁾ (\$0.20 per share) ⁽³⁾	Offer Value of \$27 million ⁽²⁾ (\$0.39 per share) ⁽³⁾
Stock Price as of 8/19/09	\$ 0.21	(8)%	82%
10 Day Average Stock Price	\$ 0.21	(6)%	85%
20 Day Average Stock Price	\$ 0.22	(8)%	80%
30 Day Average Stock Price	\$ 0.21	(4)%	89%
3 Months Average Stock Price	\$ 0.23	(13)%	72%
52 Week High Stock Price (8/11/08)	\$ 0.44	(57)%	(15)%
52 Week Low Stock Price (12/11/08)	\$ 0.07	184%	459%

(1) \$13.7 million includes reference amount of \$11 million and real estate value of \$2.7 million.

(2) \$27 million includes reference amount of \$11 million, real estate value of \$2.7 million, Aplindore program consideration of \$6 million, H3 CVR of \$4 million and VR1 CVR of \$4 million.

(3) Based on 68,974 million basic shares outstanding as of August 12, 2009.

Neurogen Valuation Analysis. MTS analyzed the valuation of Neurogen using four different methodologies: discounted cash flow analysis; comparable companies analysis; comparable acquisitions analysis; and liquidation analysis. The results of each of these analyses are summarized below.

Discounted Cash Flow Analysis.

MTS performed a discounted cash flow analysis on Neurogen based on Neurogen management forecasts through 2025 using discount rates of 10.0%, 12.5% and 15.0% while applying a cumulative probability of success of 30%. The analysis was based on the following key assumptions:

Aplindore continues Phase 2b study in RLS and completes the on as needed, or PRN, basis dosing study;

Aplindore is partnered after completing the PRN dosing study under the following terms provided by Neurogen management:

(a) there are peak Aplindore RLS sales of \$375 million in 2021, (b) Neurogen receives 30% royalties on Aplindore RLS sales, and (c) Neurogen receives a \$50 million initial payment after the PRN study, a \$50 million NDA filing milestone payment in 2013 and a \$75 million approval milestone payment in 2014;

there is a cumulative probability of success, or POS, of 30%, including POS by stage of 66.7% in Phase 2b, 50% in the PRN dosing study, and 90% in filing to approval; and

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

Neurogen raises \$20 million by issuing 100 million shares of common stock at \$0.20 per share.

Table of Contents

The following table presents the results of this analysis:

Discount Rate	Present Value of Cash Flows ⁽¹⁾			Equity Value per Share		
	Varying from 30% POS			Varying from 30% POS		
	POS: 24%	30%	37%	POS: 24%	30%	37%
10.0%	\$ 6.5	\$ 16.1	\$ 27.3	\$ 0.04	\$ 0.10	\$ 0.16
12.5%	(0.1)	7.6	16.5	(0.00)	0.04	0.10
15.0%	(5.0)	1.1	8.3	(0.03)	0.01	0.05

(1) Dollars in millions.

Comparable Companies Analysis.

MTS reviewed and compared certain financial information for certain North American companies that are focused on central nervous system, or CNS, therapies. Although none of the selected companies is directly comparable to Neurogen, the companies included were chosen because they are publicly traded companies focused on CNS therapies that have operations that, for purposes of analysis, may be considered similar to certain operations of Neurogen. MTS organized the comparable companies into two categories: (i) North American companies focused on CNS therapies that are in the early stage of development and (ii) North American companies focused on CNS therapies that have publicly announced that they have retained strategic advisors. The following tables summarize the results of each of these analyses:

CNS Focused Companies Early Stage⁽¹⁾

Company	Stock Price	Market Cap	Cash	Debt	Enterprise Value
Targacept	\$ 12.80	\$ 338.7	\$ 73.1	\$ 4.1	\$ 269.7
Repligen	5.18	161.0	47.6	0.0	113.4
Transition Therapeutics	5.22	121.2	41.5	0.0	79.7
ICAGEN	0.65	30.5	24.1	1.2	7.6
Cortex Pharmaceuticals	0.24	12.4	1.0	0.3	11.7
	<i>Max</i>	\$ 338.7	\$ 73.1	\$ 4.1	\$ 269.7
	<i>Median</i>	\$ 121.2	\$ 41.5	\$ 0.3	\$ 79.7
	<i>Mean</i>	\$ 132.8	\$ 37.5	\$ 1.1	\$ 96.4
	<i>Min</i>	\$ 12.4	\$ 1.0	\$ 0.0	\$ 7.6

(1) Dollars in millions, except stock price data.

Table of Contents**CNS Focused Companies With Retained Advisor⁽¹⁾**

Company	Stock Price	Market Cap	Cash	Debt	Enterprise Value
Insmed	\$ 0.93	\$ 116.2	\$ 127.5	\$ 1.7	\$ (9.6)
Avigen ⁽²⁾	1.18	31.8	42.5	0.0	(10.7)
Neurobiological Technologies	0.79	21.3	21.6	0.0	(0.3)
EPIX Pharmaceuticals ⁽³⁾	0.12	8.6	14.8	0.0	(6.2)
TorreyPines Therapeutics ⁽⁴⁾	0.31	5.0	6.6	3.2	1.5
	<i>Max</i>	\$ 116.2	\$ 127.5	\$ 3.2	\$ 1.5
	<i>Median</i>	\$ 21.3	\$ 21.6	\$ 0.0	\$ (6.2)
	<i>Mean</i>	\$ 36.6	\$ 42.6	\$ 1.0	\$ (5.1)
	<i>Min</i>	\$ 5.0	\$ 6.6	\$ 0.0	\$ (10.7)

(1) Dollars in millions, except stock price data.

(2) Market data for Avigen is based on March 26, 2009, one day before announcement of liquidation.

(3) Market data for EPIX is based on July 17, 2009, one day before announcement of liquidation. Pro forma for sale of MS-325 U.S., Canadian and Australian rights and exchange offer of 3.00% convertible debt.

(4) Market data for TorreyPines is based on May 28, 2009, one day before announcement of liquidation.

Table of Contents*Comparable Acquisitions Analysis.*

MTS analyzed certain information relating to certain transactions involving early clinical stage companies. While none of the selected transactions is directly comparable to the merger, the companies that participated in the selected transactions are companies that, for purposes of analysis, may be considered similar to Neurogen's operations, market size or product profile. For each of these transactions, MTS compared the one day premium, the total transaction value, and the value and percentage of the total transaction value of any contingent payments included in the transaction. The following table presents the results of this analysis:

Announced⁽¹⁾	Target / Acquiror	1-Day Premium	Total Transaction Value⁽²⁾	Total	% Transaction Value	
05/29/09	CuraGen / Celldex Therapeutics	32%	\$ 29	n/a	n/a	
03/03/09	ViroChem Pharma / Vertex	Private	377 ⁽³⁾	n/a	n/a	
02/27/09	Arana Therapeutics / Cephalon	69%	96	n/a	n/a	
12/18/08	Thiakis Limited / Wyeth	Private	150	\$ 120	80%	
10/27/08	Avalon Pharmaceuticals / Clinical Data	291%	11	3	22%	
09/24/08	Pharmacopeia / Ligand Pharmaceuticals	52%	41	15	57%	
08/04/08	Curacyte Discovery / Medicines Co.	Private	39	16	42%	
06/04/08	Protez Pharmaceuticals / Novartis AG	Private	400 ⁽³⁾	300	75%	
05/21/08	U3 Pharma AG / Daiichi Sankyo Company	Private	235	n/a	n/a	
04/15/08	Piramed Limited / Roche	Private	175	15	9%	
04/11/08	Sirtris Pharmaceuticals / GSK	68%	609 ⁽³⁾	n/a	n/a	
02/09/08	Hunter-Fleming Ltd. / Newron Pharmaceuticals	Private	34	26	77%	
12/05/07	Ester Neurosciences Ltd. / Amarin Corporation plc	Private	32	17	53%	
		<i>Max</i>	291%	\$ 235	\$ 300	80%
		<i>Median</i>	68%	40	17	55%
		<i>Mean</i>	102%	84	64	52%

(1) Certain data in this table is based on company filings. Dollars in millions, except per share data.

- (2) Total transaction value includes contingent payments.

- (3) Excluded from summary calculation.

Table of Contents*Liquidation Analysis.*

MTS performed a liquidation analysis of Neurogen based on estimates from Neurogen's management. For purposes of this analysis, MTS assumed that following stockholder approval Neurogen would commence liquidation on or about November 30, 2009 and relied on Neurogen management's estimates of the net cash that would be available on such date after the disposal of certain assets and the satisfaction of certain liabilities. MTS also applied a discount rate of 11.0%. The liquidation analysis resulted in an estimated equity value of \$0.15 per share.

Ligand Valuation Analysis. MTS analyzed the valuation of Ligand using three different methodologies: discounted cash flow analysis (management case); discounted cash flow analysis (Wall Street case); and comparable companies analysis. The results of each of these analyses are summarized below.

Discounted Cash Flow Analysis (Management Case).

MTS performed a discounted cash flow analysis on Ligand based on Ligand management forecasts through 2018 using discount rates of 10.0%, 12.5% and 15.0%. The analysis did not involve any probability adjustments because Ligand's royalty revenues have limited remaining clinical risk according to Ligand management. The analysis was based on the following key assumptions: (i) the terminal value was estimated using a 0% to 2% perpetuity growth rate because of declining research and development, or R&D, spending in the outer years of the analysis; and (ii) a tax rate of 35%. The following tables present the results of this analysis:

Discount Rate	Present Value of Cash Flows 2009-2018	Present Value of Terminal Value ⁽¹⁾ Assuming Terminal Growth Rate of:			Implied Enterprise Value Assuming Terminal Growth Rate of:		
		0.0%	1.0%	2.0%	0.0%	1.0%	2.0%
		10.0%	\$ 772	\$ 867	\$ 973	\$ 1,106	\$ 1,640
12.5%	655	490	538	595	1,145	1,193	1,250
15.0%	558	290	314	342	849	872	900

Discount Rate	Plus Net Cash	Implied Equity Value ⁽¹⁾ Assuming Terminal Growth Rate of:			Implied Equity Value per Share Assuming Terminal Growth Rate of:		
		0.0%	1.0%	2.0%	0.0%	1.0%	2.0%
		10.0%	\$ 55	\$ 1,695	\$ 1,801	\$ 1,933	\$ 14.64
12.5%	55	1,200	1,248	1,305	10.43	10.83	11.32
15.0%	55	904	928	955	7.90	8.10	8.34

(1) Dollars in millions.

Table of Contents*Discounted Cash flow analysis (Wall Street case).*

MTS performed a discounted cash flow analysis on Ligand based on Wall Street estimates through 2016 using discount rates of 10.0%, 12.5% and 15.0%. Like the management case analysis described above, this analysis did not involve any probability adjustments because Ligand's royalty revenues have limited remaining clinical risk according to Ligand management. The analysis was based on the following key assumptions: (i) the terminal value was estimated using a 2% to 4% perpetuity growth rate because of increasing R&D spending in the outer years of the analysis; and (ii) a tax rate of 35%. The following tables present the results of this analysis:

Discount Rate	Present Value of Cash Flows 2009-2016	Present Value of Terminal Value ⁽¹⁾ Assuming Terminal Growth Rate of:			Implied Enterprise Value Assuming Terminal Growth Rate of:		
		2.0%	3.0%	4.0%	2.0%	3.0%	4.0%
10.0%	\$ 65	\$ 294	\$ 339	\$ 399	\$ 358	\$ 404	\$ 464
12.5%	52	158	176	199	210	228	251
15.0%	41	91	99	109	132	141	151

Discount Rate	Plus Net Cash	Implied Equity Value ⁽¹⁾ Assuming Terminal Growth Rate of:			Implied Equity Value per Share Assuming Terminal Growth Rate of:		
		2.0%	3.0%	4.0%	2.0%	3.0%	4.0%
10.0%	\$ 55	\$ 414	\$ 459	\$ 519	\$ 3.66	\$ 4.06	\$ 4.59
12.5%	55	265	283	306	2.35	2.51	2.71
15.0%	55	187	196	206	1.66	1.73	1.82

(1) Dollars in millions.
Comparable Companies Analysis.

MTS reviewed and compared certain financial information for certain companies that are focused on development in diversified therapeutic areas. While none of the selected companies is directly comparable to Ligand, the companies included were chosen because they are publicly traded companies that have operations that, for purposes of analysis, may be considered similar to certain operations of Ligand. The following table summarizes the results of this analysis:

Company ⁽¹⁾	Stock Price	Market Cap	Cash	Debt	Enterprise Value ⁽²⁾
InCyte	\$ 6.09	\$ 592.8	\$ 140.5	\$ 401.2	\$ 853.5
Ardea	19.75	390.2	70.1	7.6	327.7
ImmunoGen	7.21	373.8	71.1	0.0	302.7
Arena	4.28	342.5	39.6	86.3	389.3
Micromet	5.94	323.0	49.2	2.5	276.2
Rigel	7.89	290.1	79.9	2.6	212.8
Sangamo	5.50	226.0	52.3	0.0	173.8
QLT	3.89	212.5	134.9	0.0	77.5
NPS	4.36	207.1	83.7	328.2	451.7
Array	3.96	192.7	58.9	81.0	214.8
Avanir	2.15	172.2	26.1	0.0	146.1
Lexicon Pharma	1.32	181.3	87.0	67.0	165.3
Repligen	5.18	161.0	47.6	0.0	113.4
ARYx	3.47	99.7	22.2	14.6	92.0
	Max	\$ 592.8	\$ 140.5	\$ 401.2	\$ 853.5

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

	<i>Median</i>	\$ 219.2	\$ 64.5	\$ 5.1	\$ 213.8
	<i>Mean</i>	\$ 268.9	\$ 68.8	\$ 70.8	\$ 271.2
	<i>Min</i>	\$ 99.7	\$ 22.2	\$ 0.0	\$ 77.5

Table of Contents

(1) Certain data in this table is based on company filings as of August 19, 2009. Dollars in millions, except per share data.

(2) Enterprise value is defined as market cap plus debt less cash.

General. MTS performed a variety of financial and comparable analyses for purposes of rendering its opinion. The preparation of a financial opinion is a complex process and is not susceptible to partial analysis or summary description. In arriving at its opinion, MTS considered the results of all of its analyses as a whole and did not attribute any particular weight to any analysis or factor considered. Furthermore, MTS believes that the summary provided and the analyses described above must be considered as a whole and that selecting any portion of the analyses, without considering all of them, would create an incomplete view of the process underlying MTS' analysis and opinion. As a result, the ranges of valuations resulting from any particular analysis or combination of analyses described above should not be taken to be the view of MTS with respect to the actual value of Neurogen or Ligand or their respective common stock.

In performing its analyses, MTS made numerous assumptions with respect to industry performance, general business, regulatory and economic conditions and other matters, all of which are beyond MTS' control and many of which are beyond the control of Neurogen or Ligand. Any estimates used by MTS in its analysis are not necessarily indicative of future results or actual values, which may be significantly more or less favorable than those suggested by such estimates.

The opinion of MTS was one of the many factors taken into consideration by the Neurogen board of directors in making its determination to approve the proposed merger. Consequently, the analyses as described above should not be viewed as determinative of the opinion of Neurogen's board of directors with respect to the merger consideration or of whether Neurogen's board of directors would have been willing to agree to a different merger consideration. The merger consideration was determined through arm's-length negotiations between Neurogen and Ligand and was approved by Neurogen's board of directors. MTS Health Partners provided advice to Neurogen during these negotiations. MTS and MTS Health Partners did not, however, recommend any specific amount of consideration to Neurogen or its board of directors or that any specific amount of consideration constituted the only appropriate consideration for the merger.

Neurogen selected MTS Health Partners because MTS Health Partners is nationally recognized in the healthcare industry as having investment banking professionals with significant experience in healthcare investment banking and merger and acquisition, or M&A, transactions, including transactions similar to the merger. Pursuant to an engagement letter agreement dated as of September 8, 2008 between Neurogen and MTS Health Partners, Neurogen engaged MTS Health Partners to act as its financial advisor in connection with a potential business combination transaction. In addition, MTS Health Partners agreed to cause MTS to provide, at no additional cost, an opinion as to the fairness from a financial point of view of any consideration to be paid in any such transaction. As compensation for MTS Health Partners' financial advisory services, Neurogen paid a retainer of \$75,000 and, upon the completion of the merger, will pay a M&A success fee of \$700,000. The initial retainer will be credited against the M&A success fee. Neurogen also agreed to reimburse MTS Health Partners for its reasonable out-of-pocket expenses, including attorney's fees and expenses, and to indemnify MTS Health Partners against various liabilities. As permitted by the terms of the engagement letter and pursuant to MTS Health Partners' internal policies, MTS, rather than MTS Health Partners, delivered the fairness opinion due to the nature of the merger consideration.

MTS and its affiliates, as part of their investment banking business, are continually engaged in performing financial analyses with respect to healthcare businesses and their capitalization in connection with mergers and acquisitions, competitive biddings, private placements and other transactions as well as for corporate and other purposes. As noted above, MTS acted as financial advisor to Neurogen in connection with, and participated in certain of the negotiations leading to, the merger agreement. In addition, MTS has provided investment banking services to Neurogen from time to time. MTS may also provide investment banking services to the combined

Table of Contents

companies in the future. In connection with the above-described investment banking services, MTS has received compensation, and may receive compensation in the future.

Ligand's Reasons for the Merger

Ligand believes that the merger will enable Ligand to enhance its portfolio of partnerships, pipeline assets and drug discovery resources and increase its cash position, allowing the combined company to increase the potential revenue earned from partnerships, and build long-term stockholder value. There were several important factors that contributed to the Ligand board of directors' approval, including the following:

Pharmaceutical Partnerships. Ligand gains a fully funded partnership with Merck for Vanilloid Receptor Subtype 1, or VR1, antagonists. Neurogen entered into an agreement with Merck in 2003 to develop VR1 antagonists for the treatment of acute and chronic pain. Merck is pursuing the lead VR1 antagonist, MK 2295, and a backup compound in preclinical testing to assess the suitability of these compounds for possible future clinical development. Under the terms of the license agreement, Merck will fund 100% of the program costs and will make milestone and royalty payments upon the achievement of certain development events and commercialization of any applicable VR1 compounds covered under the agreement.

Pipeline. Neurogen's product candidate pipeline may provide Ligand's stockholders with additional development opportunities, know-how and intellectual property which all may support its goal of entering into new license agreements.

H3 Antagonist Program. Neurogen has developed a significant intellectual property estate and identified multiple clinical candidates for blockade of the histamine H3 receptor. The histamine H3 receptor is a target of significant interest for the potential treatment of sleep disorders (e.g. narcolepsy), attention deficit hyperactivity disorder, or ADHD, and cognitive deficits (e.g. schizophrenia and Alzheimer's). Neurogen's lead and backup compounds are potent, inverse agonists of the H3 receptor that demonstrate efficacy in animal models after oral dosing.

Oral Erythropoietin (EPO) Research Program. Ligand has been conducting internal research on orally active erythropoietin agonists and has made significant progress toward declaring a clinical candidate. Neurogen has conducted its own drug discovery efforts in the area and provides novel chemical scaffolds and additional know-how that could further enhance Ligand's oral EPO program. Neurogen's program also includes technology for the pursuit of granulocyte cell stimulating factor (G-CSF) mimetics for neutropenia.

Promising Drug Discovery Platform. The drug discovery platform and proprietary technologies of the combined company are highly complementary and are capable of potentially generating unique and valuable drug candidates. Neurogen has a drug discovery technology based on AIDD (Accelerated Intelligent Drug Discovery) virtual library modeling of large, dynamic compound sets to efficiently prioritize chemicals for synthesis and biological assay tests. The AIDD technology has resulted in the discovery of numerous clinical candidates. The technology fits with Ligand's ultra-high throughput biological assays and 5 million-plus ECLiPS compound collection acquired in the Pharmacoopia transaction.

Financial Implications. The combination of the two companies should allow the combined company to operate with a stronger cash position, cut costs by eliminating redundant public company expenses and further reduce expenses by setting funding priorities on the programs considered to possess the highest potential financial return.

Cash. After taking into account transaction fees and repayment of debt, Ligand will gain an estimated \$7 million in cash from this transaction. In addition, Ligand projects that its cost to operate Neurogen will be negligible going forward as Neurogen's facilities are to be sold and Neurogen's operations will be shut down. Any investment in Neurogen's research programs are currently projected to be assumed within Ligand's operating forecast.

Table of Contents

Net Operating Loss Carryforwards. Neurogen has more than \$319 million in net operating loss carryforwards, or NOLs. While there will be significant limitation to the utilization of the NOLs over time given the tax laws governing use of acquired NOLs, the NOLs may be usable to some extent by Ligand, should the combined company become profitable.

However, there can be no assurance that the benefits of the potential growth, synergies or opportunities considered by Ligand's board of directors will be achieved through completion of the merger. Achieving Ligand's objectives is subject to particular risks which are discussed in the section of this proxy statement/prospectus entitled "Risk Factors."

Interests of Neurogen's Executive Officers and Directors in the Merger

In considering the recommendation of Neurogen's board of directors that you vote to adopt the merger agreement and approve the merger, you should be aware that some of Neurogen's executive officers and directors may have economic interests in the merger that are different from, or in addition to, those of Neurogen's stockholders generally. Neurogen's board of directors was aware of and considered these interests, among other matters, in reaching its determination that the merger agreement and the transactions contemplated thereby, including the merger, are advisable for, and in the best interests of, Neurogen and its stockholders, in approving the merger agreement and the transactions contemplated thereby, including the merger, and in making its recommendation that Neurogen's stockholders vote in favor of the adoption of the merger agreement. These interests include the following:

upon the occurrence of certain types of termination of employment after the merger, certain executive officers would be entitled to receive severance benefits, including certain lump sum payments, continuation of medical coverage, and immediate vesting of options or other incentive securities as more fully described below;

the surviving entity will maintain and honor all indemnification arrangements in place for all past and present directors and officers of Neurogen for acts or omissions occurring at or before the effective time of the merger;

the surviving entity will maintain and honor all indemnification provisions and exculpation provisions in favor of each present or former director and officer of Neurogen that is set forth in the certificate of incorporation or bylaws of Neurogen and the equivalent organizational documents of any Neurogen subsidiary in effect as of the date of the merger agreement;

the organizational documents of the surviving entity will contain provisions with respect to exculpation and indemnification that are at least as favorable to the past and present indemnified directors and officers of Neurogen as those contained in Neurogen's certificate of incorporation and bylaws in effect as of the date of the merger agreement;

Ligand will indemnify and hold harmless the present and former directors and officers of Neurogen against all liabilities arising out of the actions or omissions of such persons in service, including the advancement of certain expenses, for a period of six years following the effective time of the merger; and

the surviving entity will also maintain a directors' and officers' insurance and indemnification policy which will cover those persons who are covered by Neurogen's directors' and officers' insurance and indemnification policy for events occurring before the effective time of the merger on terms no less favorable than those applicable to the current directors and officers of Neurogen for six years, subject to certain limitations.

Certain directors and Neurogen's president and chief executive officer, Stephen R. Davis, have entered into voting agreement with Ligand which require them to vote in favor of the merger agreement and the merger. Please see "Certain Terms of the Merger Agreement - Voting Agreements" beginning on page 95 of this proxy statement/prospectus.

Table of Contents

The merger agreement does not require that Mr. Davis be given the 30 days advance notice of termination of employment, required under his employment agreement, until immediately before the effective time of the merger. This assures Mr. Davis of 30 days of continuing employment (and of salary and benefits), pursuant to the terms of his employment agreement, after the merger.

If the Aplindore program is not terminated or sold by Neurogen before the effective time of the merger or all of Neurogen's real estate is not sold by Neurogen before the effective time of the merger, the merger agreement requires Ligand to use commercially reasonable efforts to negotiate and agree to terms with as many of Stephen Davis, Thomas Pitler, Kenneth Sprenger and George Maynard (all of whom are executive officers of Neurogen) as possible to engage them as consultants for the purpose of assisting Ligand's efforts to sell the Aplindore program and the real estate.

Upon completion of the merger, based on the number of shares of common stock of Ligand and Neurogen outstanding on the record date, assuming that all in-the-money Neurogen stock options are exercised, but without taking into account stock options or warrants of Ligand, it is anticipated that the directors and executive officers of Neurogen collectively will beneficially own approximately 0.6% of the then outstanding shares of Ligand common stock, depending on the market price of Ligand's common stock during the period before the special meeting and Neurogen's actual net cash.

Certain Potential Severance Benefits. Neurogen is party to employment agreements, which include severance benefits, with Stephen R. Davis, Dr. Thomas A. Pitler, Dr. Kenneth J. Sprenger and Dr. George Maynard. These agreements provide severance payments and benefits to Neurogen's named executive officers in the event of termination of employment (a) by the executive for good reason, (b) by Neurogen without cause, (c) following a change of control under certain circumstances, (d) upon death or disability and (e) in the event of non-renewal of the agreements.

The employment agreements provide that if the executive is terminated without cause, or if the executive terminates his employment for good reason, he will be entitled to: (i) a lump sum payment in an amount equal to his then current base salary, (ii) continuation of the health and welfare benefits for the executive and his family (or the economic equivalent thereof) for one year after the termination and (iii) the right to exercise immediately any stock options and to freely trade any restricted stock that, but for such termination, would have become exercisable or tradable, as the case may be, within one year of the date of such termination.

In addition, the employment agreements provide that if the executive is terminated without cause or terminates his employment for good reason and such termination is in connection with a change of control (including without limitation any termination within two years of a change of control), then he shall also be entitled to a lump sum payment in an amount equal to the greater of: (i) his then targeted annual bonus or (ii) his annual bonus immediately prior to the change of control. Target annual bonuses as a percentage of annual base salary for the executives are: Mr. Davis, 50%; Dr. Pitler, 25%; Dr. Sprenger, 25%; Dr. Maynard, 20%.

Assuming that the merger occurs, and each executive officer's employment is terminated, on or before December 31, 2009, the approximate value of the severance payments they would be entitled to receive before applicable withholding taxes is set forth in the table below.

Executive	Number of Months of Base Salary	Number of Months of Benefit Continuation	Percentage of Target Bonus for Year of Termination	Total Severance Payments (excluding benefit continuation)
Stephen R. Davis	12	12	50% of base salary	\$ 637,500
Tom A. Pitler	12	12	25% of base salary	350,000
Kenneth J. Sprenger	12	12	25% of base salary	375,000
George Maynard	9	9	20% of base salary	195,630
Total				\$ 1,558,130

Table of Contents

Insurance and Indemnification of Neurogen Officers and Directors. For a period of six years following the effective time of the merger, Ligand will cause the surviving entity and its subsidiaries to fulfill and honor the obligations of Neurogen and its subsidiaries pursuant to each indemnification agreement in effect on the date of the merger agreement between Neurogen or any of its subsidiaries and each present or former director and officer of Neurogen and any indemnification provision and any exculpation provision in favor of each present or former director and officer of Neurogen that is set forth in the certificate of incorporation or bylaws of Neurogen and the equivalent organizational documents of any Neurogen subsidiary in effect as of the date of the merger agreement. The certificate of incorporation and bylaws of the surviving entity shall contain the provisions with respect to indemnification and exculpation from liability set forth in Neurogen's certificate of incorporation and bylaws on the date of the merger agreement, and, from and after the effective time of the merger, such provisions shall not be amended, repealed or otherwise modified in any manner that could adversely affect the rights thereunder of any individual who is or was an officer or director of Neurogen at any time on or before the effective time of the merger.

Ligand will indemnify and hold harmless the present and former directors and officers of Neurogen against all liabilities arising out of the actions or omissions of such person's service, including the advancement of certain expenses, for a period of six years following the effective time of the merger or for claims for which a written notice asserting such claim for indemnification before the sixth anniversary of the effective time until such time as such claim is fully and finally resolved.

In addition, for a period of six years following the effective time of the merger, Ligand will cause the surviving entity to maintain in effect the current level and similar scope of directors' and officers' liability insurance coverage, provided that the surviving entity shall not be obligated to expend in any one year an amount in excess of 100% of the annual premium currently payable by Neurogen. If Neurogen purchases prepaid insurance for a price in excess of this 100% threshold, the excess shall be treated as a reduction of Neurogen's net cash for purposes of calculating the number of Ligand shares to be issued in the merger.

Neurogen Directors and Officers After Completion of the merger. Upon completion of the merger, the directors and officers of Neurogen will have resigned, and Ligand will appoint Ligand personnel as the directors and officers of the surviving corporation.

Regulatory Filings and Approvals Required to Complete the Merger

Neither Ligand nor Neurogen is aware of any material governmental or regulatory requirements that must be complied with regarding the merger, other than the effectiveness of the registration statement of which this proxy statement/prospectus is a part and compliance with applicable provisions of Delaware law.

Listing of Shares of Ligand Common Stock Issued in Merger on Nasdaq

Ligand will use its reasonable best efforts to cause such shares to be approved for listing on Nasdaq, before the effective time of the merger, subject to official notice of issuance. The CVRs will not be marketable or listed on any securities exchange and will be subject to general transfer restrictions with limited exceptions.

Delisting and Deregistration of Neurogen Common Stock

If the merger is completed, Neurogen common stock will be delisted from Nasdaq and deregistered under the Exchange Act. In addition, Neurogen will cease to be a reporting company under the Exchange Act.

Sales of Shares of Ligand Common Stock Received in Merger

The shares of Ligand common stock to be issued in connection with the merger will be registered under the Securities Act and will be freely transferable, except for shares of Ligand common stock issued to any person who is deemed to be an "affiliate" of Ligand upon completion of the merger. Persons who may be deemed to be

Table of Contents

affiliates of Ligand upon completion of the merger include individuals or entities that control, are controlled by, or are under common control with Ligand. Affiliates of Neurogen may no longer be subject to resale restrictions, provided they are not deemed affiliates of the combined entity.

Persons who may be deemed to be affiliates of Ligand upon completion of the merger may not sell any of the shares of Ligand common stock received by them in connection with the merger except pursuant to:

an effective registration statement under the Securities Act covering the resale of those shares; or

any other applicable exemption under the Securities Act.

Ligand's registration statement on Form S-4, of which this proxy statement/prospectus forms a part, does not cover the resale of shares of Ligand common stock to be received in connection with the merger by persons who may be deemed to be affiliates of Ligand upon completion of the merger.

Material United States Federal Income Tax Consequences of the Merger

The following is a summary of the material United States federal income tax considerations of the merger applicable to Neurogen stockholders. This summary is based upon existing United States federal income tax law, which is subject to change or differing interpretations (possibly with retroactive effect). Neither Neurogen nor Ligand has sought, nor will they seek, a ruling from the Internal Revenue Service, or IRS, regarding the federal income tax consequences of the merger. As such, there can be no assurance that the IRS will not take a contrary position regarding the tax consequences of the merger described in this discussion or that any such contrary position would not be sustained. This summary does not address all aspects of United States federal income taxation which may be relevant to particular Neurogen stockholders in light of their individual investment circumstances, such as stockholders subject to special tax rules (e.g., financial institutions, insurance companies, broker-dealers, and tax-exempt organizations) or to stockholders who acquired Neurogen common stock in connection with stock option, stock purchase or restricted stock plans or in other compensatory transactions, or as part of a straddle, hedge, conversion, constructive sale, or other integrated security transaction for United States federal income tax purposes, all of whom may be subject to tax rules that differ significantly from those discussed below.

This summary does not discuss any United States federal income tax considerations to Neurogen stockholders who are not United States holders (as defined below). If you are not a United States holder you should consult with your own tax advisor as to the United States federal, state and local tax laws and foreign tax laws with respect to the merger. In addition, this summary does not discuss any United States federal income tax considerations to Neurogen stockholders who exercise appraisal or dissenter's rights under Delaware law. This summary is limited to Neurogen stockholders that hold their Neurogen common stock as a capital asset (generally, property held for investment) under the Internal Revenue Code (the Code). **You are urged to consult your own tax advisors regarding the United States federal income tax considerations of the merger, as well as the effects of state, local, and foreign tax laws.**

For purposes of this summary, a United States holder is a Neurogen stockholder that is, for United States federal income tax purposes, (i) an individual who is a citizen or resident of the United States; (ii) a corporation or other entity taxable as a corporation that is created in, or organized under the laws of, the United States or any state or political subdivision thereof or any other entity treated as a domestic corporation under the Code; (iii) an estate, the income of which is includible in gross income for United States federal income tax purposes regardless of its source; or (iv) a trust (A) the administration of which is subject to the primary supervision of a United States court and which has one or more United States persons who have the authority to control all substantial decisions of the trust or (B) that has otherwise elected to be treated as United States person under the Code.

If a partnership holds Neurogen common stock, the tax treatment of a partner in such partnership will generally depend upon the status of the partner and the activities of the partnership. If you are a partner of a

Table of Contents

partnership holding Neurogen common stock, you should consult your tax advisor regarding the tax considerations of the merger.

This discussion is for general information only and should not be construed as tax advice. It is a summary and does not purport to be a comprehensive analysis or description of all potential United States federal income tax consequences of the merger. Neurogen and Ligand urge you to consult your tax advisor with respect to the particular United States federal, state, local or foreign tax consequences of the merger to you.

General

The receipt of the merger consideration by a United States holder in exchange for Neurogen shares should be a taxable transaction for United States federal income tax purposes. The amount of gain or loss a United States holder recognizes, and the timing and potentially the character of a portion of such gain or loss, depends in part on the United States federal income tax treatment of the CVRs, with respect to which there is substantial uncertainty.

Because of the CVRs, the receipt of the merger consideration may be treated as either a closed transaction or an open transaction for United States federal income tax purposes. There is no authority directly on point addressing whether a sale of property for, in whole or in part, contingent value rights with characteristics similar to the CVRs should be taxed as open transactions or closed transactions and such question is inherently factual in nature. Accordingly, holders are urged to consult their tax advisors regarding this issue. The installment method of reporting any gain attributable to the receipt of a CVR will not be available because Neurogen common stock is traded on an established securities market. The CVRs may be treated as debt instruments for United States federal income tax purposes. However as such treatment is unlikely, the discussion below does not address the tax consequences of such a characterization. The following sections discuss the possible tax treatment if the receipt of the merger consideration is treated as an open transaction or a closed transaction. **Neurogen and Ligand urge you to consult your tax advisor with respect to the proper characterization of the receipt of the CVRs.**

Treatment of Consideration Received Upon Consummation of the Merger

Treatment as Open Transaction. The receipt of the CVRs would generally be treated as an open transaction if the value of the CVRs cannot be reasonably ascertained. If the receipt of the merger consideration is treated as an open transaction for United States federal income tax purposes, a United States holder will generally recognize capital gain for United States federal income tax purposes upon consummation of the merger if and to the extent (x) the sum of (i) the amount of cash, if any, received, (ii) the fair market value of Ligand common stock received and (iii) the fair market value of any other property received (other than CVRs) exceeds (y) such United States holder's adjusted tax basis in the Neurogen common stock surrendered pursuant the merger.

Subject to the Section 483 Rules discussed below, if the transaction is open for United States federal income tax purposes, the CVRs would not be taken into account in determining the holder's taxable gain upon receipt of the merger consideration and a United States holder would take no tax basis in the CVRs, but would recognize capital gain as payments with respect to the CVRs are made or deemed made in accordance with the United States holder's regular method of accounting, but only to the extent the sum of such payments (and all previous payments under the CVRs), together with the amount received upon consummation of the merger discussed above, exceeds such United States holder's adjusted tax basis in the Neurogen common stock surrendered pursuant the merger.

Subject to the Section 483 Rules discussed below, if the transaction is open for United States federal income tax purposes, a United States holder who does not receive cumulative payments pursuant to the merger

Table of Contents

with a fair market value at least equal to such United States holder's adjusted tax basis in the Neurogen common stock surrendered pursuant to the merger, will recognize a capital loss in the year that the United States holder's right to receive further payments under the CVRs terminates.

Gain or loss recognized in the transaction must be determined separately for each identifiable block of Neurogen common stock surrendered in the merger (i.e., shares of Neurogen common stock acquired at the same cost in a single transaction). Any such gain or loss will be long-term if the Neurogen common stock is held for more than one year before such disposition. With respect to gain in taxable years commencing before January 1, 2011, the maximum long-term capital gain tax rate for an individual United States holder is 15%. For gain in taxable years after December 31, 2010, under current law the long-term capital gain rate for an individual United States holder is 20%. The deductibility of both long-term and short-term capital loss is subject to certain limitations.

Treatment as Closed Transaction. If the value of the CVRs can be reasonably ascertained, the transaction should generally be treated as closed for United States federal income tax purposes, in which event a United States holder should generally recognize capital gain or loss for United States federal income tax purposes upon consummation of the merger equal to the difference between (x) the sum of (i) the fair market value of the CVRs received, (ii) the amount of cash, if any, received, (iii) the fair market value of any other property received and (iv) the fair market value of Ligand common stock received and (y) such United States holder's adjusted tax basis in the Neurogen common stock surrendered pursuant to the merger.

Basis and Holding Period. If the transaction is closed for United States federal income tax purposes, a United States holder's initial tax basis in the CVRs will equal the fair market value of the CVRs on the date of the consummation of the merger. The holding period of the CVRs will begin on the day following the date of the consummation of the merger. In either case (if the transaction is closed or open for United States federal income tax purposes) a United States holder's initial tax basis in the Ligand shares will equal the fair market value of the Ligand shares on the date of the consummation of the merger, and the holding period of the Ligand shares will begin on the day following the date of the consummation of the merger.

Potential Alternative Characterization. If the Aplindore program and/or certain real estate owned by Neurogen is sold on or prior to the effective time of the merger, holders of Neurogen common stock will receive cash and/or third party stock constituting the consideration received by Neurogen on the dispositions of such asset or assets. Any such cash or third party stock received at the effective time of the merger could be treated as a distribution received on the holder's Neurogen common stock. If any cash and/or third party stock is treated as a distribution with respect to Neurogen common stock, the cash and/or stock would be treated as a dividend to the extent of Neurogen's current or accumulated earnings and profits (determined under U.S. tax rules), with the excess treated as a non-taxable return of the United States holder's tax basis in their Neurogen common stock and as gain from the sale of Neurogen common stock if those amounts exceed tax basis. Neurogen does not expect that it will have any current or accumulated earnings and profits, with the result that if any cash and/or stock received by a United States holder at the effective time as a result of the sale of the Aplindore program and/or the identified real estate is treated as a distribution with respect to the United States holder's Neurogen common stock, such amounts will reduce the United States holder's tax basis in their Neurogen common stock, resulting in more gain or less loss pursuant to the disposition of the Neurogen common stock in the merger. Any cash or third party stock that a United States holder is treated as receiving as a distribution on their Neurogen common stock will not be taken into account in determining the United States holder's amount realized on the disposition of their Neurogen common stock in the merger. You should consult your own tax advisor to determine the tax consequences to you if any cash or property received is treated as a dividend for U.S. federal income tax purposes.

Future Payments on the CVRs

Treatment as Open Transaction. If the transaction is treated as an open transaction, a payment pursuant to a CVR to a United States holder of a CVR should be treated as a payment under a contract for the sale or exchange of Neurogen common stock to which Section 483 of the Code applies (the Section 483 Rules). Under

Table of Contents

the Section 483 Rules, a portion of the payments made pursuant to a CVR will be treated as interest, which will be ordinary income to the United States holder of a CVR. The interest amount will equal the excess of the amount received over its present value at the consummation of the merger, calculated using the applicable federal rate as the discount rate. The United States holder of a CVR must include in its taxable income interest pursuant to the Section 483 Rules using such United States holder's regular method of accounting. The portion of the payment pursuant to a CVR that is not treated as interest under the Section 483 Rules will generally be treated as a payment with respect to the sale of Neurogen common stock, as discussed above.

Treatment as Closed Transaction. If the transaction is treated as a closed transaction, there is no direct authority with respect to the tax treatment of holding and receiving payments with respect to property similar to the CVRs. It is possible that payments received with respect to a CVR, up to the amount of the holder's adjusted tax basis in the CVR, may be treated as a non-taxable return of a United States holder's adjusted tax basis in the CVR, with any amount received in excess of basis treated as gain from the disposition of the CVR. Additionally, a portion of any payment received with respect to a CVR may constitute imputed interest or as ordinary income under the Section 483 Rules. If not treated as described above, payments with respect to a CVR may be treated as either (i) payments with respect to a sale of a capital asset, (ii) ordinary income or (iii) dividends.

Due to the legal and factual uncertainty regarding the valuation and tax treatment of the CVRs, you are urged to consult your tax advisors concerning the recognition of gain, if any, resulting from the receipt of the CVRs in the merger and the receipt of payments, if any, under the CVRs after the merger.

Information Reporting and Backup Withholding

Under United States federal income tax laws, the exchange agent appointed by Ligand will generally be required to report to a United States holder and to the IRS any payments made to a United States holder in exchange for Neurogen common stock in the merger, and may be required to backup withhold 28% of any such payment. In addition, payments pursuant to the CVRs may be subject to back-up withholding and information reporting. To avoid such backup withholding, a United States holder should provide the exchange agent or other applicable person a properly completed Form W-9 (or appropriate substitute form), signed under penalties of perjury, including such holder's current Taxpayer Identification Number, or TIN, and other certifications. If the United States holder does not provide the exchange agent with a TIN and other required certifications, the exchange agent will backup withhold 28% of payments made to the holder (unless the holder is an exempt recipient as described in the next sentence and demonstrates this fact).

Certain United States holders (including, among others, corporations) are exempt from these backup withholding and reporting requirements. Exempt holders who are not subject to backup withholding should indicate their exempt status on a Form W-9 by entering their correct TIN, marking the appropriate box and signing and dating the W-9 in the space provided.

Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules will be allowed as a refund or a credit against a United States holder's United States federal income tax liability provided the required information is timely furnished to the IRS.

Anticipated Accounting Treatment

In accordance with generally accepted accounting principles in the United States, Ligand will account for the merger under the acquisition method of accounting in accordance with Statement of Financial Accounting Standards No. 141 (revised 2007), Business Combinations. Under the acquisition method of accounting, the total estimated purchase price, calculated as described in Note 2 to the unaudited pro forma condensed combined financial statements included in this proxy statement/prospectus, is allocated to the net tangible and intangible assets of Neurogen based on their estimated fair values. Management has made a preliminary allocation of the estimated purchase price to the tangible and intangible assets acquired and liabilities assumed based on various

Table of Contents

preliminary estimates. A final determination of these estimated fair values, which cannot be made before the completion of the merger, will be based on the actual net tangible and intangible assets of Neurogen that exist as of the date of completion of the merger, and upon the final purchase price.

Litigation Challenging the Merger

On August 31, 2009, Gabriel Guzman, one of Neurogen's stockholders, filed a putative class action complaint in the Connecticut Superior Court for the New Haven Judicial District, on behalf of the stockholders of Neurogen against each of the directors of Neurogen, Neurogen, Ligand and Merger Sub. The complaint generally alleges that the decision of the Neurogen board of directors to enter into the proposed transaction with Ligand on the terms contained in the merger agreement constitutes a breach of fiduciary duty and gives rise to other unspecified state law claims. The complaint also alleges that Ligand and Merger Sub aided and abetted the Neurogen board of directors' breaches of their fiduciary duties. In addition, the complaint alleges that the named plaintiff will seek an order preliminarily and permanently enjoining the proposed transaction. On October 2, 2009, the plaintiff filed an amended complaint, adding certain claims that the directors had not properly disclosed all relevant information relating to the proposed merger. On October 22, 2009, the director defendants moved to dismiss the amended complaint on the basis that the individual defendants had not been properly served. In addition, Neurogen and the director defendants filed a motion to strike the amended complaint for failure to state a claim upon which relief could be granted. On that same date, Ligand filed a motion to strike the amended complaint for failure to state a claim upon which relief could be granted. Neurogen and Ligand believe that the allegations in the complaint are without merit and intend to vigorously defend against this action.

Appraisal Rights of Dissenting Neurogen Stockholders

In connection with the merger, record holders of Neurogen common stock who comply with the procedures summarized below will be entitled to appraisal rights if the merger is consummated. The following discussion is not a complete discussion of the law pertaining to appraisal rights under Section 262 of the Delaware General Corporate Law, or Section 262, and is qualified in its entirety by the full text of Section 262 which is attached to this proxy statement/prospectus as *Annex F*. The following summary does not constitute any legal or other advice, nor does it constitute a recommendation that Neurogen stockholders exercise their right to seek appraisal under Section 262. All references in Section 262 and in this summary to a stockholder are to the record holder of the shares of Neurogen common stock as to which appraisal rights are asserted. A person having a beneficial interest in shares of Neurogen common stock held of record in the name of another person, such as a broker, fiduciary, depository or other nominee, must act promptly to cause the record holder to follow the steps summarized below properly and in a timely manner to perfect appraisal rights, or else those rights will be lost.

Under Section 262, holders of shares of Neurogen common stock who do not vote in favor of adoption of the merger agreement and the transactions contemplated thereby, including the merger, and who otherwise follow the procedures set forth in Section 262 will be entitled to have their shares appraised by the Delaware Court of Chancery and to receive payment of the fair value of the shares, exclusive of any element of value arising from the accomplishment or expectation of the merger, together with a fair rate of interest, if any, as determined by the court. Neurogen stockholders should be aware that investment banking opinions as to the fairness from a financial point of view of the merger consideration are not opinions as to fair value under Section 262.

Under Section 262, where a merger is to be submitted for approval at a meeting of stockholders, as in the case of the adoption of the merger agreement and approval of the merger, by Neurogen stockholders, the corporation, not less than 20 days before the meeting, must notify each of its stockholders entitled to appraisal rights that appraisal rights are available and include in the notice a copy of Section 262. This proxy statement/prospectus shall constitute the notice, and the full text of Section 262 is attached to this proxy statement/prospectus as *Annex F*. Any holder of Neurogen common stock who wishes to exercise appraisal rights or who wishes to preserve such holder's right to do so, should review the following discussion and *Annex F* carefully because failure to timely and properly comply with the procedures specified will result in the loss of appraisal rights. Due to the complexity of the procedures for exercising the right to seek appraisal, Neurogen stockholders who are considering exercising such rights are urged to seek the advice of legal counsel.

Table of Contents

Neurogen stockholders of record who desire to exercise their appraisal rights must satisfy all of the following conditions. They must:

hold of record shares of Neurogen common stock on the date the written demand for appraisal is made and continue to hold the shares of record through the effective time of the merger;

deliver to the Corporate Secretary of Neurogen, before the vote on the adoption of the merger agreement, a written demand for the appraisal of the stockholder's shares; and

not vote its shares of common stock in favor of, or consent in writing to, the adoption of the merger agreement and the transactions contemplated thereby, including the merger.

Neither voting against the adoption of the merger agreement and approval of the merger (either in person or by proxy), nor abstaining from voting or failing to vote on the proposal to adopt the merger agreement and approve the merger, will in and of itself constitute a written demand for appraisal satisfying the requirements of Section 262. The written demand for appraisal must be in addition to and separate from any proxy or vote. The demand must reasonably inform Neurogen of the identity of the holder as well as the intention of the holder to demand an appraisal of the fair value of the shares held by the holder. A stockholder's failure to make the written demand before the taking of the vote on the adoption of the merger agreement and approval of the merger at the Neurogen special meeting will constitute a waiver of appraisal rights.

Only a holder of record of shares of Neurogen common stock on the record date for the Neurogen special meeting is entitled to assert appraisal rights for the shares registered in that holder's name. A demand for appraisal in respect of shares of Neurogen common stock should be executed by or on behalf of the holder of record, fully and correctly, as the holder's name appears on the holder's stock certificates, should specify the holder's mailing address and the number of shares registered in the holder's name, and must state that the person intends to demand appraisal of the holder's shares pursuant to the merger agreement. If the shares are owned of record in a fiduciary capacity, such as by a trustee, guardian or custodian, execution of the demand should be made in that capacity. If the shares are owned of record by more than one person, as in a joint tenancy and tenancy in common, the demand should be executed by or on behalf of all joint owners. An authorized agent, including an agent for two or more joint owners, may execute a demand for appraisal on behalf of a holder of record. However, the agent must identify the record owner or owners and expressly disclose the fact that, in executing the demand, the agent is acting as agent for the record owner or owners. A record holder such as a broker who holds shares as nominee for several beneficial owners may exercise appraisal rights with respect to the shares held for one or more beneficial owners while not exercising the rights with respect to the shares held for other beneficial owners. In such case, however, the written demand should set forth the number of shares as to which appraisal is sought. If no number of shares is expressly mentioned, the demand will be presumed to cover all shares of Neurogen common stock held in the name of the record owner. Stockholders who hold their shares in brokerage accounts or other nominee forms and who wish to exercise appraisal rights are urged to consult with their brokers to determine the appropriate procedures for the making of a demand for appraisal by such a nominee.

A Neurogen stockholder of record who elects to demand appraisal of his or her shares must mail or deliver his or her written demand to: Neurogen Corporation, 45 NE Industrial Road, Branford, CT 06405, Attention: Corporate Secretary. The written demand for appraisal should specify the stockholder's name and mailing address, the number of shares owned, and that the stockholder is thereby demanding appraisal of his or her shares, and such written demand must be received by Neurogen before the special meeting.

In addition, a Neurogen stockholder who desires to exercise appraisal rights must not vote its shares of common stock in favor of adoption of the merger agreement and approval of the merger. A vote in favor of adoption of the merger agreement and approval of the merger, by proxy, via the Internet, or in person, will constitute a waiver of your appraisal rights and will nullify any previously filed written demands for appraisal. Because a proxy that is signed and does not contain voting instructions will, unless revoked, be voted in favor of

Table of Contents

adoption of the merger agreement and approval of the merger, a stockholder who votes by proxy and who wishes to exercise appraisal rights must vote against the merger agreement and approval of the merger, or abstain from voting on the merger agreement and approval of the merger.

Within 10 days after the effective time of the merger, Neurogen or its successor in interest, which is referred to generally as the surviving corporation, must notify each holder of Neurogen common stock who has complied with Section 262 and who has not voted in favor of the adoption of the merger agreement and approval of the merger, that the merger has become effective and shall include in such notice a copy of Section 262. Within 120 days after the effective time of the merger, the surviving corporation or any stockholder who has timely and properly demanded appraisal of his or her shares and who has complied with the required conditions of Section 262 and is otherwise entitled to appraisal rights may commence an appraisal proceeding by filing a petition in the Delaware Court of Chancery demanding a determination of the fair value of the shares of all Neurogen stockholders who have properly demanded appraisal. The surviving corporation is under no obligation to and has no present intention to file a petition. Accordingly, it is the obligation of the eligible holders of Neurogen common stock to initiate all necessary action to perfect their appraisal rights in respect of shares of Neurogen common stock within the time prescribed in Section 262. Notwithstanding the foregoing, any Neurogen stockholder that has not commenced an appraisal proceeding or joined any such proceeding within 60 days following the merger shall have the right to withdraw such stockholder's demand for appraisal and to accept the merger consideration. After this period, a stockholder may withdraw his, her or its demand for appraisal and receive payment for his, her or its shares as provided in the merger agreement only with the consent of the surviving corporation.

Within 120 days after the effective time of the merger, any holder of Neurogen common stock who has complied with the requirements for exercise of appraisal rights will be entitled, upon written request, to receive from the surviving corporation a statement setting forth the aggregate number of shares of Neurogen common stock not voted in favor of the adoption of the merger agreement and the transactions contemplated thereby, including the merger, and the aggregate number of shares that have made demands for appraisal. The statement must be mailed within 10 days after a written request has been received by the surviving corporation or within 10 days after the expiration of the period for delivery of demands for appraisal, whichever is later.

If a petition for an appraisal is timely filed by a holder of shares of Neurogen common stock and a copy is served upon the surviving corporation, the surviving corporation will then be obligated within 20 days to file with the Delaware Register in Chancery a duly verified list containing the names and addresses of all stockholders who have demanded an appraisal of their shares and with whom agreements as to the value of their shares have not been reached. After notice to the stockholders as required by the Court, the Delaware Court of Chancery is empowered to conduct a hearing on the petition to determine those stockholders who have complied with Section 262 and who have become entitled to appraisal rights thereunder. The Delaware Court of Chancery may require the stockholders who demanded payment for their shares to submit their stock certificates to the Register in Chancery for notation on the certificates of the pending appraisal proceeding. If any stockholder fails to comply with the direction, the Delaware Court of Chancery may dismiss the proceedings as to that stockholder.

After determining the holders of Neurogen common stock entitled to appraisal, the Delaware Court of Chancery will determine the fair value of shares of the Neurogen common stock exclusive of any element of value arising from the accomplishment or expectation of the merger, together with interest, if any, to be paid upon the amount determined to be the fair value.

In determining fair value, and, if applicable, a fair rate of interest, the Delaware Court of Chancery is to take into account all relevant factors.

Neurogen stockholders considering seeking appraisal should bear in mind that the fair value of their shares of common stock as determined under Section 262 could be more than, the same as, or less than the merger consideration they are entitled to receive pursuant to the merger agreement if they do not seek appraisal of their

Table of Contents

shares, and that opinions of investment banking firms as to the fairness from a financial point of view of the merger consideration payable in a merger are not opinions as to fair value under Section 262.

The cost of the appraisal proceeding (which does not include attorneys' fees or the fees or expenses of experts) may be determined by the Delaware Court of Chancery and levied upon the parties as the Delaware Court of Chancery deems equitable in the circumstances. Upon application of a stockholder seeking appraisal rights, the Delaware Court of Chancery may order that all or a portion of the expenses incurred by such stockholder in connection with the appraisal proceeding, including, without limitation, reasonable attorneys' fees and the fees and expenses of experts, be charged pro rata against the value of all shares entitled to appraisal. In the absence of such a determination of assessment, each party bears its own expenses.

Except as explained in the last sentence of this paragraph, at any time within 60 days after the effective time of the merger, any stockholder who has not commenced an appraisal proceeding or joined that proceeding as a named party will have the right to withdraw his or her demand for appraisal and to accept the merger consideration to which such stockholder is entitled pursuant to the merger. After this period, such holder may withdraw his or her demand for appraisal only with the consent of the surviving corporation. If no petition for appraisal is filed with the Delaware Court of Chancery within 120 days after the effective time of the merger, Neurogen stockholders' rights to appraisal will cease and all Neurogen stockholders will be entitled only to receive the merger consideration as provided for in the merger agreement.

Failure to comply with all of the procedures set forth in Section 262 will result in the loss of a stockholder's statutory appraisal rights. In view of the complexity of Section 262, stockholders who wish to dissent from the merger and pursue appraisal rights should consult their legal advisors before attempting to exercise such rights.

Table of Contents

CERTAIN TERMS OF THE MERGER AGREEMENT

The following description of the merger agreement describes certain material terms of the merger agreement, the CVR agreements, and other transaction documents. The full text of the merger agreement and the forms of CVR agreements are attached as *Annex A*, *Annex B*, *Annex C*, *Annex D* and *Annex E*, respectively, to this proxy statement/prospectus and are incorporated herein by reference. Neurogen stockholders are encouraged to read the entire merger agreement, CVR agreements and the other annexes to this proxy statement/prospectus.

The merger agreement, the CVR agreements and the other annexes attached to this proxy statement/prospectus were included to provide investors and security holders with information regarding their respective terms. These agreements are not intended to provide any other factual information about Ligand or Neurogen. The merger agreement and the forms of CVR agreements attached as annexes to this proxy statement/prospectus contain representations and warranties that the parties thereto made to, and solely for the benefit of, each other, and such representations and warranties may be subject to standards of materiality applicable to the contracting parties that differ from those applicable to investors. The assertions embodied in Neurogen's representations and warranties in the merger agreement are qualified by information in a confidential disclosure letter that Neurogen delivered in connection with the execution of the merger agreement. Accordingly, investors and security holders should not rely on the representations and warranties as characterizations of the actual state of facts. Moreover, information concerning the subject matter of the representations and warranties may change after the date of the merger agreement which subsequent information may or may not be fully reflected in Ligand's or Neurogen's public disclosures.

The Merger

At the effective time of the merger, Ligand's wholly-owned subsidiary, Neon Signal, LLC, or Merger Sub, will be merged with and into Neurogen, with Neurogen continuing as the surviving corporation. Upon completion of the merger, the directors and officers of Neurogen will have resigned, and Ligand will appoint Ligand personnel as the directors and officers of the surviving corporation.

Effective Time of the Merger

The merger agreement provides that the merger will become effective when a certificate of merger executed by Neurogen and Merger Sub is filed with the Secretary of State of the State of Delaware.

Manner and Basis of Converting Shares

The merger agreement provides that, at the effective time of the merger, each share of Neurogen common stock then outstanding will automatically be converted into the right to receive:

a portion of a share of Ligand common stock equal to the exchange ratio, with cash in lieu of any fractional share (after aggregating all fractional shares of Ligand common stock that otherwise would have been received), with the exchange ratio being determined as follows:

a decimal fraction (calculated to the nearest one-thousandth) the numerator of which is the quotient derived by dividing \$11 million (plus the amount, if any, by which Neurogen's net cash amount calculated as of the third trading day preceding the date of the special meeting exceeds \$7.9 million if the effective time occurs on any date during the month of September 2009, with a \$5,000 decrease for each calendar day thereafter or minus the amount, if any, by which \$7.9 million if the effective time occurs on any date during the month of September 2009, with a \$5,000 decrease for each calendar day thereafter, exceeds Neurogen's net cash amount calculated as of the third trading day preceding the date of the special meeting) by the arithmetic average of the daily volume weighted average prices of Ligand common stock for each of the last 20 trading days preceding the third trading day preceding the date of the special meeting (provided this quotient shall not exceed 4.2 million), and the denominator of which is the number of issued and outstanding shares of Neurogen common stock immediately before the effective time of the merger;

Table of Contents

any such Ligand common stock received being referred to in this proxy statement/prospectus as the stock consideration; and

if Neurogen's program for the development of Aplindore for the treatment of RLS and Parkinson's disease is sold by Neurogen before the effective time of the merger, a pro-rata share of the cash and/or number of shares of third-party stock, as the case may be, paid pre-merger by the buyer for the program; and

if the real properties currently owned by Neurogen are sold by Neurogen before the effective time of the merger, a pro-rata share of the pre-merger net cash proceeds from the sale; and

one non-transferable Aplindore contingent value right, one H3 contingent value right, one Merck contingent value right and one real estate contingent value right, each of which entitles the holder to a proportionate share of various contingent payments, payable upon the achievement of certain milestones, which are referred to in this proxy statement/prospectus as the CVRs. See CVR Agreements for a description of the conditions to be satisfied for the contingent payments.

For purposes of the exchange ratio, the merger agreement defines Neurogen's net cash as an amount equal to (i) the sum of (A) all cash (including any payments received by Neurogen from the exercise by any non-employee director of Neurogen stock options, as contemplated by the Non-Employee Director Agreements or otherwise), cash equivalents, marketable securities and accounts receivable (net of accounts receivable reserves established in accordance with GAAP) held by Neurogen its subsidiaries (but excluding the Aplindore program consideration and the real estate consideration, if any, received by Neurogen before the Effective Time) and (B) in the event Neurogen purchases a tail prepaid D&O insurance policy, any amount (up to a maximum of \$270,000) paid by Neurogen for such tail policy; minus (ii) the sum of (A) in the event Neurogen purchases a tail prepaid D&O insurance policy, any amount by which the cost of such tail policy exceeds \$270,000 to the extent such excess has not been paid by Neurogen before the third trading day preceding the Neurogen special meeting of stockholders, (B) any amount payable by Neurogen for the out-of-pocket transaction fees and expenses of Neurogen to its legal and financial advisors and accountants in connection with the merger agreement and the merger-related transactions, (C) any amount payable by Neurogen for expenses incurred in connection with the preparation, filing, printing and mailing of this proxy statement/prospectus and the solicitation of proxies for use at the special meeting, (D) an expense reserve amount of up to \$350,000 for post-closing Aplindore operations, (E) except as otherwise covered in item (F) below, all severance payments, stay bonuses and performance bonuses payable to all employees, consultants and directors of Neurogen and its subsidiaries assuming that the service relationship of all such employees, consultants and directors with Neurogen and its subsidiaries is terminated as of the closing date, even if such service relationship in fact does continue after the closing date, (F) all severance payments, stay bonuses and performance bonuses remaining payable at the closing date to all employees, consultants and directors of Neurogen and its subsidiaries whose service relationship with Neurogen and its subsidiaries is terminated on or before the closing date, (G) the salary, employer-tax and benefits cost of the continuation of employment of any Neurogen employees, as a result of the advance-notice requirements of their respective employment agreements, beyond the closing date until their actual termination date, if before the closing date Ligand requests Neurogen to terminate such employees, provided that the costs described in this item (G) shall only be deducted if at least 33 calendar days before the closing date Ligand requests Neurogen to terminate any such employee, (H) all amounts payable by Neurogen in order to repay in full the amounts outstanding under the construction loan made by Connecticut Innovations, Inc. on or around October 1999 and any and all loans secured by the Neurogen real estate and to discharge all other obligations of Neurogen or any Neurogen subsidiary thereunder, and (I) to the extent not included in any item, all accounts payable of Neurogen and its subsidiaries; provided that all such amounts shall be determined in a manner consistent with the manner in which such items were determined by Neurogen in the most recent balance sheet included in Neurogen's financial statements.

The stock consideration, the proceeds, if any, from the pre-merger sale of the Aplindore program and/or Neurogen's real estate and the contingent value rights are collectively referred to in this proxy statement/prospectus as the merger consideration.

Table of Contents

No certificates or scrip representing fractional shares of Ligand common stock shall be issued as part of the stock consideration. Instead, the exchange agent appointed by Ligand shall determine the difference between the aggregate number of full shares of Ligand common stock delivered to the exchange agent by Ligand comprising the stock consideration and the aggregate number of full shares of Ligand common stock to be distributed to Neurogen stockholders. The exchange agent shall sell the excess shares at then prevailing prices on Nasdaq and pay such amounts to Neurogen stockholders otherwise entitled to a fractional share of Ligand common stock with respect to their fractional share interests. These payments are part of the merger consideration.

Each share of Ligand common stock that is issued in connection with the merger shall be accompanied by an associated right under Ligand's stockholder rights plan.

The merger consideration shall be adjusted to the extent appropriate to reflect the effect of any stock split, division or subdivision of shares, stock dividend, reverse stock split, consolidation of shares, reclassification, recapitalization or other similar transaction with respect to Neurogen common stock or Ligand common stock occurring or having a record date on or after the date of the merger agreement and before the effective time of the merger. No such event is expected to occur.

Under the terms of the merger agreement, promptly following the effective time of the merger, an exchange agent appointed by Ligand, will mail to each record holder of Neurogen common stock a letter of transmittal and instructions for use, which record holders will use to exchange Neurogen common stock certificates for the merger consideration. Neurogen common stock certificates should not be surrendered for exchange by Neurogen stockholders before the effective time of the merger.

After the effective time of the merger, transfers of Neurogen common stock will not be registered on the stock transfer books of Neurogen, and each certificate that previously evidenced Neurogen common stock will be deemed to evidence the right to receive the merger consideration. No dividends or other distributions declared or made after the effective time of the merger with respect to Ligand common stock with a record date after the effective time of the merger shall be paid to the holder of any unsurrendered Neurogen common stock certificate with respect to the shares of Ligand common stock represented thereby, and no payment in respect of the merger consideration shall be made with respect to such shares of Neurogen common stock represented thereby, unless and until the holder of such Neurogen common stock certificate surrenders such Neurogen common stock certificate as provided in the merger agreement.

Neurogen Stock Options and Warrants

Stock Options

By operation of the Neurogen Corporation 1993 Omnibus Incentive Plan, the Neurogen Corporation 1993 Non-Employee Director Stock Option Program, the Neurogen Corporation 2000 Non-Employee Directors Stock Option Program, Neurogen's September 25, 2000 Special Committee Stock Option Grant and the Amended and Restated Neurogen Corporation 2001 Stock Option Plan, in each case, as amended from time to time, all outstanding options to purchase shares of Neurogen common stock from Neurogen, whether granted by Neurogen pursuant to its equity plans or otherwise, whether or not then vested, will become fully vested and exercisable on the closing date. Neurogen's board of directors, by operation of existing agreements, including the Non-Employee Director Agreements, or by resolution, will take all requisite actions such that immediately before the effective time of the merger (i) each holder of outstanding Neurogen options shall be entitled to exercise in full all Neurogen options held by such holder by paying the exercise price therefor in exchange for the shares of Neurogen common stock in accordance with the applicable Neurogen equity plan, and (ii) all outstanding Neurogen options not exercised, other than any unexercised Neurogen options remaining outstanding under Neurogen's 1993 Omnibus Incentive Plan, shall at the effective time of the merger be terminated and canceled without any payment or liability on the part of the Neurogen. If any option remains outstanding under Neurogen's 1993 Omnibus Incentive Plan after the effective time of the merger and the holder thereof exercises

Table of Contents

such option before its expiration or termination date, then Ligand shall issue and pay in respect of each exercised option in exchange for the payment of the applicable exercise price, on a per-exercised-share basis, equivalent consideration to the merger consideration (or the proceeds thereof) as was paid in respect of each issued and outstanding share of Neurogen common stock in the merger; provided that any such payment shall be made in compliance with Section 409A of the Code.

Warrants

Neurogen has agreed to use reasonable best efforts to enter into agreements with the holders of outstanding Neurogen warrants to terminate and cancel all such warrants, effective immediately before the effective time of the merger, without any payment or liability on the part of Neurogen. If any Neurogen warrant remains outstanding after the effective time of the merger and the holder thereof exercises such warrant before its expiration date, then Ligand shall issue and pay in respect of each exercised warrant in exchange for the payment of the applicable exercise price, on a per-exercised-share basis, equivalent consideration to the merger consideration (or the proceeds thereof) as was paid in respect of each issued and outstanding share of Neurogen common stock in the merger.

Representations and Warranties

The merger agreement contains customary representations and warranties of Neurogen, Ligand and Merger Sub relating to, among other things, certain aspects of the respective businesses and assets of the parties and other matters. The representations and warranties expire at the effective time of the merger.

Neurogen's Interim Operations

Neurogen has agreed that, during the period from the date of the merger agreement through the earlier of the effective time of the merger or the date of termination of the merger agreement, except to the extent Ligand shall otherwise consent in writing (which consent shall not be unreasonably withheld, delayed or conditioned), or except as set forth in the Neurogen disclosure letter, or except as expressly required by the merger agreement, Neurogen shall and shall cause each of its subsidiaries to use its reasonable best efforts to (i) conduct their businesses in the ordinary course of business, (ii) preserve intact their present business organizations, (iii) maintain satisfactory relations with and keep available the services of their current officers and other key employees and (iv) preserve existing relationships with material customers, lenders, suppliers, distributors and others having material business relationships and not to:

amend its certificate of incorporation or bylaws or equivalent organizational documents;

split, combine, subdivide or reclassify any shares of its capital stock;

declare, set aside or pay any dividend (whether payable in cash, stock or property) with respect to any shares of its capital stock (except with respect to shares of the capital stock of a Neurogen subsidiary that is directly or indirectly wholly owned by Neurogen);

issue, sell, pledge, transfer, deliver, dispose of or encumber any shares of, or securities convertible or exchangeable for, or options or rights to acquire, any shares of its capital stock, voting securities, phantom stock, phantom stock rights, stock based performance units or other securities that derive their value by reference to such capital stock or voting securities, other than: (i) the issuance of shares of Neurogen common stock upon the exercise of Neurogen options and (ii) the grant of Neurogen options under its 2000 Non-Employee Directors Stock Option Program in the ordinary course of business consistent with past practice;

transfer, lease or license to any third party, or subject to an encumbrance (except for permitted encumbrances), any assets of Neurogen or any subsidiary other than: (i) sales in the ordinary course of business; (ii) dispositions of obsolete assets; or (iii) the sale or disposition of the Aplindore program or the real properties owned by Neurogen in accordance with the merger agreement;

Table of Contents

repurchase, redeem or otherwise acquire or offer to repurchase, redeem or otherwise acquire any shares of its capital stock other than pursuant to the forfeiture provisions applicable to the Neurogen options or pursuant to the exercise or tax withholding provisions applicable to the Neurogen options;

acquire (whether pursuant to merger, stock or asset purchase or otherwise) or lease (i) any asset or assets, except for (A) purchases of raw materials, equipment and supplies in the ordinary course of business or (B) capital expenditures in accordance with the merger agreement, or (ii) except pursuant to the sale of the Aplindore program in accordance with the merger agreement, any equity interests (except for marketable securities acquired by Neurogen from time to time in connection with its normal cash management activities);

incur, issue, repurchase, modify or assume any indebtedness or guarantee any such indebtedness;

make any loans, advances or capital contributions, or investments other than (i) loans, advances or capital contributions to, or investments in, a Neurogen subsidiary that is directly or indirectly wholly owned by Neurogen in the ordinary course of business, (ii) advances to employees in respect of travel and other expenses in the ordinary course of business, and (iii) investments made by Neurogen in marketable securities in connection with its normal cash management activities;

(i) increase benefits under any employee benefit plan or any other material employee plan or agreement, (ii) increase or otherwise change the method for funding or insuring benefits under any employee benefit plan or any other material employee plan or agreement, except as required by applicable legal requirements, (iii) (A) establish, adopt, enter into, amend or terminate any employee benefit plan or any other material employee plan or agreement that is an employee benefit plan as defined in Section 3(3) of ERISA or other any other arrangement that would be an employee benefit plan under ERISA if it were in existence as of the date of the merger agreement, except as required by applicable legal requirements, or (B) establish, adopt, enter into, amend or terminate any collective bargaining agreement, employee benefit plan or any other material employee plan or agreement that is not an employee benefit plan under ERISA or any plan, agreement, program, policy, trust, fund or other arrangement that would be a employee benefit plan or any other material employee plan or agreement that is not an employee benefit plan under ERISA if it were in existence as of the date of the merger agreement, except in the ordinary course of business or as required by applicable legal requirements (including, without limitation, Section 409A of the Code), (iv) grant any increase in the rates of salaries, compensation or fringe or other benefits payable to any executive officer of Neurogen (other than as required by applicable legal requirements or pursuant to non-discretionary provisions of agreements in effect as of the date of the merger agreement), (v) grant any increase in the rates of salaries, compensation or fringe or other benefits payable to any employee, except increases that are required by legal requirements or pursuant to non-discretionary provisions of agreements in effect as of the date hereof, (vi) grant or pay any bonus of any kind or amount whatsoever to any current or former director or officer or any employee of Neurogen or any Neurogen subsidiary (other than pursuant to the non-discretionary provisions of agreements in effect as of the date of the merger agreement) or (vii) grant or pay any stay or severance or termination pay or increase in any manner the stay or severance or termination pay of any current or former director, officer, employee or consultant of Neurogen or any Neurogen subsidiary other than as required by applicable legal requirements or pursuant to non-discretionary provisions of agreements in effect as of the date of the merger agreement;

settle or compromise any claim (presented formally to a judicial or quasi-judicial governmental entity), lawsuit, court action, suit, arbitration or other judicial or administrative proceeding (whether or not commenced before the date of the merger agreement), other than settlements or compromises of claims, lawsuits, court actions, suits, arbitration or other judicial or administrative proceedings where the amount paid (after giving effect to insurance proceeds actually received) in settlement or compromise does not exceed Neurogen's reserves on its books therefor by more than \$10,000, or for any claim, lawsuit, court action, suit, arbitration or other judicial or administrative proceeding for which Neurogen has not yet reserved, in an amount therefor that does not exceed \$20,000;

Table of Contents

enter into any new, or amend or prematurely terminate any current, Neurogen agreement or waive, release or assign any rights or claims under any Neurogen agreement (except (i) in the ordinary course of business or (ii) where the failure to amend or terminate a Neurogen agreement would, in the reasonable judgment of the Neurogen board of directors, have a material adverse effect or (iii) the termination of any contract relating to the development of Aplindore);

change any of its methods of accounting or accounting practices in any material respect, other than changes required by GAAP or legal requirements;

make any material tax election (except for elections made in the ordinary course of business);

make any capital expenditure that is not contemplated by the capital expenditure budget set forth in the Neurogen disclosure letter, except that Neurogen or any Neurogen subsidiary: (A) may make any non-budgeted capital expenditure that does not individually exceed \$5,000 in amount; and (B) may make any non-budgeted capital expenditure that, when added to all other non-budgeted capital expenditures made by Neurogen and Neurogen's subsidiaries since the date of the merger agreement, would not exceed \$25,000 in the aggregate;

adopt a plan of complete or partial liquidation or dissolution;

take any action that is intended or would reasonably be expected to result in any of the conditions to the merger not being satisfied; or

authorize or enter into any agreement or otherwise make any commitment to do any of the foregoing.

Ligand's Interim Operations

Ligand has agreed that, during the period from the date of the merger agreement through the earlier of the effective time of the merger or the date of termination of the merger agreement, except to the extent Neurogen shall otherwise consent in writing (which consent shall not be unreasonably withheld, delayed or conditioned), as set forth in the Ligand disclosure letter, or as expressly required by the merger agreement, Ligand shall and shall cause each of its subsidiaries to use its reasonable best efforts to (i) conduct their businesses in the ordinary course of business or otherwise to an anticipated advantage, (ii) preserve intact their present business organizations and (iii) preserve existing relationships with material customers, lenders, suppliers, distributors and others having material business relationships and not to:

amend its certificate of incorporation or bylaws or equivalent organizational documents;

split, combine, subdivide or reclassify any shares of its capital stock;

declare, set aside or pay any dividend (whether payable in cash, stock or property) with respect to any shares of its capital stock (except with respect to shares of the capital stock of a Ligand subsidiary that is directly or indirectly wholly owned by Ligand);

change any of its methods of accounting or accounting practices in any material respect, other than changes required by GAAP or legal requirements;

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

adopt a plan of complete or partial liquidation or dissolution;

make any material tax election (except for elections made in the ordinary course of business);

take any action that is intended or would reasonably be expected to result in any of the conditions to the merger not being satisfied;
or

authorize or enter into any agreement or otherwise make any commitment to do any of the foregoing.

Table of Contents

Covenants

Covenants of Neurogen

Under the terms of the merger agreement, Neurogen has agreed that it will, among other things, and subject to specified exceptions:

use commercially reasonable efforts to consummate the sale of the Aplindore program and the real estate owned by it before the effective time of the merger, on such terms and conditions as determined in Neurogen's sole discretion;

before the effective time of the merger, repay in full the amounts outstanding under the construction loan made by Connecticut Innovations, Inc. on or around October 1999 and any and all loans secured by Neurogen's real estate, and discharge all other obligations of Neurogen or any Neurogen subsidiary thereunder, if any, and obtain full releases of any property of Neurogen or any Neurogen subsidiary pledged as collateral thereunder;

pay to Wyeth the \$250,000 fee required under the Aplindore license agreement with Wyeth for 2009 at the time such payment is due unless Neurogen shall have timely terminated the license under such license agreement;

use reasonable best efforts to enter into agreements with the holders of the outstanding Neurogen warrants to terminate and cancel all such warrants, effective immediately before the effective time of the merger, without any payment or liability on the part of Neurogen;

give prompt notice to Ligand of any demands received by Neurogen for appraisal of share of Neurogen common stock, withdrawals of such demands and any other instruments served pursuant to the Delaware General Corporation Law received by Neurogen;

before the effective time of the merger, take all such steps as may be required to cause any dispositions of Neurogen common stock (including derivative securities with respect to Neurogen common stock) resulting from the merger by each individual who is subject to the reporting requirements of Section 16(a) of the Exchange Act with respect to Neurogen to be exempt under Rule 16b-3 promulgated under the Exchange Act;

promptly inform Ligand if any event or circumstance relating to Neurogen or any Neurogen subsidiary, or their respective officers or directors, should be discovered by Neurogen which should be set forth in an amendment or a supplement to the registration statement or the proxy statement;

provide the Chief Executive Officer of Neurogen with a notice of termination (as an employee) immediately before the effective time of the merger, with such termination to be effective 30 days thereafter;

if and to the extent so requested by Ligand, as of immediately before the effective time of the merger terminate (and/or provide written notice of termination in accordance with any employment or consulting agreement requiring advance notice of termination of) the service relationship with Neurogen and the Neurogen subsidiaries of all employees, consultants and directors of Neurogen and the Neurogen subsidiaries and take all customary ancillary actions in connection with such termination (including giving them written notice of such termination);

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

if so requested by Ligand in writing, before the effective time of the merger, amend Neurogen's 401(k) plan to require, in the event of plan termination, in-kind distribution of any CVRs in a participant's account, and take all customary ancillary actions in connection with such amendment, and whether or not such amendment shall have been requested, Neurogen shall as of immediately before the effective time of the merger terminate its 401(k) plan and take all customary ancillary actions in connection with such termination; and

if so requested by Ligand, request the consent of the counterparty to any Neurogen agreement to the consummation by Neurogen of the merger.

Table of Contents

Covenants of Ligand

Under the terms of the merger agreement, Ligand has agreed that it will, among other things, and subject to specified exceptions:

take all or any action required under any applicable federal or state securities laws in connection with the issuance of shares of Ligand common stock in the merger;

promptly inform Neurogen if any event or circumstance relating to Ligand or any Ligand subsidiary, or their respective officers or directors, should be discovered by Ligand which should be set forth in an amendment or a supplement to the registration statement or the proxy statement;

promptly prepare and submit to Nasdaq a listing application covering the shares of Ligand common stock to be issued in the merger and shall use its reasonable best efforts to cause such shares to be approved for listing on Nasdaq, subject to official notice of issuance, before the effective time of the merger;

If the Aplindore program is not terminated or sold by Neurogen before the effective time of the merger or all of Neurogen's real estate is not sold by Neurogen before the effective time of the merger, Ligand shall engage in the efforts (in good faith and with commercial reasonableness) to sell each of the Aplindore program and the real estate in accordance with the Aplindore CVR agreement and the real estate CVR agreement, respectively, and in furtherance of such obligations, before the effective time, use commercially reasonable efforts to negotiate and agree to terms with as many of Stephen Davis, Thomas Pitler, Kenneth Sprenger and George Maynard as possible to engage them as consultants for the purpose;

honor the terms of the employment agreements and the severance plan listed on the Neurogen disclosure letter; and

honor in accordance with their terms the obligations of Neurogen to provide continued medical and dental coverage to employees under the terms of the employment agreements and the severance plan listed on the Neurogen disclosure letter, and as and to the extent required by applicable law, continue to provide COBRA continuation coverage to former employees of Neurogen.

Covenants of Ligand and Neurogen

Under the terms of the merger agreement, Ligand and Neurogen have agreed that they will, among other things, and subject to specified exceptions:

as promptly as practicable after the execution of the merger agreement prepare and file with the SEC a registration statement in connection with the issuance of the shares of Ligand common stock in the merger and a proxy statement to solicit adoption of the merger agreement by the stockholders of Neurogen, and use all reasonable efforts to have the registration statement declared effective under the Securities Act as promptly as practicable after such filing;

promptly make and effect all registrations, filings and submissions required to be made or effected by it pursuant to the Exchange Act and other applicable legal requirements with respect to the transactions contemplated by the merger agreement and use its reasonable best efforts to cause to be taken, on a timely basis, all other actions necessary or appropriate for the purpose of consummating and effectuating the transactions contemplated by the merger agreement;

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

give the other party prompt notice of the making or commencement of any request, inquiry, investigation, action or legal proceeding by or before any governmental entity with respect to the transactions contemplated by the merger agreement, keep the other party informed as to the status of any such request, inquiry, investigation, action or legal proceeding and promptly inform the other party of any communication to or from any governmental entity regarding the transactions contemplated by the merger agreement;

Table of Contents

consult and cooperate with the other party and consider in good faith the views of the other party in connection with any analysis, appearance, presentation, memorandum, brief, argument, opinion or proposal made or submitted in connection with any request, inquiry, investigation, action or legal proceeding by or before any governmental entity with respect to the transactions contemplated by the merger agreement and except as may be prohibited by any governmental entity or by any legal requirement, in connection with any such request, inquiry, investigation, action or legal proceeding, each party hereto will permit authorized representatives of the other party to be present at each meeting or conference relating to such request, inquiry, investigation, action or legal proceeding and to have access to and be consulted in connection with any document, opinion or proposal made or submitted to any governmental entity in connection with such request, inquiry, investigation, action or legal proceeding;

use its reasonable best efforts to resolve such governmental-entity objections, if any, as may be asserted with respect to the transactions contemplated by the merger agreement;

use its reasonable best efforts to avoid the entry of, or to have vacated or terminated, any decree, order or judgment that would restrain, prevent or delay the consummation of the transactions contemplated by the merger agreement, including by defending through litigation on the merits any claim asserted in any court;

upon reasonable advance written notice, afford the other party and its representatives reasonable access, during normal business hours throughout the period before the effective time of the merger, to its books and records and, during such period, shall, and shall cause its subsidiaries to, furnish promptly to the other party all readily available information concerning its business as such other party may reasonably request;

consult with each other and give due consideration to any reasonable additions, deletions or changes suggested by the other party and its counsel before issuing any press releases or otherwise making public statements with respect to the transactions contemplated by the merger agreement and before making any filings with any governmental entity with respect to the transactions contemplated by the merger agreement;

not report the merger as, a tax-free reorganization within the meaning of Section 368 of the Code; and

use its reasonable best efforts to cause the conditions to the other party's obligations to effect the merger and the other transactions contemplated by the merger agreement to be satisfied.

Indemnification; Directors and Officers Insurance

For a period of six years following the effective time of the merger, Ligand will cause the surviving entity and its subsidiaries to fulfill and honor the obligations of Neurogen and its subsidiaries pursuant to each indemnification agreement in effect on the date of the merger agreement between Neurogen or any of its subsidiaries and each present or former director and officer of Neurogen and any indemnification provision and any exculpation provision in favor of each present or former director and officer of Neurogen that is set forth in the certificate of incorporation or bylaws of Neurogen and the equivalent organizational documents of any Neurogen subsidiary in effect as of the date of the merger agreement. The certificate of incorporation and bylaws of the surviving entity shall contain the provisions with respect to indemnification and exculpation from liability set forth in Neurogen's certificate of incorporation and bylaws on the date of the merger agreement, and, from and after the effective time of the merger, such provisions shall not be amended, repealed or otherwise modified in any manner that could adversely affect the rights thereunder of any individual who is or was an officer or director of Neurogen at any time on or before the effective time of the merger.

Ligand will indemnify and hold harmless the present and former directors and officers of Neurogen against all liabilities arising out of the actions or omissions of such person's service, including the advancement of certain expenses, for a period of six years following the effective time of the merger or for claims for which a written notice asserting such claim for indemnification before the sixth anniversary of the effective time until such time as such claim is fully and finally resolved.

Table of Contents

In addition, for a period of six years following the effective time of the merger, Ligand will cause the surviving entity to maintain in effect the current level and similar scope of directors' and officers' liability insurance coverage, provided that the surviving entity shall not be obligated to expend in any one year an amount in excess of 100% of the annual premium currently payable by Neurogen.

Limitation on Neurogen's Ability to Consider Other Acquisition Proposals

Neurogen has agreed that it shall not, that it shall cause all of its subsidiaries not to and shall use its reasonable best efforts to cause Neurogen's and such subsidiaries' directors, officers, employees, investment bankers, attorneys and other agents or representatives, subject to specified exceptions, directly or indirectly, not to:

solicit, initiate, knowingly encourage or knowingly induce the making, submission or announcement of an acquisition proposal;

furnish any non-public information relating to Neurogen in response to or in connection with an acquisition proposal;

participate or engage in discussions or negotiations with respect to an acquisition proposal; or

approve, endorse or recommend to the stockholders of Neurogen any acquisition proposal.

The foregoing restrictions do not prohibit Neurogen from engaging or participating in discussions or negotiations with any person that has made an acquisition proposal that the Neurogen board of directors determines in good faith constitutes or is reasonably likely to lead to a superior proposal, and in connection therewith furnishing to such party any non-public information relating to Neurogen and its subsidiaries pursuant to a confidentiality agreement, provided that the Neurogen board of directors shall first have determined in good faith that the failure to take such action is inconsistent with its fiduciary obligations to the stockholders of Neurogen and contemporaneously with furnishing any nonpublic information to such party, Neurogen furnishes such nonpublic information to Ligand.

Under the terms of the merger agreement, Neurogen has agreed to immediately cease and cause to be terminated any active discussions with any party (other than Ligand) that relate to any acquisition proposal.

Also, under the terms of the merger agreement, unless the Neurogen board of directors shall first have determined in good faith that the failure to take the following actions is inconsistent with its fiduciary obligations to the stockholders of Neurogen, Neurogen shall not release or permit the release of any party from, or waive or permit the waiver of any provision of, any confidentiality, standstill or similar agreement to which Neurogen is a party or under which Neurogen has any rights.

For purposes of the merger agreement, the term "acquisition proposal" means any unsolicited, bona fide offer or proposal (other than an offer or proposal made or submitted by Ligand or Merger Sub) relating to a possible transaction or series of related transactions (other than the transactions contemplated by the merger agreement) involving or resulting in: (i) any acquisition or purchase by any person or group (as defined in or under Section 13(d) of the Exchange Act), directly or indirectly, of more than 20% of the total outstanding voting securities of Neurogen, or any tender offer or exchange offer that, if consummated, would result in the person or group (as defined in or under Section 13(d) of the Exchange Act) making such offer beneficially owning more than 20% of the total outstanding voting securities of Neurogen, (ii) any merger, consolidation, share exchange, business combination, acquisition of securities, recapitalization, tender offer, exchange offer or other similar transaction involving Neurogen pursuant to which the stockholders of Neurogen immediately before the consummation of such transaction would hold less than 80% of the equity interests in the surviving or resulting entity of such transaction immediately after consummation thereof, or (iii) any sale, lease, exchange, transfer, license, acquisition or disposition of assets (other than the Aplindore program and/or the Neurogen real estate) constituting more than 20% of the assets of Neurogen (measured by either book or fair market value thereof) or the net revenues or net income of Neurogen and its subsidiaries taken as a whole.

Table of Contents

For purposes of the merger agreement, the term **acquisition transaction** means any transaction or series of related transactions (other than the transactions contemplated by the merger agreement) involving or resulting in: (i) any acquisition or purchase by any person or group (as defined in or under Section 13(d) of the Exchange Act), directly or indirectly, of more than 20% of the total outstanding voting securities of Neurogen, or any tender offer or exchange offer that, if consummated, would result in the person or group (as defined in or under Section 13(d) of the Exchange Act) making such offer beneficially owning more than 20% of the total outstanding voting securities of Neurogen; (ii) any merger, consolidation, share exchange, business combination, acquisition of securities, recapitalization, tender offer, exchange offer or other similar transaction involving Neurogen pursuant to which the stockholders of Neurogen immediately before the consummation of such transaction would hold less than 80% of the equity interests in the surviving or resulting entity of such transaction immediately after consummation thereof; or (iii) any sale, lease, exchange, transfer, license, acquisition or disposition of assets (other than the Aplindore program and/or the Neurogen real estate) constituting more than 20% of the assets of Neurogen (measured by either book or fair market value thereof) or the net revenues or net income of Neurogen and its subsidiaries taken as a whole.

For purposes of the merger agreement, the term **superior proposal** means any unsolicited, bona fide written offer made by a third party unaffiliated with Neurogen to directly or indirectly acquire (by way of merger, tender or exchange offer or otherwise) greater than 95% of Neurogen's assets (other than any such offer relating only to the Aplindore program and/or the Neurogen real estate and/or the proceeds of the pre-closing date sale thereof) or greater than 95% of the outstanding Neurogen common stock (other than Neurogen common stock already held by such third party) that the Neurogen board of directors shall have determined in good faith (after consultation with Neurogen's outside legal counsel and financial advisor, and after taking into account, among other things, the financial, legal and regulatory aspects of such offer (including any financing required and the availability thereof), as well as any revisions to the terms of the merger agreement proposed by Ligand, is more favorable to the stockholders of Neurogen than the terms of the merger (taking into account any revisions to the terms of the merger agreement proposed by Ligand) and is reasonably capable of being consummated on the terms proposed.

Obligations of the Neurogen Board of Directors with Respect to its Recommendation and Holding a Meeting of Stockholders

Neurogen agreed to duly set a record date for, call and establish a date for, and give notice of, a special meeting (with the record date and meeting date each set for a date as soon as reasonably practicable and in consultation with Ligand), and convene and hold the special meeting as soon as reasonably practicable after the date on which the registration statement becomes effective. This is the same special meeting to which this proxy statement/prospectus relates.

Under the terms of the merger agreement, Neurogen has also agreed that its board of directors will recommend that Neurogen stockholders vote to adopt the merger agreement. However, at any time before the approval of the Neurogen stockholders to adopt the merger agreement, Neurogen's board of directors is entitled to withdraw or modify its recommendation that Neurogen stockholders vote to adopt the merger agreement if certain requirements, including either of the following, are satisfied:

- (i) An acquisition proposal that constitutes a superior proposal has been made and not withdrawn, (ii) Neurogen's board of directors determines in good faith that the failure to effect a change in recommendation in light of such superior proposal is inconsistent with its fiduciary obligations to the Neurogen stockholders under applicable law, (iii) Neurogen shall have given Ligand at least five days prior written notice advising Ligand that Neurogen's board of directors has received a superior proposal, specifying the material terms and conditions of such superior proposal, including a copy of such superior proposal and identifying the party making such superior proposal and stating that it intends to modify or withdraw its recommendation that Neurogen stockholders adopt the merger agreement, (iv) during the five day period following Ligand's receipt of a notice of recommendation

Table of Contents

change, Neurogen shall have given Ligand the opportunity to meet with Neurogen, and at Ligand's request, shall have negotiated in good faith regarding the terms of possible revisions to the terms of the merger agreement and (v) Ligand shall not, within five days following Ligand's receipt of a notice of recommendation change, have made an offer that the Neurogen board of directors determines in good faith (after consultation with its outside legal counsel and financial advisor) to be at least as favorable to the stockholders of Neurogen as such superior proposal; or

other than in connection with a superior proposal, (i) the Neurogen board of directors determines in good faith that the failure to effect a change in recommendation is inconsistent with its fiduciary obligations to the stockholders of Neurogen under applicable law, (ii) at least five days before such change in recommendation, Neurogen shall have provided to Ligand a notice of its intention to make such change in recommendation, specifying in reasonable detail the circumstances for such proposed change in recommendation, and (iii) during the five day period following Ligand's receipt of a notice of recommendation change, Neurogen shall have given Ligand the opportunity to meet with Neurogen, and at Ligand's request, shall have negotiated in good faith regarding the terms of possible revisions to the terms of the merger agreement.

Under the terms of the merger agreement, Neurogen's obligation to call, give notice of, convene and hold the special meeting of Neurogen stockholders will not be limited or otherwise affected by the commencement, disclosure, announcement or submission to Neurogen of an acquisition proposal or by any withdrawal or modification of the recommendation by Neurogen's board of directors that Neurogen stockholders vote to adopt the merger agreement. Neurogen is also not permitted to submit to the vote of its stockholders any acquisition proposal unless the merger agreement has been terminated by Neurogen in accordance with its terms. See Termination of the Merger Agreement.

The merger agreement provides that, if Ligand terminates the merger agreement because Neurogen's board of directors withdraws or modifies its recommendation that Neurogen stockholders vote to adopt the merger agreement, Neurogen will be required to pay Ligand the termination fee. See Termination Fee.

Conditions to the Merger

Conditions to the Obligations of Each Party

The merger agreement provides that the obligations of Ligand, Merger Sub and Neurogen to effect the merger and the other transactions contemplated by the merger agreement are subject to the satisfaction, at or before the effective time of the merger, of the following conditions, in addition to the additional conditions applicable to each of the parties set forth below:

the registration statement on Form S-4 shall have been declared effective by the SEC, and shall not be subject to a stop order or any proceeding initiated or threatened by the SEC for that purpose;

the merger agreement shall have been adopted by Neurogen's stockholders;

no temporary, preliminary or permanent order or injunction shall have been issued by a court of competent jurisdiction and shall be continuing that prohibits the consummation of the merger, and no law, statute, code, ordinance, regulation, code, order, judgment, writ, injunction, decision, ruling or decree promulgated by any governmental entity that prevents or prohibits consummation of the merger shall have been enacted since the date of the merger agreement and shall remain in effect; and

the shares of Ligand common stock issuable pursuant to the merger shall have been approved for listing on Nasdaq, subject only to official notice of issuance.

Table of Contents

Additional Conditions to the Obligations of Ligand and Merger Sub

The merger agreement provides that the obligations of Ligand and Merger Sub to consummate and effect the merger and the other transactions contemplated by the merger agreement are subject to the satisfaction of the following conditions:

each of the representations and warranties of Neurogen set forth in the merger agreement (without giving effect to any material adverse effect or other materiality qualifications contained in such representations and warranties) shall be true and correct as of the effective time of the merger as though made on and as of the effective time (except that those representations and warranties which address matters only as of a particular date need only be true and correct as of such date), except for such inaccuracies, individually or in the aggregate (and subject to exceptions defined in the merger agreement), that would not reasonably be expected to have a material adverse effect on Neurogen;

the covenants of Neurogen contained in the merger agreement that are required to have been performed by Neurogen before the effective time of the merger shall have been performed in all material respects;

since the date of the merger agreement, there shall not have occurred and be continuing any event or development which, individually or in the aggregate (and subject to exceptions defined in the merger agreement), has had or would reasonably be expected to have a material adverse effect on Neurogen;

no more than 6,800,000 shares of Neurogen common stock shall have demanded or be eligible to demand appraisal pursuant to Section 262 of the Delaware General Corporation Law;

Neurogen shall have delivered to Ligand the resignations of each director and officer of Neurogen and each Neurogen subsidiary, as such, each effective as of the effective time of the merger; and

Ligand shall have received from Neurogen (i) a properly executed statement dated as of the closing date, that Neurogen is not, and has not been at any time during the applicable period, a United States real property holding corporation, as defined in Section 897(c)(2) of the Code, and (ii) proof reasonably satisfactory to Ligand that Neurogen has provided notice of such certification to the Internal Revenue Service.

Additional Conditions to the Obligations of Neurogen

The merger agreement provides that the obligations of Neurogen to consummate and effect the merger and the other transactions contemplated by the merger agreement are subject to the satisfaction of the following conditions:

each of the representations and warranties of Ligand and Merger Sub set forth in the merger agreement (without giving effect to any material adverse effect or other materiality qualifications contained in such representations and warranties) shall be true and correct as of the effective time of the merger as though made on and as of the effective time (except that those representations and warranties which address matters only as of a particular date need only be true and correct as of such date), except for such inaccuracies, individually or in the aggregate (and subject to exceptions defined in the merger agreement), that would not reasonably be expected to have a material adverse effect on Ligand;

the covenants of Neurogen contained in the merger agreement that are required to have been performed by Ligand and Merger Sub before the effective time of the merger shall have been performed in all material respects; and

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

since the date of the merger agreement, there shall not have occurred and be continuing any event or development which, individually or in the aggregate (and subject to exceptions defined in the merger agreement), has had or would reasonably be expected to have a material adverse effect on Ligand.

As used with respect to Neurogen in the merger agreement, material adverse effect means any fact, circumstance, event, change or occurrence that, individually or in the aggregate with all other facts,

Table of Contents

circumstances, events, changes or occurrences, has or would reasonably be expected to have a material adverse effect on the results of operations or financial condition of Neurogen and its subsidiaries, taken as a whole, other than changes, subject to certain exceptions, events, occurrences or effects arising out of, resulting from or attributable to:

changes in conditions in the United States or global economy or capital or financial markets generally, including changes in interest or exchange rates;

conditions (or changes therein) in any industry or industries in which Neurogen and its subsidiaries operate;

any change in law or GAAP or interpretation of any law or GAAP;

the negotiation, execution, announcement or performance of the merger agreement or the consummation of the merger, including the impact thereof on relationships, contractual or otherwise, with customers, suppliers, distributors, partners, collaborators or employees;

acts of war, sabotage or terrorism, or any escalation or worsening of any such acts of war, sabotage or terrorism threatened or underway as of the date of the merger agreement;

storms, earthquakes or other natural disasters;

any action taken by Neurogen or any Neurogen subsidiary as contemplated or permitted by the merger agreement or with Ligand's consent;

the initiation of any litigation by any stockholder of Neurogen relating to the merger agreement or the merger;

any decline in the market price, or change in trading volume, of the capital stock of Neurogen or any failure of Neurogen to meet revenue or earnings projections, either published by Neurogen or any third party (provided that this exception shall not prevent or otherwise affect a determination that any changes, state of facts, circumstances, events or effects underlying such a change has resulted in, or contributed to, a material adverse effect on Neurogen);

any adverse changes, developments, circumstances, events or occurrences relating to Neurogen's ongoing research programs to the extent resulting from an action by Ligand or any of its affiliates;

the determination by, or the delay of a determination by, the FDA, or any panel or advisory body empowered or appointed thereby, with respect to the approval, non-approval or disapproval of any products similar to or competitive with Neurogen's product candidates;

the results of any clinical trial of one or more products or product candidates of any person other than Neurogen;

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

the entry or threatened entry into the market of a generic version of one or more product candidates of Neurogen; or

the sale of the Aplindore program or Neurogen's real estate in accordance with the merger agreement, regardless of the price obtained therefor.

As used with respect to Ligand in the merger agreement, "material adverse effect" means any fact, circumstance, event, change or occurrence that, individually or in the aggregate with all other facts, circumstances, events, changes or occurrences, has or would reasonably be expected to have a material adverse effect on the results of operations or financial condition of Ligand and its subsidiaries, taken as a whole, other than changes, subject to certain exceptions, events, occurrences or effects arising out of, resulting from or attributable to:

changes in conditions in the United States or global economy or capital or financial markets generally, including changes in interest or exchange rates;

conditions (or changes therein) in any industry or industries in which Ligand and its subsidiaries operate;

Table of Contents

any change in law or GAAP or interpretation of any law or GAAP;

acts of war, sabotage or terrorism, or any escalation or worsening of any such acts of war, sabotage or terrorism threatened or underway as of the date of the merger agreement;

storms, earthquakes or other natural disasters;

the initiation of any litigation by any stockholder of Ligand relating to the merger agreement or the merger;

any decline in the market price, or change in trading volume, of the capital stock of Ligand or any failure of Ligand to meet revenue or earnings projections, either published by Ligand or any third party (provided that this exception shall not prevent or otherwise affect a determination that any changes, state of facts, circumstances, events or effects underlying such a change has resulted in, or contributed to, a material adverse effect on Ligand);

the negotiation, execution, announcement or performance of the merger agreement or the consummation of the transactions contemplated thereby, including the impact thereof on relationships, contractual or otherwise, with customers, suppliers, distributors, partners, collaborators or employees;

any action taken by Ligand or any of its subsidiaries as contemplated or permitted by the merger agreement or with Neurogen's consent;

the determination by, or the delay of a determination by, the FDA, or any panel or advisory body empowered or appointed thereby, with respect to the approval, non-approval or disapproval of any products similar to or competitive with Ligand's product candidates;

the results of any clinical trial of one or more products or product candidates of any party other than Ligand; or

the entry or threatened entry into the market of a generic version of one or more product candidates of Ligand.

Termination of the Merger Agreement

The merger agreement may be terminated and the merger may be abandoned (before or after the obtaining of the Neurogen stockholder approval) by mutual written consent of Neurogen and Ligand. In addition, either Neurogen or Ligand may terminate the merger agreement if:

the Neurogen stockholder approval shall not have been obtained by reason of the failure to obtain the required vote at the special meeting or at any adjournment thereof;

the effective time of the merger shall not have occurred by December 24, 2009, or the outside date, provided that the right to so terminate the merger agreement shall not be available to any party where the failure of such party or any affiliate or representative of such party to fulfill any obligation under the merger agreement or any voting agreement has resulted in the failure of the effective time to have occurred on or before the outside date;

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

there shall be any final, permanent law, statute, code, ordinance, regulation, code, order, judgment, writ, injunction, decision, ruling or decree promulgated by any governmental entity that is in effect and that prevents or prohibits consummation of the merger; provided, however, that a party shall not be permitted to so terminate the merger agreement if the existence of the legal prohibition is attributable to the failure of such party to perform in any material respect any covenant in the merger agreement required to be performed by such party at or before the effective time of the merger, and provided, further, that the party seeking to terminate the agreement shall have used its reasonable best efforts to prevent such legal prohibition and to cause any such legal prohibition to be vacated or otherwise rendered of no effect;

Table of Contents

In addition, the merger agreement provides that Ligand may terminate the merger agreement:

if the Neurogen board of directors makes a change in its recommendation that Neurogen stockholders vote in favor of adoption of the merger agreement, provided such termination occurs within five business days thereof; or

if: (i) the representations and warranties of Neurogen set forth in the merger agreement shall not be true and correct on and as of the date of such determination as if made on such date (other than those representations and warranties that address matters only as of a particular date, which shall be true and correct as of such date), except where the failure of any such representation or warranty to be true and correct (without giving effect to any material adverse effect on Neurogen or other materiality qualifications set forth therein) would not, individually or in the aggregate, reasonably be expected to have a material adverse effect on Neurogen or impair in any material respect the ability of Neurogen to perform its obligations under the merger agreement or (ii) Neurogen shall have, in any material respect, breached or failed to perform or comply with any obligation, agreement or covenant required by the merger agreement to be performed or complied with by it; and such breach or failure is not cured, or is incapable of being cured, on or before the outside date.

In addition, the merger agreement provides that Neurogen may terminate the merger agreement:

if the Neurogen board of directors authorizes Neurogen, subject to complying with the terms of the merger agreement, to accept (or to enter into a written agreement for a transaction constituting) a superior proposal; provided that immediately before (or contemporaneous with) such termination of the merger agreement, Neurogen shall pay to Ligand the termination fee payable pursuant to the merger agreement;

if: (i) the representations and warranties of Ligand or Merger Sub set forth in the merger agreement shall not be true and correct on and as of the date of such determination as if made on such date (other than those representations and warranties that address matters only as of a particular date, which shall be true and correct as of such date), except where the failure of any such representation or warranty to be true and correct (without giving effect to any material adverse effect on Ligand or other materiality qualifications set forth therein) would not, individually or in the aggregate, reasonably be expected to have a material adverse effect or impair in any material respect the ability of Ligand or Merger Sub to perform their obligations under the merger agreement; or (ii) Ligand or Merger Sub shall have, in any material respect, breached or failed to perform or comply with any obligation, agreement or covenant required by the merger agreement to be performed or complied with by them it; and such breach or failure is not cured, or is incapable of being cured, on or before the outside date; or

at any time at least three business days before the erstwhile closing date if the result that would be obtained by multiplying (A) the sum of (x) the total number of shares of Ligand common stock issuable pursuant to the merger agreement, after giving effect to the application of the 4.2 million maximum amount of shares and assuming that there are no dissenting shares, plus (y) the aggregated fractional shares, by (B) the volume weighted average price of Ligand common stock on the trading day immediately preceding the third trading day preceding the special meeting is less than \$11 million, as adjusted based on Neurogen's actual net cash amount, unless on the business day next following the day on which Ligand receives actual notice in writing from Neurogen of termination, Ligand agrees to irrevocably waive in full the application of the 4.2 million maximum share amount, in which case the termination shall be nullified.

If the merger agreement is terminated, then it will be of no further effect; provided however that the following shall survive such termination: (i) certain confidentiality obligations, (ii) liabilities relating to payment of the termination fee, if applicable, (iii) the requirement that each party bear its own expenses, and (iv) liabilities or damages incurred or suffered by a party as a result of fraud or the willful and material breach by the other party of any of its representations, warranties or covenants set forth in the merger agreement.

Table of Contents

Termination Fee

Neurogen has agreed pay a \$475,000 termination fee to Ligand if the Neurogen board of directors authorizes Neurogen to accept (or to enter into a written agreement for a transaction constituting) a superior proposal.

Neurogen has also agreed to pay a \$475,000 termination fee to Ligand if:

(i) Ligand or Neurogen terminates the merger agreement as a result of the Neurogen stockholder approval shall not have been obtained by reason of the failure to obtain the required vote at the special meeting or at any adjournment thereof, (ii) Ligand or Neurogen terminates the merger agreement as a result of the merger not being consummated by December 24, 2009 outside date or (iii) Ligand terminates the merger agreement as a result of a breach by Neurogen of its representations and warranties, which would reasonably be expected to have a material adverse effect or a material breach by Neurogen of its obligations, agreements or covenants contained in the merger agreement;

neither Ligand nor Merger Sub shall have materially breached any of its representations, warranties or covenants contained in the merger agreement; and

at or before the time of any such termination of the merger agreement an acquisition proposal shall have been made (and such acquisition proposal shall not have been withdrawn before the time of the termination of the merger agreement) and within twelve (12) months after the date of termination of the merger agreement, Neurogen or any Neurogen subsidiary consummates an acquisition transaction or enters into an agreement to consummate an acquisition transaction that is subsequently consummated, provided, however if the acquisition transaction is for less than 50% of the assets, voting securities or equity interests of Neurogen, the termination fee shall be \$362,500.

Neurogen has agreed to pay a \$225,000 termination fee to Ligand if Neurogen terminates the merger agreement because the value of the stock consideration to be received by Neurogen stockholders in the merger is less than \$11 million, as adjusted, and Ligand does not nullify the termination by waiving the 4.2 million share amount maximum.

Fees and Expenses

The merger agreement provides that, whether or not the merger is consummated, each party shall pay its own expenses incident to preparing for, entering into and carrying out the merger agreement and the transactions contemplated thereby. Nothing contained in the merger agreement shall be deemed to limit the right or ability of any party to the merger agreement to pay such expenses, as and when due and payable.

Amendment

The merger agreement may be amended by the parties thereto at any time before the effective time of merger provided that after the adoption of the merger agreement by Neurogen's stockholders, no amendment shall be made which by law or in accordance with the rules of any relevant stock exchange requires further approval by the stockholders of Neurogen, without such further stockholder approval.

CVR Agreements

In connection with the closing of the merger, Ligand, Neurogen and a rights agent to be determined will enter into separate contingent value rights agreements relating to (i) Neurogen's Aplindore program, substantially in the form of the contingent value rights agreement included in this proxy statement/prospectus as *Annex B*, (ii) Neurogen's H3 antagonist program, substantially in the form of the contingent value rights agreement included in this proxy statement/prospectus as *Annex C*, (iii) Neurogen's vanilloid receptor subtype 1, or VR1, program, substantially in the form of the contingent value rights agreement included in this proxy statement/prospectus as *Annex D* and (iv) Neurogen's real properties, substantially in the form of the contingent value rights agreement included in this proxy statement/prospectus as *Annex E*. *Annex B*, *Annex C*, *Annex D* and *Annex E* are each incorporated by reference into this proxy statement/prospectus. The following summary

Table of Contents

describes the material provisions of the contingent value rights agreements. This summary may not contain all of the information about the contingent value rights agreements that is important to you. You are encouraged to read the forms of contingent value rights agreements carefully in their entirety because when entered into among Ligand, Neurogen and the rights agent, these documents will be the legal documents governing the contingent value rights to be issued to former Neurogen securityholders in connection with the merger. Although the definitive version of the contingent value rights agreements negotiated and entered into with the chosen rights agent is not expected to differ from the form of contingent value rights agreements included with this proxy statement/prospectus in any respect that would be material to holders of contingent value rights, there can be no assurance that any changes will not, in fact, be material to holders.

At the closing of the merger, Ligand, Neurogen and a rights agent, will enter into the contingent value rights, or CVR, agreements, the forms of which are attached as *Annex B*, *Annex C*, *Annex D* and *Annex E* to this proxy statement/prospectus. The CVR agreements set forth the rights that former Neurogen securityholders will have with respect to each CVR to be held by them after the closing of the merger. The CVRs provide each holder the right to receive a proportionate share of:

(i) if the Aplindore program is sold before the six month anniversary of the merger, a pro-rata share of the cash and/or number of shares of third-party stock received by Ligand from the buyer of the Aplindore program less the costs and expenses of sale, plus any amount remaining in an operating expense reserve account, or (ii) if the Aplindore program is not sold before the six month anniversary of the merger, any amount remaining in the operating expense reserve account;

(i) \$4 million in cash if Ligand licenses the Neurogen antagonist program intended to create an H3 receptor drug on or before the third anniversary of the merger, (ii) 50% of the net cash proceeds from a sale of such program if Ligand sells the program before the third anniversary of the merger or (iii) 50% of the net proceeds if an option agreement to either license or sell the H3 antagonist program is entered into, in each case before the third anniversary of the merger. If any such option to license is exercised, each holder would also receive a proportionate share of an additional amount up to \$4 million (taking into account the option proceeds previously received by the CVR holders) or if any such option to sell is exercised, each holder would also receive a proportionate share of 50% of the net sale proceeds;

\$3 million if a milestone payment from Merck is received upon the initiation of a Phase 3 clinical trial of a VR1 antagonist drug for the treatment of pain, or 50% of the net proceeds if such program is sold back to Merck before the milestone payment is made; and

the cash paid by any buyer of the real estate currently owned by Neurogen and received by Ligand on or before the six month anniversary of the merger, less any costs and expenses reasonably incurred by Ligand in connection with such sale.

CVRs Non-transferable

The CVRs are designed not to be marketable. They may not be sold, assigned, transferred, pledged, encumbered or in any other manner transferred or disposed of, in whole or in part, other than through a permitted transfer and, in the case of a permitted transfer, only in accordance with the provisions of the CVR agreements regarding procedures for transfer and in compliance with applicable United States federal and state securities laws. For purposes of the CVR agreements, a permitted transfer means:

transfers of any or all of the CVRs on death by will or intestacy;

transfers by instrument to an inter vivos or testamentary trust in which the CVRs are to be passed to beneficiaries upon the death of the trustee;

transfers made pursuant to a court order of a court of competent jurisdiction (such as in connection with divorce, bankruptcy or liquidation);

if the holder is a partnership or limited liability company, a distribution by the transferring partnership or limited liability company to its partners or members, as applicable;

Table of Contents

transfers made by operation of law (such as a merger or consolidation), or in connection with the dissolution, liquidation or termination of any corporation, limited liability company, partnership or other entity;

transfers from a participant account in tax-qualified employee benefit plans to such participant or to such participant's account in a different tax-qualified employee benefit plan or to a tax-qualified individual retirement account for the benefit of such participant; or

transfers from a participant in a tax-qualified employee benefit plan, who received the CVRs from such participant's account in such tax-qualified employee benefit plan, to such participant's account in a different tax-qualified employee benefit plan or to a tax-qualified individual retirement account for the benefit of such participant.

Sole Discretion and Decision Making Authority

The CVR agreements provide:

in the case of the Aplindore CVR agreement, that Ligand shall attempt to sell the Aplindore program for the benefit of the holders of the Aplindore CVRs, but have sole discretion and decision making authority, which shall be exercised in good faith and with commercial reasonableness, over (a) any continued operation of, development of or investment in the Aplindore program and (b) when (if ever) to consummate the sale of all or any portion of the Aplindore program to any purchaser, and upon what terms and conditions; provided, however, that before the six month anniversary of the merger, Ligand shall not sell all or any portion of the Aplindore program for any consideration other than cash or shares of stock listed for trading on a U.S. national securities exchange;

in the case of the H3 CVR agreement, that Ligand shall have sole discretion and decision making authority, which shall be exercised in good faith, over any continued operation of, development of or investment in the H3 antagonist program and over when (if ever) and whether to pursue, or enter into, a licensing agreement and/or sale agreement and/or similar transfer agreement and/or agreement for the grant of an option to enter into any such transaction with respect to a drug candidate or technology or intellectual property from the H3 antagonist program, and upon what terms and conditions;

in the case of the Merck CVR agreement, that Ligand shall have sole discretion and decision making authority, which shall be exercised in good faith, over any continued operation of, development of or investment in the VR1 program, and over when (if ever) to consummate the sale, conveyance, relinquishment or other transfer of the VR1 program rights to Merck, and upon what terms and conditions; provided, however, that pursuant to the Merck CVR agreement, there are timing restrictions on Ligand's ability to (a) sell, convey or otherwise transfer the VR1 program rights to anyone other than Merck and (b) accept any consideration from Merck for the VR1 program rights other than cash to be paid in full within 90 days of the sale, conveyance, relinquishment or other transfer of the VR1 program rights (for avoidance of doubt: Merck will control the operations of the VR1 program and when, if ever, to initiate the VR1 Phase 3 trial; and Merck may not wish to buy the VR1 program, even if Ligand wishes to sell it); and

in the case of the real estate CVR agreement, that Ligand shall attempt to sell the real properties owned by Neurogen for the benefit of the holders of the real estate CVRs, but shall have sole discretion and decision making authority, which shall be exercised in good faith and with commercial reasonableness, over when (if ever) to consummate the sale of all, or any parcel of the real estate, to any purchaser, and upon what terms and conditions.

Achievement and Non-Achievement Certificates

The CVR agreements provide that the rights agent shall promptly deliver a copy of an achievement or non-achievement certificate (reflecting, respectively, satisfaction or non-satisfaction of the conditions to payment described above), as applicable, to each holder of CVRs after it is received by the rights agent. Upon receipt of a non-achievement certificate, any holder or holders of at least 20% in the aggregate of the outstanding CVRs may, within 45 days of receipt of the non-achievement certificate, require that the rights agent deliver a notice

Table of Contents

specifying that such holder or holders object to the non-achievement certificate. Such notice shall include a statement of the reason upon which such holder or holders have determined that the condition to payment was satisfied within the required time period.

If Ligand does not agree with any or all of the objections to the non-achievement certificate as stated in such notice, Ligand, the rights agent and any available holder or holders among those objecting shall negotiate in good faith for a period of 30 days to resolve the dispute. After expiration of the 30-day period, any remaining objections will be settled by binding arbitration pursuant to the terms of the applicable CVR agreement.

If Ligand delivers to the rights agent an achievement certificate (or if the CVR payment amount is otherwise determined to be payable pursuant to the arbitration provisions in the CVR agreement), Ligand shall establish a CVR payment date that is within 15 calendar days of the date of the achievement certificate (or the date of final determination pursuant to the arbitration provisions in the applicable CVR agreement). At least five business days before such CVR payment date, Ligand shall cause the CVR payment amount to be delivered to the rights agent, who will in turn, on such CVR payment date, distribute the CVR payment amount on a pro rata basis to the CVR holders.

Rights of CVR Holders

The rights of a CVR holder are limited to those expressed in the applicable CVR agreement. The CVRs will not entitle the holders thereof, by virtue of their ownership of CVRs, to any of the rights of a Ligand stockholder.

Amendment of CVR Agreements

Without the consent of the CVR holders or the rights agent, Ligand, at any time and from time to time, may enter into one or more amendments to the CVR agreements, for any of the following purposes:

to evidence the succession of another person to Ligand and the assumption by any successor of the covenants of Ligand in the applicable CVR agreement; or

to evidence the termination of the applicable CVR registrar and the succession of another person as a successor CVR registrar and the assumption by any successor of the obligations of the CVR registrar.

Without the consent of the CVR holders, Ligand and the rights agent, at any time and from time to time, may enter into one or more amendments to the CVR agreements, for any of the following purposes:

to evidence the succession of another person as a successor rights agent and the assumption by any successor of the covenants and obligations of the rights agent;

to add to the covenants of Ligand any further covenants, restrictions, conditions or provisions as Ligand and the rights agent considered to be for the protection of CVR holders; provided that in each case, the provisions do not adversely affect the rights of CVR holders;

to cure any ambiguity, to correct or supplement any provision in the applicable CVR agreement that may be defective or inconsistent with any other provision, or to make any other provisions with respect to matters or questions arising under the applicable CVR agreement; provided that in each case, the provisions do not adversely affect the rights of CVR holders; or

to add, eliminate or change any provision in the applicable CVR agreement unless such addition, elimination or change is adverse to the rights of CVR holders.

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

With the written consent of holders of not less than a majority of the CVRs then outstanding, Ligand may enter into one or more amendments to any or all of the CVR agreements for the purpose of adding, eliminating or changing any provision of the applicable CVR agreement, even if the addition, elimination or change is in any way adverse to the rights of CVR holders.

Table of Contents

Consolidation, Merger, Sale or Conveyance of Ligand

Under the terms of the CVR agreements, Ligand may not consolidate with or merge into any other person or convey, transfer or lease its properties and assets substantially as an entirety to any person, unless (i) such person expressly assumes payment of amounts on all the CVRs and the performance of every duty and covenant of the CVR agreements on the part of Ligand to be performed or observed and (ii) Ligand has delivered to the rights agent a certificate of one of its officers, stating that such consolidation, merger, conveyance, transfer or lease complies with the CVR agreements and that all conditions provided for relating to such transaction have been complied with.

Termination of CVR Agreements

The CVR agreements terminate upon the earliest to occur of (i)(A) in the case of the Aplindore CVR agreement, the payment of the last possible Aplindore CVR payment amount, (B) in the case of the H3 CVR agreement, the payment of the H3 CVR payment amount, (C) in the case of the Merck CVR agreement, the payment of the Merck CVR payment amount and (D) in the case of the real estate CVR agreement, the payment of the last possible real estate CVR payment amount, (ii) in the event that an objection notice regarding the non-achievement certificate pursuant to a CVR agreement is not delivered within the required 45-day period following the distribution of the rights agent to CVR holders of such non-achievement certificate, the expiration of such period or (iii) in the event of the delivery of an objection notice regarding the non-achievement certificate pursuant to a CVR agreement, either (i) the final determination in accordance with such CVR agreement that the condition to payment has not been satisfied or (ii) the fulfillment of any payment or other obligation required pursuant to a final determination made in accordance with such CVR agreement.

Treatment of Option and Warrant Holders

The holders of any outstanding options to purchase Neurogen common stock that are not cancelled before the effective time of the merger and the holders of any outstanding warrants to purchase Neurogen stock shall be entitled to receive consideration equivalent to the CVRs upon exercise of such options or warrants by the holder thereof and following the receipt by Ligand of the applicable exercise price thereof.

Voting Agreements

As an inducement to Ligand and as a condition to Ligand's entering into the merger agreement, each of Warburg Pincus Private Equity VIII, L.P., Stephen R. Davis, Julian Baker, Baker/Tisch Investments, L.P., Baker Bros. Investments, L.P., Baker Bros. Investments II, L.P., Baker Biotech Fund I, L.P., Baker Brothers Life Sciences, L.P. and FBB Associates, or collectively the stockholder parties, entered into voting agreements with Ligand, whereby the stockholder parties agreed to vote all of the shares of Neurogen common stock beneficially owned by them in favor of adoption of the merger agreement and approval of the merger and against any acquisition proposal or superior proposal. The stockholder parties also granted Ligand an irrevocable proxy to vote such shares in accordance with the preceding sentence. The voting agreements limit the ability of the stockholder parties to sell or otherwise transfer the shares of Neurogen common stock beneficially owned by them. As of September 29, 2009, the stockholder parties owned an aggregate of approximately 32.0% of the outstanding shares of Neurogen common stock. The voting agreements will terminate upon (i) mutual agreement, (ii) the effective time of the merger, (iii) the termination of the merger agreement in accordance with its terms or (iv) any amendment, modification or change (or waiver, which waiver is made at the request of, or with the consent of, Ligand) to the terms of the merger agreement or one or more of the CVR Agreements that is not consented to by a stockholder party and is or results in (w) any change (adverse-to-the-stockholder-party) in the exchange ratio as defined in the merger agreement, or (x) any change (adverse-to-the-stockholder-party) to the economic terms of the CVRs and the forms of CVR Agreements, or (y) any change to the merger agreement provisions governing the economic terms of any potential cash payment that may be paid to Neurogen's stockholders before the effective time of the merger, or (z) any change in the form of consideration payable pursuant to the merger agreement or the CVR agreements.

Table of Contents**SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS OF NEUROGEN**

The table below reflects the number of shares beneficially owned by (a) each director of Neurogen; (b) each executive officer of Neurogen; (c) all current directors and executive officers as a group; and (d) each person or group known to Neurogen to own more than 5% of the outstanding shares of Neurogen common stock. Unless otherwise noted the information is stated as of October 28, 2009 and the beneficial owners exercise sole voting and investment power over the shares. Shares of Neurogen common stock outstanding on October 28, 2009 were 69,038,691.

In addition, Ligand has beneficial ownership of 26,531,030 shares of Neurogen common stock, including 4,592,576 shares subject to options and warrants exercisable within 60 days, by virtue of its shared voting power arising from its voting agreements with Warburg Pincus Private Equity VIII, L.P., Julian Baker and entities affiliated with him, and Stephen R. Davis. For a description of the voting agreements, see Certain Terms of the Merger Agreement Voting Agreements beginning on page 95 of this proxy statement/prospectus. Those persons also have beneficial ownership of the same shares, as reflected in the table below.

Name and Address of Beneficial Owner	Shares Owned including Options Exercisable within 60 days of October 28, 2009	Right to Acquire Beneficial Ownership under Options Exercisable within 60 days of October 28, 2009	Percent of Common Stock owned
Warburg Pincus & Co. ⁽¹⁾ 466 Lexington Avenue New York, NY 10017	13,571,411		19.7
Andrew H. Tisch ⁽²⁾	947,108		1.4
Daniel R. Tisch ⁽²⁾	947,108		1.4
James S. Tisch ⁽²⁾	947,108		1.4
Thomas J. Tisch ⁽²⁾	947,108		1.4
Joan H. Tisch ⁽²⁾	24,100		*
Four-Fourteen Partners, LLC ⁽²⁾ 667 Madison Avenue New York, NY 10065	2,800,004		4.1
Tang Capital Management ⁽³⁾ 441 Eastgate Mall San Diego, CA 92121	4,578,980		6.6
All current officers and directors as a group (10 persons)	10,637,130	1,634,879	15.4
Stephen R. Davis	602,490	457,053	*
Julian C. Baker ⁽⁴⁾	8,327,974	106,368	12.1
Eran Broshy	93,642	93,642	*
Stewart Hen	85,875	85,875	*
John LaMattina	15,657	15,657	*
George Maynard	197,300	104,251	*
Thomas A. Pitler	317,437	219,046	*
Craig Saxton	204,080	179,080	*
John Simon	414,581	106,087	*
Kenneth J. Sprenger	209,098	117,820	*
Srdjan Stankovic	168,996	150,000	*

Table of Contents

Notes:

- * Less than 1% of the outstanding shares of common stock.
- (1) Based on a Schedule 13D/A filed with the SEC on August 25, 2009, reporting beneficial ownership as of August 23, 2009, by Warburg Pincus Private Equity VIII, L.P., (WP VIII LP), Warburg Pincus LLC, the manager of each Investor defined below (WP LLC), Warburg Pincus Partners LLC, (WP Partners LLC), Warburg Pincus & Co., the sole general partner of WP VIII and the managing member of WP Partners (WP) and Messrs. Charles R. Kaye and Joseph P. Landy, each a Managing General Partner of WP and Co-President and Managing Member of WP LLC. Due to their respective relationships with Warburg and each other, each of WP IX LLC, WP LLC, WPP LLC, WP, Mr. Kaye and Mr. Landy may be deemed to beneficially own, and each report shared voting and shared dispositive power with respect to, an aggregate of 13,571,411 shares of Common Stock (the WP Shares), excluding 2,499,991 of Common Stock issuable upon the exercise of Warrants to purchase Common Stock beneficially owned by Warburg Pincus Private Equity VIII, L.P. reported as beneficially owned in the Schedule 13D/A. The WP Shares include the holdings of Warburg Pincus Netherlands Private Equity VIII C.V. I (WPNPE) and WP-WPVIII Investors L.P. (WPVIII). Each of WP VII LP, WP LLC, WP, WP Partners LLC, Mr. Kaye and Mr. Landy disclaim beneficial ownership of all shares of the Common Stock except to the extent of any indirect pecuniary interest therein.
- (2) Based on Schedule 13G/A with the SEC on January 30, 2009, reporting beneficial ownership as of December 31, 2008, by Andrew H. Tisch, Daniel R. Tisch, James H. Tisch, Thomas J. Tisch and Joan H. Tisch. The shares held by Andrew H. Tisch include 694,803 shares held directly by Andrew H. Tisch, 126,153 shares held by Andrew H. Tisch 1995 Issue Trust 1, and 126,152 shares held by Andrew H. Tisch 1995 Issue Trust 2 as to which Daniel R. Tisch has sole voting and sole dispositive power. The shares held by Daniel R. Tisch include 694,803 shares held directly by Daniel R. Tisch and 252,305 shares held by the Daniel R. Tisch 1999 Issue Trust as to which Daniel R. Tisch has sole voting and sole dispositive power. The shares held by James H. Tisch include 694,803 held directly by James H. Tisch and 252,305 shares held by the James S. Tisch 1995 Issue Trust as to which James S. Tisch has sole voting and sole dispositive power. Joan H. Tisch holds 24,100 shares as to which she has sole voting and dispositive power. The shares held by Thomas J. Tisch include 694,803 held directly by Thomas J. Tisch and 252,305 shares held by the Thomas J. Tisch 1994 Issue Trust and 2,800,004 shares held by Four-Fourteen Partners, LLC as to which Thomas J. Tisch has sole voting and sole dispositive power. By virtue of their status as trustees of the respective Trusts referred to above, each of Andrew H. Tisch, Daniel R. Tisch, James S. Tisch and Thomas J. Tisch may be deemed to be the beneficial owner of securities held by those trusts. By virtue of his status as manager of Four-Fourteen Partners, LLC, Thomas J. Tisch may be deemed to be the beneficial owner of securities owned by Four-Fourteen Partners, LLC. Each of Andrew H. Tisch, Daniel R. Tisch, James S. Tisch, Joan H. Tisch and Thomas J. Tisch disclaims that he or she and any other person or persons in fact constitute a group for purposes of Section 13(d)(3) of the Securities Exchange Act of 1934, as amended, or Rule 13d-5 thereunder or that he or she is the beneficial owner of, or has a pecuniary interest in, any securities owned by any other person. The address of each person is 667 Madison Ave., 7th Floor, New York, NY 10021, except for Daniel R. Tisch, whose address is 500 Park Ave., New York, NY 10022.
- (3) Based on a Schedule 13G/A filed with the SEC on February 17, 2009 which reported beneficial ownership as of December 13, 2008 for Tang Capital Partners, LP and Tang Capital Management as the general partner of Tang Capital Partners. Tang Capital Management, Tang Capital Partners and Kevin C. Tang share voting and dispositive power over the 4,578,980 shares. Kevin C. Tang is manager of Tang Capital Management. Mr. Tang disclaims beneficial ownership of all shares reported herein except to the extent of his pecuniary interest therein.
- (4) Based on a Schedule 13D/A filed with the SEC on April 15, 2008, reporting beneficial ownership as of April 11, 2008 by Julian C. Baker (J. Baker) and Felix J. Baker (F. Baker). Includes 16,200 shares held directly by J. Baker as to which he has sole voting as dispositive power, 4,692 shares held directly by F. Baker as to which he has sole voting and dispositive power and 210,556 shares held by Baker/Tisch Investments, L.P., 230,162 shares held by Baker Bros. Investments, L.P., 203,190 shares held by Baker

Table of Contents

Bros. Investments II, L.P., 2,195,509 shares held by Baker Biotech Fund I, L.P., 2,307,661 shares held by Baker Brothers Life Sciences, L.P., and 58,500 shares held by FBB Associates as to which J. Baker and F. Baker have shared voting and shared dispositive power. Excluding 652,275 shares held by Baker Biotech Fund I, L.P., 60,372 shares held by Baker Bros Investments II, L.P., 68,380 shares held by Baker Bros Investments, L.P., 685,581 shares held by Baker Brothers Life Sciences, L.P. and 62,556 shares held by Baker/Tisch Investments, L.P. issuable upon the exercise of Warrants to purchase Common Stock. By virtue of their ownership of entities that have power to control the investment decisions of the limited partnerships listed above, J. Baker and F. Baker may each be deemed to be the beneficial owners of the shares owned by such entities. J. Baker and F. Baker are also sole partners of FBB Associates, a general partnership and as such may be deemed to be beneficial owners of shares owned by FBB Associates. The address for J. Baker, F. Baker and each entity listed above is 667 Madison Avenue, 17th Floor, New York, NY 10065.

Table of Contents

UNAUDITED PRO FORMA CONDENSED COMBINED FINANCIAL INFORMATION

The following unaudited pro forma condensed combined balance sheet is based on historical unaudited balance sheets of Ligand and Neurogen and has been prepared to reflect the merger as if it had been completed on the balance sheet date of June 30, 2009. The following unaudited pro forma condensed combined statements of operations give effect to the merger as if it had taken place on January 1, 2008, the beginning of the earliest period presented, in accordance with SEC guidance.

The merger will be accounted for under the acquisition method of accounting in accordance with Statement of Financial Accounting Standards No. 141 (revised 2007), Business Combinations. Under the purchase method of accounting, the total estimated purchase price, calculated as described in Note 2 to these unaudited pro forma condensed combined financial statements, is allocated to the net tangible and intangible assets of Neurogen based on their estimated fair values. Management has made a preliminary allocation of the estimated purchase price to the tangible and intangible assets acquired and liabilities assumed based on various preliminary estimates. A final determination of these estimated fair values, which cannot be made prior to the completion of the merger, will be based on the actual net tangible and intangible assets of Neurogen that exist as of the date of completion of the merger, and upon the final purchase price.

The unaudited pro forma condensed combined financial information is based on the estimates and assumptions which are preliminary and have been made solely for purposes of developing such pro forma information. They do not include liabilities that may result from integration activities which are not presently estimable. The management of Ligand and Neurogen are in the process of making these assessments, and estimates of these costs are not currently known. However, liabilities ultimately may be recorded for costs associated with exiting activities of Neurogen that would affect the pro forma condensed combined financial statements. The unaudited pro forma condensed combined financial statements are not necessarily an indication of the results that would have been achieved had the merger been completed as of the dates indicated or that may be achieved in the future. The number of Ligand shares to be issued in the merger is subject to a 4.2 million share maximum, unless Ligand waives such maximum.

Under the terms of the Merger Agreement, Ligand will issue to each Neurogen stockholder a number of Ligand shares equal to approximately \$11 million subject to dollar for dollar adjustments for Neurogen's net cash at Closing divided by the average of the daily volume weighted average price of Ligand's stock over the 20 day trading period ending three trading days before the Neurogen stockholders meeting with respect to the Merger, which result is then divided by the number of shares of Neurogen stock outstanding immediately before the Closing.

If Neurogen's Aplindore program is sold by Neurogen before the merger, Neurogen stockholders will also receive in the merger a pro-rata share of the cash and/or number of shares of third-party stock, as the case may be, paid pre-merger by the buyer for the program. In addition, if the real properties currently owned by Neurogen are sold by Neurogen before the merger, the pre-merger net cash proceeds from the sale shall also be paid in the merger to the Neurogen stockholders.

This unaudited pro forma condensed combined financial information should be read in conjunction with the historical consolidated financial statements and notes thereto of Ligand and Neurogen and other financial information pertaining to Ligand and Neurogen, including Management's Discussion and Analysis of Financial Condition and Results of Operations and Risk Factors incorporated by reference or included herein.

Table of Contents**Pro Forma Condensed Combined****Balance Sheet**

As of June 30, 2009

(Amounts in thousands, except share data)

	Ligand	Neurogen	Pro Forma Adjustments	Pro Forma Combined
ASSETS				
Current assets:				
Cash and cash equivalents	\$ 3,549	\$ 21,937	\$ (8,327)a	\$ 17,159
Short-term investments	51,961			51,961
Accounts receivable, net	1,050	33		1,083
Assets held for sale		2,802		2,802
Current portion of co-promote termination payments receivable	11,518			11,518
Other current assets	1,392	939		2,331
Total current assets	69,470	25,711	(8,327)	86,854
Restricted cash and investments	1,341	121		1,462
Property and equipment, net	10,459	13		10,472
Long-term portion of co-promote termination payments receivable	46,146			46,146
Goodwill and other identifiable intangible assets	1,659		1,893b	3,552
Other assets	101	22		123
Total assets	\$ 129,176	\$ 25,867	\$ (6,434)	\$ 148,609
LIABILITIES AND STOCKHOLDERS EQUITY				
Current liabilities:				
Accounts payable and accrued expenses	\$ 21,765	\$ 4,085	\$ 2,802c	\$ 28,652
Allowance for loss on returns, rebates and chargebacks related to discontinued operations	1,275			1,275
Current portion of accrued litigation settlement costs	1,180			1,180
Current portion of deferred gain	1,964			1,964
Current portion of co-promote termination liability	11,518			11,518
Current portion of equipment financing obligations	241	4,122	(4,122)d	241
Current portion of deferred revenue	10,259			10,259
Total current liabilities	48,202	8,207	(1,320)	55,089
Long-term portion of co-promote termination liability	46,146			46,146
Long-term portion of equipment financing obligations	25	2,630	(2,630)d	25
Long-term portion of deferred revenue	8,421			8,421
Long-term portion of deferred gain	22,310			22,310
Other long-term liabilities	7,987	121		8,108
Total liabilities	133,091	10,958	(3,950)	140,099
Commitments and contingencies				
Common stock subject to conditional redemption; 665,230 shares issued and outstanding at June 30, 2009	8,344			8,344
Stockholders equity:				
Common stock	119	1,724	(1,720)e	123
Additional paid-in capital	716,049	353,956	(339,960)f	730,045

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

Accumulated other comprehensive income (loss)	94			94
Accumulated deficit	(686,387)	(340,771)	339,196g	(687,962)
Treasury stock, at cost; 6,607,905 shares	(42,134)			(42,134)
Total stockholders' equity	(12,259)	14,909	(2,484)	166
Total liabilities and stockholders' equity	\$ 129,176	\$ 25,867	\$ (6,434)	\$ 148,609

See Notes to Unaudited Pro Forma Condensed Combined Financial Statements.

Table of Contents**Pro Forma Condensed Combined****Statement of Operations****For the Six Months Ended June 30, 2009****(Amounts in thousands, except share and per share data)**

	Ligand	Neurogen	Pro Forma Adjustments	Pro Forma Combined
Revenues:				
Royalties	\$ 4,736	\$	\$	\$ 4,736
Collaborative research and development and other revenues	12,328	2,650		14,978
Total revenues	17,064	2,650		19,714
Operating costs and expenses:				
Research and development	19,824	6,051		25,875
General and administrative	9,755	3,314	(30)h	13,039
Write-off of acquired in-process research and development	441			441
Restructuring		11,853		11,853
Total operating costs and expenses	30,020	21,218	(30)	51,208
Accretion of deferred gain on sale leaseback	(982)			(982)
Loss from operations	(11,974)	(18,568)	30	(30,512)
Other income (expense):				
Interest income	260	352	(83)i	529
Interest expense	(236)	(176)		(412)
Other, net	(7)			(7)
Total other income (expense), net	17	176	(83)	110
Loss before income taxes	(11,957)	(18,392)	(53)	(30,402)
Income tax benefit		45		45
Loss from continuing operations	\$ (11,957)	\$ (18,347)	\$ (53)	\$ (30,357)
Basic and diluted per share amounts:				
Loss from continuing operations	\$ (0.11)		\$	\$ (0.26)
Weighted average number of common shares	113,132,893	68,490,000	(64,290,000)j	117,332,893

See Notes to Unaudited Pro Forma Condensed Combined Financial Statements.

Table of Contents**Pro Forma Condensed Combined****Statement of Operations****For the Year Ended December 31, 2008****(Amounts in thousands, except share and per share data)**

	Ligand	Neurogen	Pro Forma Adjustments	Pro Forma Combined
Revenues:				
Royalties	\$ 20,315	\$	\$	\$ 20,315
Collaborative research and development and other revenues	7,000	3,000		10,000
Total revenues	27,315	3,000		30,315
Operating costs and expenses:				
Research and development	30,770	31,643		62,413
General and administrative	23,785	7,118	(75)h	30,828
Write-off of acquired in-process research and development	72,000			72,000
Restructuring		16,078		16,078
Total operating costs and expenses	126,555	54,839	(75)	181,319
Accretion of deferred gain on sale leaseback	(1,964)			(1,964)
Loss from operations	(97,276)	(51,839)	75	(149,040)
Other income (expense):				
Interest income	2,161	1,149	(167)i	3,143
Interest expense	(202)	(524)		(726)
Other, net	(2,198)			(2,198)
Gain on warrants to purchase common stock		16,700		16,700
Total other income (expense), net	(239)	17,325	(167)	16,919
Loss before income taxes	(97,515)	(34,514)	(92)	(132,121)
Income tax benefit	55	238		293
Loss from continuing operations	\$ (97,460)	\$ (34,276)	\$ (92)	\$ (131,828)
Basic and diluted per share amounts:				
Loss from continuing operations	\$ (1.02)		\$	\$ (1.32)
Weighted average number of common shares	95,505,421	53,357,000	(49,157,000)j	99,705,421

See Notes to Unaudited Pro Forma Condensed Combined Financial Statements.

Table of Contents

Notes to Unaudited Pro Forma Condensed

Combined Financial Statements

(1) Description of Transaction

On August 23, 2009, Ligand and Merger Sub entered into a merger agreement with Neurogen. Under the merger agreement, Ligand will acquire Neurogen pursuant to a reverse triangular merger, whereby Merger Sub will merge with and into Neurogen, with Neurogen as the surviving corporation.

Under the terms of the merger agreement, Ligand will issue to each Neurogen stockholder a number of Ligand shares equal to approximately \$11 million, subject to dollar for dollar adjustments for any difference between Neurogen's targeted and actual net cash as of the third trading day before the date of the Neurogen special meeting of stockholders, divided by the average of the daily volume weighted average prices of Ligand's common stock over the 20 day trading period ending three trading days before the special meeting of Neurogen stockholders with respect to the merger, which result is then divided by the number of shares of Neurogen stock outstanding immediately before the merger. The number of Ligand shares to be issued in the merger is subject to a 4.2 million share maximum, unless Ligand waives such maximum.

If Neurogen's Aplindore program is sold by Neurogen before the merger, Neurogen stockholders will also receive in the merger a pro-rata share of the cash and/or number of shares of third-party stock, as the case may be, paid pre-merger by the buyer for the program. In addition, if the real properties currently owned by Neurogen are sold by Neurogen before the merger, the pre-merger net cash proceeds from the sale shall also be paid in the merger to Neurogen stockholders.

At the closing of the merger, Ligand, Neurogen and a rights agent will enter into up to four CVR agreements. The CVR agreements will set forth the rights that former Neurogen stockholders will have with respect to each CVR to be held by them after the closing of the merger. Each Neurogen stockholder will receive one CVR under each of the four CVR agreements for each share of Neurogen stock held. The CVRs will not be marketable or listed on any securities exchange and will be subject to general transfer restrictions with limited exceptions.

Aplindore CVR

If the Aplindore program is not sold or cancelled before the merger, each Neurogen stockholder shall be issued one Aplindore CVR entitling them to receive (i) if the Aplindore program is sold before the six month anniversary of the merger, a pro-rata share of the cash and/or number of shares of third-party stock received by Ligand from the buyer of the Aplindore program less the costs and expenses of sale, plus any amount remaining in an operating expense reserve account, or (ii) if the Aplindore program is not sold before the six month anniversary of the merger, a pro-rata share of any amount remaining in the operating expense reserve account.

H3 CVR

The H3 CVR agreement provides for the payment of a pro rata portion of (i) \$4 million in cash if Ligand licenses the Neurogen antagonist program intended to create an H3 receptor drug on or before the third anniversary of the merger, (ii) 50% of the net cash proceeds from a sale of such program if Ligand sells the program before the third anniversary of the merger or (iii) 50% of the net proceeds if an option agreement to either license or sell the H3 antagonist program is entered into, in each case before the third anniversary of the merger. If any such option to license is exercised, the CVR holders would receive a pro rata portion of an additional amount up to \$4 million (taking into account the option proceeds previously received by the CVR holders) or if any such option to sell is exercised, the CVR holders would receive a pro rata portion of 50% of the net sale proceeds.

Table of Contents

**Notes to Unaudited Pro Forma Condensed
Combined Financial Statements (Continued)**

Merck CVR

The Merck CVR agreement provides for the payment of a pro rata portion of \$3 million if a milestone payment from Merck is received upon the initiation of a Phase 3 clinical trial of a VR1 antagonist drug for the treatment of pain, or 50% of the net proceeds if such program is sold back to Merck before the milestone payment is made.

Real Estate CVR

If the real estate is not sold by Neurogen before the merger, each Neurogen stockholder will be issued one real estate CVR for each share of Neurogen stock held. The real estate CVR agreement provides for the payment of a pro rata portion of the cash paid by any buyer of the real estate currently owned by Neurogen and received by Ligand on or before the six month anniversary of the merger, less any costs and expenses reasonably incurred by Ligand in connection with such sale.

The unaudited pro forma condensed combined financial statements included herein assume an exchange ratio of .06 of a share of Ligand common stock for each share of Neurogen common stock.

(2) Purchase Price

Total estimated purchase price is summarized as follows:

	(in thousands)
Estimated fair value of shares of Ligand common stock to be issued	\$ 11,000
Estimated fair value of Contingent Value Rights	3,000
Total preliminary estimated purchase price	\$ 14,000

For purposes of the preliminary purchase price allocation, the estimated fair value of the Aplindore, H3 and Merck Contingent Value Rights is based upon the total estimated fair value of Neurogen of \$14 million, which is consistent with Neurogen's market value as of August 21, 2009 (the last full trading day before the public announcement of the merger agreement). See note 3(c) below for discussion of the Real Estate Contingent Value Right.

For purposes of this pro forma analysis, the above estimated purchase price has been allocated based on a preliminary estimate of the fair value of assets acquired and liabilities assumed:

	(in thousands)
Assets Acquired:	
Cash & cash equivalents	\$ 21,937
Accounts receivable, net	33
Assets held for sale	2,802
Property & equipment	13
Other assets	1,082
Goodwill and other identifiable intangible assets	1,893
Total Assets	27,760

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

Liabilities Assumed:	
Accounts payable & accrued liabilities	4,085
Payable to shareholders	2,802
Long-term debt	6,752
Other non-current liabilities	121
Total Liabilities	13,760
Total Purchase Price	\$ 14,000

Table of Contents

**Notes to Unaudited Pro Forma Condensed
Combined Financial Statements (Continued)**

(3) Pro Forma Adjustments

Adjustments included in the column under the heading **Pro Forma Adjustments** are related to the following (in thousands):

- (a) Cash and cash equivalents adjustments consist of the following:

Estimated Ligand transaction fees	\$ 400
Estimated Neurogen transaction fees	1,175
Payoff of Neurogen debt	6,752
Total	\$ 8,327

- (b) To record the estimated fair value of goodwill and other identifiable intangible assets, which is primarily related to Neurogen's internal and partnered early stage product candidates. For purposes of the preliminary purchase price allocation, goodwill and other identifiable intangible assets are presented as the residual asset which includes the estimated fair value of the related liability for the CVR agreements. No amortizable intangible assets have been identified in the preliminary analysis. The value of identifiable intangible assets is based upon a preliminary valuation. The final valuation will be performed as of the date of completion of the mergers. Differences between the preliminary and final valuation could have a material impact on the accompanying unaudited pro forma condensed combined financial statement information and Ligand's future results of operations and financial position.
- (c) To record the estimated amount due to stockholders related to the Real Estate CVR agreement. For purposes of the preliminary purchase price allocation, it is assumed that the real estate will be sold prior to the expiration of the Real Estate CVR agreement at a selling price equal to the carrying amount of the real estate.
- (d) To record the payoff of Neurogen's outstanding debt, which is a condition to closing.
- (e) To record the following adjustments to common stock:

Elimination of Neurogen common stock	\$ (1,724)
Issuance of Ligand common stock	4
Total	\$ (1,720)

- (f) To record the following adjustments to additional paid-in capital:

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

Elimination of Neurogen paid-in capital	\$ (353,956)
Issuance of Ligand common stock	10,996
Fair value of contingent value rights	3,000
Total	\$ (339,960)

(g) To record the following adjustments to accumulated deficit:

Elimination of Neurogen accumulated deficit	\$ 340,771
Adjustment for transaction related fees	(1,575)
Total	\$ 339,196

Table of Contents

**Notes to Unaudited Pro Forma Condensed
Combined Financial Statements (Continued)**

- (h) To eliminate costs directly related to the transaction that were previously recorded by Neurogen.
- (i) To eliminate interest income foregone on net cash and cash equivalents used to pay transaction related costs.
- (j) For purposes of these unaudited pro forma condensed combined financial statements, the unaudited pro forma combined basis and diluted net income per share amounts are based on the historical weighted average number of shares of Ligand common stock outstanding, adjusted to reflect the issuance of shares of Ligand common stock as a result of the acquisition as follows:
For the six months ended June 30, 2009:

Eliminate Neurogen common stock	(68,490,000)
Issue Ligand common stock	4,200,000
	(64,290,000)

For the twelve months ended December 31, 2008:

Eliminate Neurogen common stock	(53,357,000)
Issue Ligand common stock	4,200,000
	(49,157,000)

Table of Contents

**COMPARATIVE RIGHTS OF LIGAND STOCKHOLDERS AND
NEUROGEN STOCKHOLDERS**

The following is a summary of the material differences between the rights of Neurogen stockholders and Ligand stockholders. This section does not include a complete description of all differences between the rights of Neurogen stockholders and Ligand stockholders, nor does it include a complete description of the specific rights of such holders. This summary is qualified in its entirety by reference to the Delaware General Corporation Law as well as to the respective certificates of incorporation and bylaws of Neurogen and Ligand, which are available upon request. See the section entitled "Where You Can Find More Information" beginning on page 110 of this proxy statement/prospectus.

Neurogen and Ligand are both Delaware corporations governed by the Delaware General Corporation Law, or the DGCL. Any differences, therefore, between the rights of the stockholders of Neurogen and Ligand arise primarily from differences in their respective certificates of incorporation and bylaws. Upon completion of the merger, the rights of former Neurogen stockholders who receive Ligand common stock in connection with the merger will be determined by reference to the provisions of Ligand's certificate of incorporation and bylaws.

Authorized Capital Stock

Neurogen. The authorized capital stock of Neurogen consists of 150,000,000 shares of common stock, having a par value of \$0.025 per share, and 10,000,000 shares of preferred stock, having a par value of \$0.025 per share.

Ligand. The authorized capital stock of Ligand consists of 200,000,000 shares of common stock, having a par value of \$0.001 per share, and 5,000,000 shares of preferred stock, having a par value of \$0.001 per share, of which 1,600,000 shares have been designated as Series A Participating Preferred Stock.

Outstanding Shares of Capital Stock

Neurogen. As of October 28, 2009, there were 69,038,691 shares of Neurogen common stock, and no shares of Neurogen preferred stock, outstanding. Neurogen common stock is traded on Nasdaq under the symbol NRGN.

Ligand. As of October 28, 2009, there were 113,016,515 shares of Ligand common stock, and no shares of Ligand preferred stock, outstanding. Ligand common stock is traded on Nasdaq under the symbol LGND.

Classification of Board of Directors

Neurogen. Neurogen's certificate of incorporation and by-laws provide for the election of all of the directors at each annual meeting of stockholders, with each director serving until the next succeeding annual meeting of stockholders.

Ligand. Ligand's certificate of incorporation and by-laws provide for the election of all of the directors at each annual meeting of stockholders, with each director serving until the next succeeding annual meeting of stockholders.

Size of Board of Directors

The DGCL provides that a corporation's board of directors must consist of one or more individuals, with the number fixed by, or in the manner provided in, the bylaws, unless the certificate of incorporation fixes the number, in which case a change in the number of directors shall be made only by amendment of the certificate of

Table of Contents

incorporation. The DGCL further provides that directors need not be stockholders of the corporation unless the corporation's certificate of incorporation or bylaws so provide. The certificate of incorporation and bylaws may also prescribe other qualifications for directors.

Neurogen. Neurogen's bylaws provide for seven directors of Neurogen.

Ligand. Ligand's bylaws provide that the number of directors of Ligand must not be less than seven nor more than eleven, with the exact number of directors to be determined by Ligand's board of directors.

Special Meetings

The DGCL provides that a special meeting of stockholders may be called only by the board of directors or by any persons authorized in the certificate of incorporation or bylaws of the corporation.

Neurogen. Neurogen's bylaws provide that special meetings of the stockholders for any purpose may be called by Neurogen's chairman, if any, the president or any vice president, and shall be called by the chairman, if any, the president or any vice president at the request in writing of a majority of Neurogen's board of directors.

Ligand. Ligand's bylaws provide that special meetings of the stockholders for any purpose may be called by the president and shall be called by the president or secretary at the request in writing of a majority of Ligand's board of directors, or at the request in writing of stockholders owning at least 10% of the issued and outstanding capital stock of Ligand.

Stockholder Rights Plan

Neurogen. Neurogen does not have a stockholder rights plan.

Ligand. In October 2006, Ligand adopted a stockholder rights plan and its board of directors declared a dividend of one right to purchase one one-thousandth share of Ligand's Series A Participating Preferred Stock for each outstanding share of common stock as of the close of business on October 31, 2006, at an exercise price of \$100 per right. In general, the rights will be exercisable if a person or group becomes the beneficial owner of 20% or more of Ligand's outstanding common stock or announces a tender offer for 20% or more of Ligand common stock.

Table of Contents

EXPERTS

The consolidated financial statements and schedule and management's report on the effectiveness of internal control over financial reporting of Ligand Pharmaceuticals Incorporated as of December 31, 2008 appearing in Ligand's annual report on Form 10-K for the year ended December 31, 2008 incorporated by reference in this Proxy Statement/Prospectus have been audited by Grant Thornton LLP, an independent registered public accounting firm, to the extent and for the periods set forth in their reports incorporated herein by reference, and are included in reliance upon such reports given upon the authority of said firm as experts in auditing and accounting.

The consolidated financial statements and schedule and management's report on the effectiveness of internal control over financial reporting of Ligand Pharmaceuticals Incorporated as of December 31, 2007 incorporated by reference in this S-4 Registration Statement and Proxy Statement have been audited by BDO Seidman, LLP, an independent registered public accounting firm, to the extent and for the periods set forth in their reports incorporated herein by reference, and are included in reliance upon such reports given upon the authority of said firm as experts in auditing and accounting.

The consolidated financial statements of Neurogen Corporation incorporated in, and delivered with, this proxy statement/prospectus by reference to the Annual Report on Form 10-K for the year ended December 31, 2008 have been so incorporated in reliance on the report (which contains an explanatory paragraph relating to Neurogen Corporation's ability to continue as a going concern, as described in Note 1 to the consolidated financial statements) of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

LEGAL MATTERS

The validity of the shares of common stock offered hereby will be passed upon for Ligand by Stradling Yocca Carlson & Rauth, San Diego, California.

STOCKHOLDER PROPOSALS

Inclusion in Proxy Statement for 2009 Annual Meeting of Stockholders

If the merger is not consummated, the Neurogen 2009 annual meeting of stockholders will be held on such date as may be fixed by Neurogen's board of directors. Neurogen stockholders wishing to have a proposal included in the Neurogen board of directors' proxy statement with respect to such annual meeting must submit the proposal so that Neurogen's Corporate Secretary receives it a reasonable time before Neurogen begins to print and send such proxy statement as shall be fixed by Neurogen's board of directors. Such proposals should be sent to Corporate Secretary, Neurogen Corporation, 45 NE Industrial Road, Branford, CT 06405.

Presentation at Meeting

In addition, the proxy solicited by the Neurogen board of directors for the 2009 annual meeting of stockholders will confer discretionary authority to vote on any stockholder proposal presented at the meeting, unless Neurogen is provided notice of such proposal no later than a reasonable time before Neurogen begins to print and send such proxy statement as shall be fixed by the Neurogen board of directors.

Table of Contents

WHERE YOU CAN FIND MORE INFORMATION

Ligand and Neurogen each file annual, quarterly and current reports, proxy statements and other information with the SEC. You may read and copy any reports, statements or other information that the companies file at the SEC's Public reference room at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the public reference room. The SEC maintains an internet site that contains annual, quarterly and current reports, proxy and information statements and other information that issuers, including Ligand and Neurogen, file electronically with the SEC. These electronic SEC filings are available to the public at the SEC's Internet site, www.sec.gov. You can also review Ligand's SEC filings on its web site at <http://www.ligand.com> and Neurogen's SEC filings on its web site at <http://www.neurogen.com>. Information included on Ligand's or Neurogen's web site is not a part of this proxy statement/prospectus.

Ligand has filed a registration statement on Form S-4 to register with the SEC the offering and sale of the shares of Ligand common stock to be issued to Neurogen stockholders in the merger. You should rely only on the information contained in this proxy statement/prospectus or on information to which Ligand or Neurogen has incorporated by reference into this proxy statement/prospectus. This proxy statement/prospectus is a part of such registration statement and constitutes a prospectus of Ligand and a proxy statement of Neurogen for the special meeting of Neurogen stockholders. This proxy statement/prospectus does not contain all of the information set forth in the registration statement because certain parts of the registration statement are omitted as provided by the rules and regulations of the SEC. You may inspect and copy the registration statement at the SEC's reference room or web addresses listed above.

Table of Contents

INCORPORATION BY REFERENCE

The SEC allows Ligand and Neurogen to incorporate by reference information into this proxy statement/prospectus, which means that they can disclose important information to you by referring you to another document filed separately with the SEC and/or delivered with this proxy statement/prospectus. The information incorporated by reference is deemed to be part of this proxy statement/prospectus, except for any information superseded by information contained directly in this proxy statement/prospectus. This proxy statement/prospectus incorporates by reference the documents described below that Ligand and Neurogen have previously filed with the SEC, as well as the annexes to this proxy statement/prospectus. The documents described below that Neurogen has previously filed with the SEC are being delivered with this proxy statement/prospectus. These documents contain important information about Ligand, Neurogen and the financial condition of Ligand and of Neurogen.

The following documents listed below that Ligand has previously filed with the SEC are incorporated by reference:

the description of Ligand's common stock contained in Ligand's Registration Statement on Form 8-A filed on November 21, 1994, and any amendment or report filed for the purpose of updating such description;

the description of Ligand's preferred shares purchase rights contained in Ligand's Registration Statement on Form 8-A filed on October 17, 2006, and any amendment or report filed for the purpose of updating such description;

Ligand's definitive proxy statement on Schedule 14A filed with the SEC on April 29, 2009;

Ligand's annual report on Form 10-K for the fiscal year ended December 31, 2008 filed with the SEC on March 16, 2009;

Ligand's quarterly report on Form 10-Q for the fiscal quarter ended March 31, 2008 filed with the SEC on May 11, 2009;

Ligand's quarterly report on Form 10-Q for the fiscal quarter ended June 30, 2009 filed with the SEC on August 4, 2009;

Ligand's current reports on Form 8-K filed with the SEC on January 26, 2009, February 6, 2009, February 18, 2009, February 20, 2009, March 27, 2009, April 16, 2009, April 22, 2009, June 1, 2009, June 24, 2009, August 4, 2009, August 11, 2009, August 24, 2009, September 10, 2009, October 1, 2009 and October 28, 2009; and

Ligand's current report on Form 8-K/A filed with the SEC on February 25, 2009.

The following documents, which were filed by Neurogen with the SEC, are incorporated by reference and delivered with this proxy statement/prospectus, except to the extent of information which was furnished rather than filed by Neurogen, all such information specifically not being incorporated by reference herein:

The description of Neurogen's common stock contained in Neurogen's Registration Statement on Form 8-A filed on February 21, 1990, as updated by Form 8-A/A filed with the SEC on March 5, 1990;

Neurogen's definitive proxy statement on Schedule 14A filed with the SEC on June 2, 2008;

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

Neurogen s annual report on Form 10-K for the fiscal year ended December 31, 2008;

Neurogen s annual report on Form 10-K/A filed with the SEC on April 30, 2009;

Neurogen s quarterly reports on Form 10-Q for the fiscal quarters ended March 31, 2009 and June 30, 2009; and

Neurogen s current reports on Form 8-K filed with the SEC on May 7, 2009, August 24, 2009 and November 6, 2009.

Table of Contents

All documents that Ligand files pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this proxy statement/prospectus and before the later of the date of Neurogen's special meeting or the date on which the offering of shares of Ligand common stock under this proxy statement/prospectus is completed or terminated shall also be deemed to be incorporated by reference in this proxy statement/prospectus. Notwithstanding anything herein to the contrary, any information furnished under Item 2.02 or Item 7.01 of Ligand's current reports on Form 8-K and any other information which is furnished, but not filed with the SEC, is not incorporated herein by reference.

Ligand has supplied all information contained in this proxy statement/prospectus relating to Ligand and Merger Sub, and Neurogen has supplied all information contained in this proxy statement/prospectus relating to Neurogen.

You may obtain any of the documents incorporated by reference from the SEC's public reference room or the SEC's Internet web site described above in the section entitled "Where You Can Find More Information." Documents incorporated by reference in this proxy statement/prospectus are also available from Ligand or Neurogen, as applicable, without charge, excluding all exhibits unless specifically incorporated by reference in such documents. Stockholders may obtain documents incorporated by reference in this proxy statement/prospectus by requesting them in writing or by telephone from Ligand or Neurogen at the following address:

Ligand Pharmaceuticals Incorporated

Attention: Investor Relations

10275 Science Center Drive

San Diego, California 92121

Telephone: (858) 550-7500

Neurogen Corporation

Attn: Corporate Secretary

45 NE Industrial Road

Branford, CT 06405

Telephone: (203) 488-8201

In order to receive timely delivery of the documents, you must make your request no later than December 11, 2009. If you request any incorporated documents, Ligand or Neurogen, as applicable, will strive to mail them to you by first class mail, or another equally prompt means, within one business day of receipt of your request.

You should rely only on the information contained in this proxy statement/prospectus to vote your shares at the special meeting of Neurogen stockholders. Neither Ligand nor Neurogen has authorized anyone to provide you with information that differs from that contained in this proxy statement/prospectus. This proxy statement/prospectus is dated November 6, 2009. You should not assume that the information contained in this proxy statement/prospectus is accurate as of any date other than that date, and neither the mailing of this proxy statement/prospectus to stockholders nor the issuance of shares of Ligand common stock in the merger shall create any implication to the contrary.

This proxy statement/prospectus does not constitute an offer to sell, or a solicitation of an offer to purchase, the securities offered by this proxy statement/prospectus, or the solicitation of a proxy, in any jurisdiction to or from any person to whom or from whom it is unlawful to make such offer, solicitation of an offer or proxy solicitation in such jurisdiction.

Ligand Pharmaceuticals Incorporated's trademarks, trade names and service marks referenced in this proxy statement/prospectus include Ligand and ECLiPS. Neurogen Corporation's trademarks, trade names and service marks referenced in this proxy statement/prospectus include Neurogen and the Neurogen logo and AIDD. All other trademarks, trade names or service marks are owned by their respective owners.

AGREEMENT AND PLAN OF MERGER*

by and among:

LIGAND PHARMACEUTICALS INCORPORATED,

a Delaware corporation;

NEON SIGNAL, LLC,

a Delaware limited liability company; and

NEUROGEN CORPORATION,

a Delaware corporation

Dated as of August 23, 2009

* Including amendments made by Amendment to Agreement and Plan of Merger dated as of September 18, 2009 and Amendment No. 2 to Agreement and Plan of Merger dated as of November 2, 2009. The amendments are to the definition of "Target Net Cash Amount" in Article I and the definition of "Outside Date" in Section 7.01(c) in Article VII.

Table of Contents

<u>ARTICLE I CERTAIN DEFINITIONS</u>	A-2
<u>ARTICLE II THE MERGER; EFFECTIVE TIME</u>	A-10
Section 2.01 <u>Merger of Merger Sub into the Company.</u>	A-10
Section 2.02 <u>Effect of the Merger.</u>	A-10
Section 2.03 <u>Effective Time</u>	A-10
Section 2.04 <u>Closing</u>	A-10
Section 2.05 <u>Certificate of Incorporation and Bylaws; Officers and Directors.</u>	A-10
Section 2.06 <u>Conversion of Company Shares.</u>	A-11
Section 2.07 <u>Closing of the Company's Transfer Books.</u>	A-11
Section 2.08 <u>Exchange of Certificates.</u>	A-12
Section 2.09 <u>Fractional Shares</u>	A-13
Section 2.10 <u>Distributions with Respect to Unexchanged Shares of Parent Common Stock.</u>	A-14
Section 2.11 <u>Company Stock Options; Company Warrants.</u>	A-14
Section 2.12 <u>Dissenting Shares</u>	A-14
<u>ARTICLE III REPRESENTATIONS AND WARRANTIES OF THE COMPANY</u>	A-15
Section 3.01 <u>Organization, Standing and Corporate Power.</u>	A-15
Section 3.02 <u>Capitalization.</u>	A-16
Section 3.03 <u>Authority; Non-contravention; Voting Requirements.</u>	A-16
Section 3.04 <u>Governmental Approvals.</u>	A-17
Section 3.05 <u>Company SEC Documents; Financial Statements.</u>	A-17
Section 3.06 <u>Legal Proceedings.</u>	A-18
Section 3.07 <u>Compliance With Legal Requirements; Governmental Authorizations; FDA Laws.</u>	A-19
Section 3.08 <u>Information Supplied.</u>	A-19
Section 3.09 <u>Tax Matters.</u>	A-20
Section 3.10 <u>Employee Benefits and Labor Matters.</u>	A-20
Section 3.11 <u>Contracts.</u>	A-21
Section 3.12 <u>Environmental Matters.</u>	A-22
Section 3.13 <u>Intellectual Property.</u>	A-23
Section 3.14 <u>Insurance.</u>	A-23
Section 3.15 <u>Certain Business Relationships with Affiliates.</u>	A-24
Section 3.16 <u>Opinion of Financial Advisor.</u>	A-24
Section 3.17 <u>Brokers and Other Advisors.</u>	A-24
Section 3.18 <u>Section 203 of the DGCL Not Applicable; State Takeover Statutes.</u>	A-24
Section 3.19 <u>No Reliance.</u>	A-24
<u>ARTICLE IV REPRESENTATIONS AND WARRANTIES OF PARENT AND MERGER SUB</u>	A-25
Section 4.01 <u>Organization and Standing.</u>	A-25
Section 4.02 <u>Capitalization.</u>	A-25
Section 4.03 <u>Authority; Non-contravention.</u>	A-26
Section 4.04 <u>Governmental Approvals.</u>	A-26
Section 4.05 <u>Parent SEC Documents; Financial Statements.</u>	A-27
Section 4.06 <u>Legal Proceedings.</u>	A-28
Section 4.07 <u>Compliance With Legal Requirements.</u>	A-28
Section 4.08 <u>Information Supplied.</u>	A-28
Section 4.09 <u>Tax Matters.</u>	A-28
Section 4.10 <u>Ownership and Operations of Merger Sub.</u>	A-29
Section 4.11 <u>Brokers and Other Advisors.</u>	A-29
Section 4.12 <u>Ownership of Company Shares.</u>	A-29
Section 4.13 <u>No Other Representations or Warranties.</u>	A-29
Section 4.14 <u>No Reliance.</u>	A-29

Table of Contents

<u>ARTICLE V COVENANTS</u>		A-30
Section 5.01	<u>Interim Operations of the Company.</u>	A-30
Section 5.02	<u>Interim Operations of Parent.</u>	A-32
Section 5.03	<u>No Solicitation.</u>	A-32
Section 5.04	<u>Company Board Recommendation.</u>	A-33
Section 5.05	<u>Registration Statement; Proxy Statement; Special Meeting.</u>	A-34
Section 5.06	<u>Filings; Other Action.</u>	A-36
Section 5.07	<u>Access.</u>	A-36
Section 5.08	<u>Publicity.</u>	A-37
Section 5.09	<u>Employee Benefits.</u>	A-37
Section 5.10	<u>Indemnification; Directors and Officers Insurance.</u>	A-38
Section 5.11	<u>Section 16 Matters.</u>	A-39
Section 5.12	<u>Stock Exchange Listing.</u>	A-39
Section 5.13	<u>Plan of Reorganization.</u>	A-39
Section 5.14	<u>Sale of the Aplindore Program and the Real Estate Before the Effective Time</u>	A-39
Section 5.15	<u>Sale of the Aplindore Program and the Real Estate After the Effective Time</u>	A-40
Section 5.16	<u>Repayment of Company Loans</u>	A-40
Section 5.17	<u>Efforts to Satisfy Closing Conditions</u>	A-40
<u>ARTICLE VI CONDITIONS TO EACH PARTY'S OBLIGATION TO EFFECT THE MERGER</u>		A-41
Section 6.01	<u>Conditions to Obligations of Each Party Under This Agreement.</u>	A-41
Section 6.02	<u>Additional Conditions to Obligations of Parent and Merger Sub.</u>	A-41
Section 6.03	<u>Additional Conditions to Obligations of the Company.</u>	A-42
Section 6.04	<u>Estoppel.</u>	A-42
<u>ARTICLE VII TERMINATION</u>		A-42
Section 7.01	<u>Termination.</u>	A-42
Section 7.02	<u>Effect of Termination.</u>	A-44
Section 7.03	<u>Termination Fee.</u>	A-44
<u>ARTICLE VIII MISCELLANEOUS PROVISIONS</u>		A-45
Section 8.01	<u>Amendment.</u>	A-45
Section 8.02	<u>Waiver.</u>	A-45
Section 8.03	<u>No Survival of Representations and Warranties.</u>	A-45
Section 8.04	<u>Entire Agreement; Counterparts.</u>	A-45
Section 8.05	<u>Applicable Legal Requirements; Jurisdiction; Waiver of Jury Trial.</u>	A-45
Section 8.06	<u>Payment of Expenses.</u>	A-46
Section 8.07	<u>Transfer Taxes.</u>	A-46
Section 8.08	<u>Assignability; No Third Party Rights.</u>	A-46
Section 8.09	<u>Notices.</u>	A-46
Section 8.10	<u>Severability.</u>	A-47
Section 8.11	<u>Obligation of Parent.</u>	A-48
Section 8.12	<u>Specific Performance.</u>	A-48
Section 8.13	<u>Remedies.</u>	A-48
Section 8.14	<u>Construction.</u>	A-48
Section 8.15	<u>Further Action.</u>	A-48

Exhibits

EXHIBIT A:	Aplindore CVR Agreement
EXHIBIT B:	H3 CVR Agreement
EXHIBIT C:	Merck CVR Agreement
EXHIBIT D:	Real Estate CVR Agreement
EXHIBIT E:	List of Potential Consultants

Table of Contents

INDEX OF DEFINED TERMS

1993 Company Options Section 2.11(a)	Excess Shares Section 2.09(b)
Agreement Preamble	Exchange Agent Section 2.08
Appraisal Rights Section 2.12	FDA Laws Section 3.07(b)
Bankruptcy and Equity Exception Section 3.03(a)	Filed Company SEC Documents Article III Preamble
Certificate of Merger Section 2.03	Filed Parent SEC Documents Article IV Preamble
Closing Section 2.04	IRS Section 3.10(a)
Closing Date Section 2.04	Merger Recitals
Company Preamble	Merger Consideration Section 2.06(a)(iii)
Company Board Recitals	Merger Sub Preamble
Company Change in Recommendation Section 5.04(b)	Non-Budgeted Capital Expenditure Section 5.01(a)(15)
Company Charter Documents Section 3.01(b)	Non-Employee Director Agreements Recitals
Company Contracts Section 3.11(a)	Non-Employee Directors Recitals
Company Disclosure Letter Article III Preamble	Notice of Recommendation Change Section 5.04(c)(i)
Company Financial Statements Section 3.05(b)	Outside Date Section 7.01(c)
Company Pension Plan Section 3.10(a)	Parent Preamble
Company Plan Section 3.10(a)	Parent Charter Documents Section 4.01(b)
Company Preferred Stock Section 3.02(a)	Parent Common Stock Section 2.06(a)(iii)
Company Recommendation Section 3.03(b)	Parent Disclosure Letter Article IV Preamble
Company SEC Documents Section 3.05(a)	Parent Financial Statements Section 4.05(b)
Company Share Section 3.02(a)	Parent SEC Documents Section 4.05(a)
Company Shares Section 3.02(a)	Proxy Statement Section 5.05(a)
Company Stock Certificate Section 2.07	Registration Statement Section 5.05(a)
Company Stockholder Approval Section 3.03(a)	Representatives Section 5.03(a)
Confidentiality Agreement Section 5.03(a)	Sarbanes-Oxley Act Section 3.05(a)
Consulting Committee Section 5.15(c)	Securities Act Section 3.01(b)
D&O Insurance Policy Section 5.10(c)	Surviving Corporation Section 2.01
DGCL Recitals	Transactions Recitals
Dissenting Shares Section 2.12	Transfer Taxes Section 8.07
Effective Time Section 2.03	Voting Agreements Recitals
Environmental Laws Section 3.12(a)	

Table of Contents

AGREEMENT AND PLAN OF MERGER

THIS AGREEMENT AND PLAN OF MERGER (*Agreement*) is made and entered into as of August 23, 2009, by and among LIGAND PHARMACEUTICALS INCORPORATED, a Delaware corporation (*Parent*); NEON SIGNAL, LLC, a Delaware limited liability company and a wholly-owned Subsidiary of Parent (*Merger Sub*); and NEUROGEN CORPORATION, a Delaware corporation (the *Company*). Capitalized terms used but not otherwise defined in this Agreement shall have the meanings given to them in *Article I*.

RECITALS

WHEREAS, the respective boards of directors of each of Parent, Merger Sub and the Company have approved the acquisition of the Company by Parent upon the terms and subject to the conditions set forth in this Agreement;

WHEREAS, upon the terms and subject to the conditions set forth in this Agreement, Merger Sub shall merge with and into the Company (the *Merger*) and each Company Share that is issued and outstanding immediately before the Effective Time (other than (i) as provided in *Section 2.09* and (ii) Dissenting Shares) will be canceled and converted into the right to receive the Merger Consideration, all upon the terms and subject to the conditions set forth herein;

WHEREAS, the board of directors of the Company (the *Company Board*) has, upon the terms and subject to the conditions set forth herein, unanimously and duly adopted resolutions (i) determining that the transactions contemplated by this Agreement, including the Merger (collectively, the *Transactions*), are advisable and in the best interests of the Company and its stockholders, (ii) approving this Agreement and the Transactions in accordance with the Delaware General Corporation Law (the *DGCL*), (iii) directing that this Agreement be submitted to the stockholders of the Company for adoption, and (iv) recommending that the stockholders of the Company adopt this Agreement and approve the Transactions;

WHEREAS, the board of directors of Parent and the Manager of Merger Sub have, upon the terms and subject to the conditions set forth herein, unanimously and duly approved and declared advisable this Agreement and the Transactions, and Parent, in its capacity as the sole limited liability company interest holder of Merger Sub, has adopted this Agreement, in each case, in accordance with the DGCL;

WHEREAS, as an inducement to Parent's willingness to enter into this Agreement, simultaneously with the execution of this Agreement, Parent and certain stockholders of the Company owning in the aggregate approximately 33% of the Outstanding Company Shares have executed and delivered to the Company the applicable voting agreements (the *Voting Agreements*);

WHEREAS, simultaneously with the execution of this Agreement, each of the non-employee members of the Company Board (the *Non-Employee Directors*) have entered into letter agreements with the Company (the *Non-Employee Director Agreements*) pursuant to which the Non-Employee Directors have agreed that they will be given the opportunity, on the Closing Date, to exercise all previously unexercised Company Options held by them and that any such Company Options not so exercised will, immediately before the Effective Time, automatically be terminated and canceled without any payment or obligation on the part of the Company or any further action on the part of any Non-Employee Director;

WHEREAS, for U.S. federal income tax purposes, it is intended that the Merger not qualify as a tax-free reorganization within the meaning of Section 368(a) of the Code and the Treasury Regulations promulgated thereunder; and

Table of Contents

WHEREAS, Parent, Merger Sub and the Company desire to make certain representations, warranties, covenants and agreements in connection with the Merger and the other transactions contemplated by this Agreement and also to prescribe certain conditions to the Merger as specified herein;

NOW, THEREFORE, in consideration of the foregoing and the mutual covenants and agreements herein contained, and intending to be legally bound hereby, Parent, Merger Sub and the Company hereby agree as follows:

ARTICLE I

CERTAIN DEFINITIONS

For purposes of the Agreement:

Acquisition Proposal shall mean any unsolicited, bona fide offer or proposal (other than an offer or proposal made or submitted by Parent or Merger Sub) relating to a possible Acquisition Transaction.

Acquisition Transaction shall mean any transaction or series of related transactions (other than the transactions contemplated by this Agreement) involving or resulting in: (i) any acquisition or purchase by any Person or group (as defined in or under Section 13(d) of the Exchange Act), directly or indirectly, of more than 20% of the total outstanding voting securities of the Company, or any tender offer or exchange offer that, if consummated, would result in the Person or group (as defined in or under Section 13(d) of the Exchange Act) making such offer beneficially owning more than 20% of the total outstanding voting securities of the Company; (ii) any merger, consolidation, share exchange, business combination, acquisition of securities, recapitalization, tender offer, exchange offer or other similar transaction involving the Company pursuant to which the stockholders of the Company immediately before the consummation of such transaction would hold less than 80% of the equity interests in the surviving or resulting entity of such transaction immediately after consummation thereof; or (iii) any sale, lease, exchange, transfer, license, acquisition or disposition of assets (other than the Aplindore Program and/or the Real Estate) constituting more than 20% of the assets of the Company (measured by either book or fair market value thereof) or the net revenues or net income of the Company and the Company Subsidiaries taken as a whole.

Actual Net Cash Amount shall mean the Net Cash Amount calculated as of the Determination Date and set forth in a certificate delivered by an executive officer of the Company to Parent on the first Business Day following the Determination Date.

Adjusted Reference Amount shall mean the Reference Amount (i) plus the amount, if any, by which the Actual Net Cash Amount exceeds the Target Net Cash Amount or (ii) minus the amount, if any, by which the Target Net Cash Amount exceeds the Actual Net Cash Amount.

Affiliate shall mean a Person who is related to another Person such that such Person directly or indirectly controls, is directly or indirectly controlled by or is directly or indirectly under common control with such other Person.

Aplindore shall mean a small molecule partial agonist for the D2 dopamine receptor for the treatment of Restless Leg Syndrome and Parkinson's disease.

Aplindore CVR shall mean a right having the terms and conditions set forth in the Aplindore CVR Agreement, to be issued in accordance with Section 2.06 in respect of each Outstanding Company Share, to receive a pro rata portion (based on the number of Outstanding Company Shares) of any Aplindore Program Consideration received by Parent or the Surviving Corporation (as opposed to the Company) before the CVR Outside Date (as defined in the Aplindore CVR Agreement).

Aplindore CVR Agreement shall mean the agreement governing the terms and conditions of the Aplindore CVRs substantially in the form attached hereto as *Exhibit A*.

Table of Contents

Aplindore Program shall mean the Company's two active programs for the development of Aplindore for the treatment of Restless Leg Syndrome and Parkinson's disease, including all rights and obligations of the Company under the Wyeth License Agreement, all related Intellectual Property and other related rights of the Company, and all clinical and non-clinical data compiled by the Company, in each case arising from the Company's operation of such programs.

Aplindore Program Consideration shall mean any of (a) if the Aplindore Program is sold on or before Effective Time, the Aplindore Program Payment; (b) if the Aplindore Program is sold after the Effective Time but on or before the six month anniversary of the Effective Time, the Aplindore Program Payment plus the remaining Expense Reserve Amount, if any; or (c) if the Aplindore Program is not sold before the six month anniversary of the Effective Time, the remaining Expense Reserve Amount, if any.

Aplindore Program Payment shall mean the aggregate cash proceeds paid by and/or the aggregate number of shares of stock issued by any third-party purchaser of the Aplindore Program after the date hereof but on or before the CVR Outside Date (as defined in the Aplindore CVR Agreement) in accordance with the terms of this Agreement or the Aplindore CVR Agreement, as the case may be, less any costs and expenses reasonably incurred by the Company or Parent, as the case may be, in connection with such sale (including amounts paid to the Consulting Committee in accordance with an arrangement entered into pursuant to *Section 5.15(c)*); *provided* that if the consideration for the Aplindore Program in any such sale is to consist in whole or in part of shares of stock of the third-party purchaser, such shares must be of a class listed for trading on a U.S. national securities exchange.

Average Price shall mean a price equal to the arithmetic average of the Volume Weighted Average Price on each of the last 20 Trading Days preceding the Determination Date.

Business Day shall mean any day other than a Saturday, Sunday or a day on which the banks in New York, New York or San Diego, California are authorized by applicable Legal Requirement or executive order to be closed.

Code shall mean the Internal Revenue Code of 1986, as amended from time to time.

Company Equity Plans shall mean the Neurogen Corporation 1993 Omnibus Incentive Plan, the Neurogen Corporation 1993 Non-Employee Director Stock Option Program, the Neurogen Corporation 2000 Non-Employee Directors Stock Option Program, the Company's September 25, 2000 Special Committee Stock Option Grant and the Amended and Restated Neurogen Corporation 2001 Stock Option Plan, in each case, as amended from time to time.

Company Intellectual Property shall mean the Intellectual Property, IP Licenses and Software held for use or used in the business of the Company or any Company Subsidiary as presently conducted.

Company Material Adverse Effect shall mean, in reference to any fact, circumstance, event, change or occurrence, any such fact, circumstance, event, change or occurrence that, individually or in the aggregate with all other facts, circumstances, events, changes or occurrences, has or would reasonably be expected to have a material adverse effect on the results of operations or financial condition of the Company and the Company Subsidiaries, taken as a whole, other than changes, events, occurrences or effects arising out of, resulting from or attributable to (i) changes in conditions in the United States or global economy or capital or financial markets generally, including changes in interest or exchange rates, (ii) conditions (or changes therein) in any industry or industries in which the Company and the Company Subsidiaries operate, (iii) any change in Legal Requirements or GAAP or interpretation of any of the foregoing, (iv) the negotiation, execution, announcement or performance of this Agreement or the consummation of the Transactions, including the impact thereof on relationships, contractual or otherwise, with customers, suppliers, distributors, partners, collaborators or employees, (v) acts of war, sabotage or terrorism, or any escalation or worsening of any such acts of war, sabotage or terrorism threatened or underway as of the date of this Agreement, (vi) storms, earthquakes or other natural disasters,

Table of Contents

(vii) any action taken by the Company or any Company Subsidiary as contemplated or permitted by this Agreement or with Parent's consent, (viii) the initiation of any litigation by any stockholder of the Company relating to this Agreement or the Merger, (ix) any decline in the market price, or change in trading volume, of the capital stock of the Company or any failure of the Company to meet revenue or earnings projections, either published by the Company or any third party (*provided* that this exception shall not prevent or otherwise affect a determination that any changes, state of facts, circumstances, events or effects underlying a change described in this clause (ix) has resulted in, or contributed to, a Company Material Adverse Effect), (x) any adverse changes, developments, circumstances, events or occurrences relating to the Company's ongoing research programs to the extent resulting from an action by Parent or any of its Affiliates, (xi) the determination by, or the delay of a determination by, the FDA, or any panel or advisory body empowered or appointed thereby, with respect to the approval, non-approval or disapproval of any products similar to or competitive with the Company's product candidates, (xii) the results of any clinical trial of one or more products or product candidates of any Person other than the Company, (xiii) the entry or threatened entry into the market of a generic version of one or more product candidates of the Company, or (xiv) the sale of the Aplindore Program or the Real Estate in accordance with *Section 5.14*, regardless of the price obtained therefor; *except*, in the case of the foregoing clauses (i), (ii), (iii), (v) and (vi), to the extent that any such condition has a materially disproportionate adverse effect on the Company and the Company Subsidiaries, taken as a whole, relative to other companies of comparable size to the Company and the Company Subsidiaries operating in industry or industries in which the Company and the Company Subsidiaries operate.

Company Options shall mean options to purchase Company Shares from the Company, whether granted by the Company pursuant to the Company Equity Plans or otherwise.

Company Subsidiary shall mean a Subsidiary of the Company.

Company Warrants shall mean the warrants issued by the Company pursuant to the Securities Purchase Agreement among the Company and the purchasers listed therein, dated April 7, 2008, to purchase Company Shares for \$2.30 per Company Share.

Confidentiality and Exclusivity Agreement shall mean the Confidentiality and Exclusivity Agreement dated August 3, 2009, and as thereafter extended/amended, between Parent and the Company.

Contract shall mean any loan or credit agreement, bond, debenture, note, mortgage, indenture, guarantee, lease or other contract, commitment, agreement, instrument, arrangement, understanding, obligation, undertaking or license (each, including all amendments thereto).

Copyrights shall mean all registered and unregistered copyrights (including those in Software) and registrations and applications to register the same.

CVR Agreements shall mean, collectively, the Aplindore CVR Agreement, the H3 CVR Agreement, the Merck CVR Agreement and the Real Estate CVR Agreement.

CVRs shall mean, collectively, the Aplindore CVRs, the H3 CVRs, the Merck CVRs and the Real Estate CVRs.

Determination Date shall mean the 3rd Trading Day preceding the date of the Special Meeting.

Encumbrance shall mean, with respect to any property or asset, any mortgage, easement, lien, pledge (including any negative pledge), security interest or other encumbrance of any nature whatsoever in respect of such property or asset.

Entity shall mean any corporation (including any non-profit corporation), general partnership, limited partnership, limited liability partnership, joint venture, estate, trust, company (including any company limited by shares, limited liability company or joint stock company), firm, society or other enterprise, association, organization or entity (including any Governmental Entity).

Table of Contents

ERISA shall mean the Employee Retirement Income Security Act of 1974, as amended from time to time.

Exchange shall mean The NASDAQ Global Market of The NASDAQ Stock Market LLC.

Exchange Act shall mean the Securities Exchange Act of 1934, as amended.

Exchange Ratio shall mean a decimal fraction (calculated to the nearest one-thousandth), the numerator of which is the quotient derived by dividing the Adjusted Reference Amount by the Average Price, and the denominator of which is the number of Outstanding Company Shares.

Executive shall mean any executive officer of the Company.

Expense Reserve Amount shall mean, in the event the Aplindore Program is not terminated or sold by the Company before the Effective Time and if the Closing occurs (a) before November 22, 2009, an amount in cash equal to \$350,000, or (b) after November 22, 2009, an amount in cash equal to \$100,000, in either case to be used by Parent solely in connection with the Aplindore Program as provided in *Section 5.15(a)*.

FDA shall mean the United States Food and Drug Administration.

GAAP shall mean United States generally accepted accounting principles.

Governmental Authorization shall mean any permit, license, registration, qualification, certificate, clearance, variance, waiver, exemption, certificate of occupancy, exception, franchise, entitlement, consent, confirmation, order, approval or authorization granted by any Governmental Entity.

Governmental Entity shall mean any federal, state or local government or body or any agency, authority, subdivision or instrumentality of any of the foregoing, including any court, tribunal, department, bureau, administrative agency, commission or board, or any quasi-governmental or private body duly exercising any regulatory, taxing, inspecting or other governmental authority.

H3 Antagonist Program shall mean an antagonist program intended to create an H3 receptor drug.

H3 CVR shall mean a right having the terms and conditions set forth in the H3 CVR Agreement, to be issued in accordance with *Section 2.06* in respect of each Outstanding Company Share, to receive (among other possible amounts) a pro rata portion (based on the number of Outstanding Company Shares) of either (i) \$4,000,000 in cash if Parent licenses the H3 Antagonist Program on or before the third anniversary of the Effective Time, or (ii) in the event Parent sells the H3 Antagonist Program on or before the third anniversary of the Effective Time and before such a licensing, 50% of the net cash proceeds from such sale; *provided* that all decisions relating to the matters described in this paragraph shall be in the sole discretion of Parent exercised in good faith.

H3 CVR Agreement shall mean the agreement governing the terms and conditions of the H3 CVRs substantially in the form attached hereto as *Exhibit B*.

Indebtedness shall mean (i) indebtedness for borrowed money, including indebtedness evidenced by a note, bond, debenture or similar instrument, or (ii) obligations in respect of outstanding letters of credit, acceptances and similar obligations created for the account of such Person.

Indemnified Party shall mean each individual who is or was an officer or director of the Company at any time on or before the Effective Time.

Intellectual Property shall mean all U.S. and foreign (i) Trademarks, (ii) Patents, (iii) Copyrights, (iv) Trade Secrets and (v) databases and compilations, including any and all electronic data and electronic collections of data.

Table of Contents

IP Licenses shall mean any license or sublicense rights in or to any Intellectual Property.

Knowledge of Parent shall mean the actual knowledge of John Higgins, John Sharp or Charles Berkman.

Knowledge of the Company shall mean the actual knowledge of Stephen Davis or Thomas Pitler.

Legal Proceeding shall mean any claim (presented formally to a judicial or quasi-judicial Governmental Entity), lawsuit, court action, suit, arbitration or other judicial or administrative proceeding.

Legal Prohibition shall mean any final, permanent Legal Requirement that is in effect and that prevents or prohibits consummation of the Transactions.

Legal Requirement shall mean any federal, state or local law, statute, code, ordinance, regulation, code, order, judgment, writ, injunction, decision, ruling or decree promulgated by any Governmental Entity.

Maximum Amount shall mean 4,200,000 shares of Parent Common Stock.

Merck shall mean Merck Sharpe & Dohme Limited and its affiliates.

Merck Agreement shall mean the Research Collaboration and License Agreement, effective as of November 24, 2003, between Merck and the Company, as amended from time to time.

Merck CVR shall mean a right having the terms and conditions set forth in the Merck CVR Agreement, to be issued in accordance with Section 2.06 in respect of each Outstanding Company Share, to receive a pro rata portion (based on the number of Outstanding Company Shares) of either (i) \$3,000,000 in cash promptly after receipt by Parent of the milestone payment from Merck upon the Phase III VR1 Trial Initiation or (ii) in the event Parent sells the program that is the subject of the Phase III VR1 Trial to Merck before the initiation of a Phase III VR1 Trial, 50% of the net cash proceeds from such sale; *provided* that all decisions relating to the matters described in this paragraph shall be in the sole discretion of Parent exercised in good faith.

Merck CVR Agreement shall mean the agreement governing the terms and conditions of the Merck CVRs substantially in the form attached hereto as *Exhibit C*.

Net Cash Amount shall mean, as of the applicable date, an amount equal to (i) the sum of (A) all cash (including any payments received by the Company from the exercise by any Non-Employee Director of Company Options, as contemplated by the Non-Employee Director Agreements or otherwise), cash equivalents, marketable securities and accounts receivable (net of accounts receivable reserves established in accordance with GAAP) held by the Company and the Company Subsidiaries (but excluding the Aplindore Program Consideration and the Real Estate Consideration, if any, received by the Company before the Effective Time) and (B) in the event the Company purchases a tail prepaid policy on the D&O Insurance Policy in accordance with the penultimate sentence of Section 5.10(c), any amount (up to a maximum of \$270,000) paid before the Determination Date by the Company for such tail policy; minus (ii) the sum of (A) in the event the Company purchases the tail prepaid policy on the D&O Insurance Policy in accordance with the penultimate sentence of Section 5.10(c), any amount by which the cost of such tail policy exceeds \$270,000 to the extent such excess has not been paid by the Company before the Determination Date, (B) any amount payable by the Company or the Surviving Corporation after the Determination Date for the out-of-pocket transaction fees and expenses of the Company to its legal and financial advisors and accountants in connection with this Agreement and the Transactions, (C) any amount payable by the Company or the Surviving Corporation after the Determination Date for expenses incurred by the Company in connection with the preparation, filing, printing and mailing of the Proxy Statement and the solicitation of proxies for use at the Special Meeting, (D) the Expense Reserve Amount, (E) except as otherwise covered in subclause (F) below, all severance payments, stay bonuses and performance bonuses payable to all employees, consultants and directors of the Company and the Company Subsidiaries assuming that the service relationship of all such employees, consultants and directors with the Company and the

Table of Contents

Company Subsidiaries is terminated as of the Closing Date, even if such service relationship in fact does continue after the Closing Date, (F) all severance payments, stay bonuses and performance bonuses remaining payable at the Closing Date to all employees, consultants and directors of the Company and the Company Subsidiaries whose service relationship with the Company and the Company Subsidiaries is terminated on or before the Closing Date, (G) the salary, employer-tax and benefits cost of the continuation of employment of any Company employees, as a result of the advance-notice requirements of their respective employment agreements, beyond the Closing Date until their actual termination date, if before the Closing Date Parent requests the Company to terminate such employees, provided that the costs described in this subclause (G) shall only be deducted if before the Closing Date Parent requests the Company to terminate any such employee and delivers any such request to the Company at least 33 calendar days before the Closing Date, (H) all amounts payable by the Company in order to comply with the covenant contained in *Section 5.16* and (I) to the extent not included in any other subclause of this clause (ii), all accounts payable of the Company and the Company Subsidiaries; *provided* that all such amounts shall be determined in a manner consistent with the manner in which such items were determined by the Company in the most recent balance sheet included in the Company Financial Statements.

Outstanding Company Shares shall mean the Company Shares issued and outstanding immediately before the Effective Time (not including, for purposes of calculating the Exchange Ratio or Merger Consideration, any Company Shares to be cancelled pursuant to *Section 2.06(a)(i)* and *(ii)*).

Parent Equity Plans shall mean the 2002 Stock Incentive Plan and the Pharmacoepia, Inc. 2000 Stock Option Plan, in each case, as amended from time to time.

Parent Material Adverse Effect shall mean, in reference to any fact, circumstance, event, change or occurrence, any such fact, circumstance, event, change or occurrence that, individually or in the aggregate with all other facts, circumstances, events, changes or occurrences, has or would reasonably be expected to have a material adverse effect on the results of operations or financial condition of Parent and the Parent Subsidiaries, taken as a whole, other than changes, events, occurrences or effects arising out of, resulting from or attributable to (i) changes in conditions in the United States or global economy or capital or financial markets generally, including changes in interest or exchange rates, (ii) conditions (or changes therein) in any industry or industries in which Parent and the Parent Subsidiaries operate, (iii) any change in Legal Requirements or GAAP or interpretation of any of the foregoing, (iv) acts of war, sabotage or terrorism, or any escalation or worsening of any such acts of war, sabotage or terrorism threatened or underway as of the date of this Agreement, (v) storms, earthquakes or other natural disasters, (vi) the initiation of any litigation by any stockholder of Parent relating to this Agreement or the Merger, (vii) any decline in the market price, or change in trading volume, of the capital stock of Parent or any failure of Parent to meet revenue or earnings projections, either published by Parent or any third party (*provided* that this exception shall not prevent or otherwise affect a determination that any changes, state of facts, circumstances, events or effects underlying a change described in this clause (vii) has resulted in, or contributed to, a Parent Material Adverse Effect), (viii) the negotiation, execution, announcement or performance of this Agreement or the consummation of the Transactions, including the impact thereof on relationships, contractual or otherwise, with customers, suppliers, distributors, partners, collaborators or employees, (ix) any action taken by Parent or any Parent Subsidiary as contemplated or permitted by this Agreement or with the Company's consent, (x) the determination by, or the delay of a determination by, the FDA, or any panel or advisory body empowered or appointed thereby, with respect to the approval, non-approval or disapproval of any products similar to or competitive with Parent's product candidates, (xi) the results of any clinical trial of one or more products or product candidates of any Person other than Parent, or (xii) the entry or threatened entry into the market of a generic version of one or more product candidates of Parent, *except*, in the case of the foregoing clauses (i), (ii), (iii), (iv) and (v), to the extent that any such condition has a materially disproportionate adverse effect on Parent and the Parent Subsidiaries, taken as a whole, relative to other companies of comparable size to Parent and the Parent Subsidiaries operating in such industry or industries.

Parent Options shall mean options to purchase shares of Parent Common Stock from Parent, whether granted by Parent pursuant to Parent Equity Plans or otherwise.

Table of Contents

Parent Rights Agreement shall mean the 2006 Preferred Shares Rights Agreement, by and between Ligand Pharmaceuticals Incorporated and Mellon Investor Services LLC, dated October 13, 2006.

Parent Subsidiary shall mean a Subsidiary of Parent.

Patents shall mean all patents and pending patent applications, invention disclosure statements, and any and all divisions, continuations, continuations-in-part, reissues, reexaminations and extensions thereof, any counterparts claiming priority therefrom and like statutory rights.

Permitted Encumbrances shall mean: (i) Encumbrances for Taxes not yet due and payable or for Taxes that are being contested in good faith by appropriate proceedings; (ii) Encumbrances or imperfections of title resulting from or otherwise relating to any of the contracts referred to in the Company Disclosure Letter, to the extent the Company Disclosure Letter expressly identifies such Encumbrance or imperfection of title (or such is obvious on the face of the contract); (iii) Encumbrances or imperfections of title relating to liabilities reflected in the financial statements (including any related notes) contained in the Company SEC Documents; (iv) Encumbrances arising from or otherwise relating to transfer restrictions under the Securities Act and the securities laws of the various states of the United States or foreign jurisdictions; and (v) mechanics , materialmen s and similar statutory liens arising or incurred in the ordinary course of business for amounts not overdue.

Person shall mean any individual or Entity.

Phase III VR1 Trial shall mean a Phase III clinical trial as referred to in Section 6.4(b)(ii)(B) of the Merck Agreement.

Phase III VR1 Trial Initiation shall mean the enrollment of the first subject in a Phase III VR1 Trial.

Real Estate shall mean the properties currently owned by the Company located at 15, 35 and 45 NE Industrial Road, Branford, Connecticut 06405.

Real Estate Consideration shall mean the aggregate cash proceeds paid by any purchaser of the Real Estate after the date hereof and in accordance with the terms of this Agreement or the Real Estate CVR Agreement, as the case may be, less any costs and expenses reasonably incurred by the Company in connection with such sale (including secured loan payoffs and amounts paid to the Consulting Committee in accordance with an arrangement entered into pursuant to *Section 5.15(b)*).

Real Estate CVR shall mean a right having the terms and conditions set forth in the Real Estate CVR Agreement, to be issued in accordance with *Section 2.06* in respect of each Outstanding Company Share, to receive a pro rata portion (based on the number of Outstanding Company Shares) of any Real Estate Consideration received by Parent on or before the CVR Outside Date (as defined in the Real Estate CVR Agreement).

Real Estate CVR Agreement shall mean the agreement governing the terms and conditions of the Real Estate CVRs substantially in the form attached hereto as *Exhibit D*.

Reference Amount shall mean \$11,000,000.

SEC shall mean the United States Securities and Exchange Commission.

Software means all computer programs, including any and all software implementations of algorithms, models and methodologies whether in source code or object code form, and all documentation, including user manuals and training materials, related to any of the foregoing.

Special Meeting shall mean a special meeting of the stockholders of the Company held for the purpose of considering and taking action upon this Agreement and the Merger.

Table of Contents

Subsidiary shall mean an Entity that is related to another Entity such that such other Entity directly or indirectly owns, beneficially or of record: (i) an amount of voting securities or other interests in such Entity that is sufficient to enable such other Entity to elect at least a majority of the members of such Entity's board of directors or comparable governing body; or (ii) more than 50% of the outstanding equity interests issued by such Entity.

Superior Proposal shall mean any unsolicited, bona fide written offer made by a third party unaffiliated with the Company to directly or indirectly acquire (by way of merger, tender or exchange offer or otherwise) greater than 95% of the Company's assets (other than any such offer relating only to the Aplindore Program and/or the Real Estate and/or the proceeds of the pre-Closing Date sale thereof) or greater than 95% of the outstanding Company Shares (other than Company Shares already held by such third party) that the Company Board shall have determined in good faith (after consultation with the Company's outside legal counsel and financial advisor, and after taking into account, among other things, the financial, legal and regulatory aspects of such offer (including any financing required and the availability thereof), as well as any revisions to the terms hereof proposed by Parent pursuant to *Section 5.04(c)*), is more favorable to the stockholders of the Company than the terms of the Merger (taking into account any revisions to the terms hereof proposed by Parent pursuant to *Section 5.04(c)*) and is reasonably capable of being consummated on the terms proposed.

* *Target Net Cash Amount* shall mean \$7,900,000 if the Determination Date occurs on any date during the month of September 2009, with a \$5,000 decrease for each calendar day thereafter if the Determination Date occurs on any date thereafter.

Tax or *Taxes* shall mean (i) all federal, state, local or foreign taxes, including all net income, gross receipts, capital, sales, use, ad valorem, value added, transfer, franchise, profits, inventory, capital stock, license, withholding, payroll, employment, social security, unemployment, excise, severance, stamp, occupation, property and estimated taxes or other taxes any kind whatsoever, and (ii) all interest, penalties, fines, additions to tax or additional amounts imposed by any Governmental Entity in connection with any item described in clause (i).

Tax Returns shall mean any return, report, claim for refund, estimate, information return or statement or other similar document relating to or required to be filed with any Governmental Entity with respect to Taxes, including any schedule or attachment thereto, and including any amendment thereof.

Termination Fee shall mean, for purposes of *Section 7.03(a)* and *Section 7.03(c)*, \$475,000, and for purposes of *Section 7.03(b)*, \$225,000.

Trade Secrets shall mean confidential technology, know-how, plans, data, designs, protocols, plans, strains, molecules, works of authorship, inventions, processes, formulae, algorithms, models and methodologies, and trade secrets as defined in applicable state law.

Trademarks shall mean all registered and unregistered trademarks, service marks, trade names, Internet domain names, designs, logos and slogans, together with goodwill, registrations and applications relating to the foregoing.

Trading Day shall mean any day on which securities are traded on the Exchange.

Volume Weighted Average Price shall mean, for any Trading Day, the daily volume weighted average price of the Parent Common Stock for such date (or the nearest preceding date) on the Exchange as reported by Bloomberg L.P. (based on a Trading Day from 9:30 a.m. (New York time) to 4:02 p.m. (New York time)).

Wyeth License Agreement shall mean the License Agreement between Wyeth (acting through its Wyeth Pharmaceuticals division) and the Company, effective as of November 22, 2006.

Wyeth Maintenance Fee shall mean the \$250,000 fee required under the Wyeth License Agreement for 2009.

* Changed by amendment to read as herein stated pursuant to the Amendment to Agreement and Plan of Merger dated as of September 18, 2009.

Table of Contents

ARTICLE II

THE MERGER; EFFECTIVE TIME

Section 2.01 Merger of Merger Sub into the Company.

Upon the terms and subject to the conditions set forth in this Agreement and in accordance with the DGCL, at the Effective Time, Merger Sub shall be merged with and into the Company, and the separate existence of Merger Sub shall cease. The Company will continue as the surviving corporation in the Merger (the *Surviving Corporation*).

Section 2.02 Effect of the Merger.

The Merger shall have the effects set forth in this Agreement and in the applicable provisions of the DGCL. Without limiting the generality of the foregoing and subject thereto, at the Effective Time, all the property rights, privileges, immunities, powers and franchises of the Company and Merger Sub shall vest in the Surviving Corporation and all the debts, liabilities and duties of the Company and Merger Sub shall become the debts, liabilities and duties of the Surviving Corporation.

Section 2.03 Effective Time

Subject to the provisions of this Agreement, Parent, Merger Sub and the Company will cause a properly executed certificate of merger conforming to the requirements of the DGCL (the *Certificate of Merger*) to be filed with the Secretary of State of the State of Delaware on the Closing Date. The Merger shall become effective at the time the Certificate of Merger is filed with the Secretary of State of the State of Delaware, or at such later time as is agreed to in writing by the parties hereto and specified in the Certificate of Merger (the time at which the Merger becomes effective being referred to in this Agreement as the *Effective Time*).

Section 2.04 Closing

The closing of the Transactions (the *Closing*) will take place at 10:00 a.m. (San Diego time) on the date (the *Closing Date*) that is the second Business Day after the satisfaction or waiver (if such waiver is permitted and effective under applicable Legal Requirements) of the latest to be satisfied or waived of the conditions set forth in *Article VI* (excluding conditions that, by their terms, are to be satisfied on the Closing Date), unless another time or date is agreed to in writing by the parties. The Closing shall be held at the offices of Stradling Yocca Carlson & Rauth located at 4365 Executive Drive, Suite 1500, San Diego, CA 92121, unless another place is agreed to in writing by the parties.

Section 2.05 Certificate of Incorporation and Bylaws; Officers and Directors.

Unless otherwise jointly determined by Parent and the Company before the Effective Time:

(a) Subject to *Section 5.10(a)*, (i) the certificate of incorporation of the Company as in effect immediately before the Effective Time shall be the certificate of incorporation of the Surviving Corporation, until thereafter changed or amended as provided therein or by applicable Legal Requirements, and (ii) the bylaws of the Company as in effect immediately before the Effective Time shall be the bylaws of the Surviving Corporation, until thereafter changed or amended as provided therein or by applicable Legal Requirements.

(b) The manager and officers of Merger Sub immediately before the Effective Time shall be the initial director and officers, respectively, of the Surviving Corporation, each to hold office in accordance with the Certificate of Incorporation and Bylaws of the Surviving Corporation.

Table of Contents

Section 2.06 Conversion of Company Shares.

(a) At the Effective Time, by virtue of the Merger and without any further action on the part of Parent, Merger Sub, the Company or any member of Merger Sub or stockholder of the Company:

(i) any Company Shares then held by the Company or any wholly-owned Company Subsidiary (or held in the Company's treasury) shall cease to exist, and no consideration shall be paid in exchange therefor;

(ii) any Company Shares then held by Parent, Merger Sub or any other wholly-owned Parent Subsidiary shall cease to exist, and no consideration shall be paid in exchange therefor;

(iii) except as provided in clauses (i) and (ii) above, each issued and outstanding Company Share (other than Dissenting Shares) shall be converted, subject to *Section 2.09*, into the right to receive (A) a portion of a validly issued, fully paid and nonassessable share of common stock, par value \$0.001 per share, of Parent equal to the Exchange Ratio, including the associated rights under the Parent Rights Agreement (the *Parent Common Stock*); provided, that subject to *Section 7.01(i)* the maximum number of shares of Parent Common Stock that Parent shall be required to issue pursuant to this *Section 2.06(a)(iii)* shall not exceed the Maximum Amount, (B) in the event the Aplindore Program is sold by the Company before the Effective Time, an amount in cash and/or a number of shares of third-party stock, as the case may be, equal to the Aplindore Program Consideration which has been received as of the Effective Time divided by the total number of Outstanding Company Shares, (C) in the event the Real Estate is sold by the Company before the Effective Time, an amount in cash equal to the Real Estate Consideration which has been received as of the Effective Time divided by the total number of Outstanding Company Shares, (D) one Aplindore CVR (unless the Aplindore Program is sold by and all proceeds thereof are received by the Company before the Effective Time, or the Aplindore Program is terminated by the Company before the Effective Time), (E) one H3 CVR, (F) one Merck CVR, and (G) one Real Estate CVR (unless the Real Estate is sold by and all proceeds thereof are received by the Company before the Effective Time) (collectively, the *Merger Consideration*); and

(iv) each unit of limited liability company interest of Merger Sub then outstanding shall be converted into one share of the common stock of the Surviving Corporation, such that immediately after the Effective Time Parent shall, as the former holder of all the units of limited liability company interest of Merger Sub, own a number of shares of the common stock of the Surviving Corporation equal to the number (immediately before the Effective Time) of Outstanding Common Shares.

(b) The Exchange Ratio and the Maximum Amount shall be adjusted to the extent appropriate to reflect the effect of any stock split, division or subdivision of shares, stock dividend, reverse stock split, consolidation of shares, reclassification, recapitalization or other similar transaction with respect to Company Shares or Parent Common Stock occurring or having a record date on or after the date of this Agreement and before the Effective Time.

Section 2.07 Closing of the Company's Transfer Books.

At the Effective Time: (a) all Company Shares outstanding immediately before the Effective Time shall cease to exist as provided in *Section 2.06* and all holders of certificates representing Company Shares that were outstanding immediately before the Effective Time shall cease to have any rights as stockholders of the Company except the right to receive the Merger Consideration therefor; and (b) the stock transfer books of the Company shall be closed with respect to all Company Shares. No further transfer of any such Company Shares shall be made on such stock transfer books after the Effective Time. If, after the Effective Time, a valid certificate previously representing any Company Shares (a *Company Stock Certificate*) is presented to the Exchange Agent, the Surviving Corporation or Parent, such Company Stock Certificate shall be canceled and, if it represents Outstanding Company Shares, shall be exchanged as provided in *Section 2.08*.

Table of Contents

Section 2.08 Exchange of Certificates.

(a) Before the Effective Time: (i) Parent shall select a bank or trust company (reasonably acceptable to the Company) to act as exchange agent with respect to the payment of the Merger Consideration (the *Exchange Agent*); and (ii) Parent (or, as applicable, the Company) shall deposit with the Exchange Agent certificates representing the shares of Parent Common Stock, the Aplindore Program Consideration (to the extent already received by the Company) in the event the Aplindore Program is sold by the Company at or before the Effective Time, the Real Estate Consideration (to the extent already received by the Company) in the event the Real Estate is sold by the Company at or before the Effective Time, sufficient to enable the Exchange Agent to make payments pursuant to *Section 2.06* and *Section 2.09* to the holders of Outstanding Company Shares. After the Effective Time, Parent shall, if applicable, deposit with the Escrow Agent cash or securities for payment of any dividends or distributions sufficient to enable the Exchange Agent to make payments pursuant to *Section 2.10*. Such cash amounts deposited with the Exchange Agent shall, pending its disbursement to such holders, be invested by the Exchange Agent in (i) direct obligations of the United States of America, (ii) obligations for which the full faith and credit of the United States of America is pledged to provide for the payment of principal and interest, or (iii) money market funds investing solely in a combination of the foregoing. Any interest and other income resulting from such investments shall be the property of, and shall be paid to, Parent. Parent shall promptly replace any funds deposited with the Exchange Agent lost through any investment made pursuant to this paragraph.

(b) Promptly after the Effective Time, Parent shall cause the Exchange Agent to mail to each Person who was, immediately before the Effective Time, a holder of record of Company Shares a form of letter of transmittal and instructions for use in effecting the surrender of Company Stock Certificates representing such Company Shares in exchange for payment therefor. Parent shall ensure that, upon surrender to the Exchange Agent of each such Company Stock Certificate, together with a properly executed letter of transmittal, the holder of such Company Stock Certificate (or, under the circumstances described in *Section 2.08(f)*, the transferee of the Company Shares represented by such Company Stock Certificate) shall promptly receive in exchange therefor the Merger Consideration (including the CVRs and including any cash in lieu of fractional shares of Parent Common Stock to which such holder is entitled pursuant to *Section 2.09*) and any dividends or other distributions to which such holder is entitled pursuant to *Section 2.10*.

(c) On or after the sixth month anniversary of the Effective Time, Parent or the Surviving Corporation shall be entitled to cause the Exchange Agent to deliver to Parent or the Surviving Corporation any funds made available by Parent to the Exchange Agent which have not been disbursed to holders of Company Shares, and thereafter such holders shall be entitled to look only to Parent and the Surviving Corporation with respect to the consideration payable and issuable upon surrender of their Company Shares.

(d) Neither the Exchange Agent, Parent nor the Surviving Corporation shall be liable to any holder of Company Shares for any amount properly paid to a public official pursuant to any applicable abandoned property or escheat law. If any Company Stock Certificates shall not have been surrendered on the day immediately before the day that such property is required to be delivered to any public official pursuant to any applicable abandoned property, escheat or similar Legal Requirement, any such Merger Consideration in respect thereof shall, to the extent permitted by applicable Legal Requirements, become the property of Parent, free and clear of all claims or interest of any Person previously entitled thereto.

(e) If any Company Stock Certificate shall have been lost, stolen or destroyed, then, upon the making of an affidavit of that fact by the Person claiming such Company Stock Certificate to be lost, stolen or destroyed in a form reasonably satisfactory to Parent (together with an indemnity in form reasonably satisfactory to Parent against any claim that may be made against the Exchange Agent or Parent or otherwise with respect to such certificate and, if required by Parent, the posting by such Person of a bond in such reasonable amount as Parent may direct to support such indemnity), Parent shall cause the Exchange Agent to pay in exchange for such lost, stolen or destroyed Company Stock Certificate the Merger Consideration (including any cash in lieu of fractional shares of Parent Common Stock to which such holder is entitled pursuant to *Section 2.09*) and any dividends or other distributions to which such holder is entitled pursuant to *Section 2.10*.

Table of Contents

(f) In the event of a transfer of ownership of Company Shares which is not registered in the transfer records of the Company, the Merger Consideration (including any cash in lieu of fractional shares of Parent Common Stock to which such holder is entitled pursuant to *Section 2.09*) and any dividends or other distributions to which such holder is entitled pursuant to *Section 2.10* may be paid and issued with respect to such Company Shares to a transferee of such Company Shares if the Company Stock Certificate representing such Company Shares is presented to the Exchange Agent, accompanied by all documents reasonably required by the Exchange Agent to evidence and effect such transfer and to evidence that any applicable stock transfer taxes relating to such transfer have been paid.

(g) The Surviving Corporation or Parent shall bear and pay all charges and expenses, including those of the Exchange Agent, incurred in connection with the exchange of the Company Shares.

(h) Parent, the Surviving Corporation and the Exchange Agent shall be entitled to deduct and withhold from the consideration otherwise payable pursuant to the Merger or this Agreement to any holder of Company Shares, such amounts as Parent, the Surviving Corporation or the Exchange Agent are required to deduct and withhold under the Code with respect to the making of such payment. To the extent that amounts are so withheld and paid over to the appropriate Tax authority or other Governmental Entity by Parent, the Surviving Corporation or the Exchange Agent, such withheld amounts shall be treated for all purposes of this Agreement as having been paid to the holder of Company Shares, in respect of whom such deduction and withholding was made by Parent, the Surviving Corporation or the Exchange Agent.

Section 2.09 Fractional Shares

(a) No certificates or scrip representing fractional shares of Parent Common Stock shall be issued upon the surrender for exchange of Company Stock Certificates, no dividend or distribution with respect to Parent Common Stock shall be payable on or with respect to any fractional share and such fractional share interests will not entitle the owner thereof to any rights of a stockholder of Parent.

(b) As promptly as practicable following the Effective Time, the Exchange Agent shall determine the difference between (i) the number of full shares of Parent Common Stock delivered to the Exchange Agent by Parent pursuant to *Section 2.08* and (ii) the aggregate number of full shares of Parent Common Stock to be distributed to holders of Company Shares pursuant to *Section 2.06(a)(iii)* (such difference being the *Excess Shares*). As soon after the Effective Time as practicable, the Exchange Agent, as agent for such holders of Parent Common Stock, shall sell the Excess Shares at then prevailing prices on the Exchange, all in the manner provided in this *Section 2.09*.

(c) The sale of the Excess Shares by the Exchange Agent shall be executed on the Exchange through one or more member firms of the Exchange and shall be executed in round lots to the extent practicable. Until the net proceeds of any such sale or sales have been distributed to such holders of Company Shares, the Exchange Agent will hold such proceeds in trust for such holders of Company Shares as part of the Exchange Fund. Parent shall pay all commissions, transfer taxes and other out-of-pocket transaction costs of the Exchange Agent incurred in connection with such sale or sales of Excess Shares. In addition, Parent shall pay the Exchange Agent's compensation and expenses in connection with such sale or sales. The Exchange Agent shall determine the portion of such net proceeds to which each holder of Company Shares shall be entitled, if any, by multiplying the amount of the aggregate net proceeds by a fraction, the numerator of which is the amount of the fractional share interest to which such holder of Company Shares is entitled (after taking into account all shares of Parent Common Stock to be issued to such holder) and the denominator of which is the aggregate amount of fractional share interests to which all holders of Company Shares are entitled.

(d) As soon as practicable after the determination of the amount of cash, if any, to be paid to holders of Company Shares with respect to any fractional share interests, the Exchange Agent shall promptly pay such amounts to such holders of Company Shares subject to and in accordance with the terms of *Section 2.10*.

Table of Contents**Section 2.10 Distributions with Respect to Unexchanged Shares of Parent Common Stock.**

No dividends or other distributions declared or made after the Effective Time with respect to Parent Common Stock with a record date after the Effective Time shall be paid to the holder of any unsurrendered Company Stock Certificate with respect to the shares of Parent Common Stock represented thereby, no cash payment in lieu of fractional shares shall be paid to any such holder pursuant to *Section 2.09*, and no payment in respect of the Merger Consideration shall be made with respect to such Company Shares represented thereby pursuant to *Section 2.06(a)(iii)*, unless and until the holder of such Company Stock Certificate shall surrender such Company Stock Certificate. Subject to the effect of escheat, tax or other applicable Laws, following proper surrender of any such Company Stock Certificate, there shall be paid to the holder of the certificates representing whole shares of Parent Common Stock issued in exchange therefor, without interest, (A) promptly, the amount of any cash payable with respect to a fractional share of Parent Common Stock to which such holder is entitled pursuant to *Section 2.09* and the amount of dividends or other distributions with a record date after the Effective Time theretofore paid with respect to such whole shares of Parent Common Stock, (B) the Merger Consideration pursuant to *Section 2.06(a)(iii)*, and (C) at the appropriate payment date, the amount of dividends or other distributions, with a record date after the Effective Time but before surrender and a payment date occurring after surrender, payable with respect to such whole shares of Parent Common Stock.

Section 2.11 Company Stock Options; Company Warrants.

(a) By operation of the Company Equity Plans, all outstanding Company Options, whether or not then vested, will become fully vested and exercisable on the Closing Date. The Company Board, by operation of existing agreements, including the Non-Employee Director Agreements, or by resolution, will take all requisite actions such that immediately before the Effective Time (i) each holder of outstanding Company Options shall be entitled to exercise in full all Company Options held by such holder by paying the exercise price therefor in exchange for the Company Shares in accordance with the applicable Company Equity Plan, and (ii) all outstanding Company Options not exercised pursuant to clause (i) of this *Section 2.11(a)*, other than any unexercised Company Options remaining outstanding under the Company's 1993 Omnibus Incentive Plan (the *1993 Company Options*), shall be terminated and canceled without any payment or liability on the part of the Company.

(b) Between the date of this Agreement and the Effective Time, the Company shall use reasonable best efforts to enter into agreements with the holders of the outstanding Company Warrants to terminate and cancel all such Company Warrants, effective immediately before the Effective Time, without any payment or liability on the part of the Company; *provided* that the ability of the Company to terminate and cancel all such Company Warrants shall not limit in anyway Parent's obligation to consummate the Merger and the Transactions.

(c) If any Company Warrant or 1993 Company Option remains outstanding after the Effective Time and the holder thereof exercises such Company Warrant or 1993 Company Option, as the case may be, before its expiration date, then Parent shall issue and pay in respect of each exercised Company Warrant or 1993 Company Option, as the case may be, in exchange for the payment of the applicable exercise price, on a per-exercised-share basis, equivalent consideration to the Merger Consideration (or the proceeds thereof) as was paid in respect of each issued and outstanding Company Share in the Merger; *provided* that any such payment in respect of the 1993 Company Options shall be made in compliance with Section 409A of the Code.

Section 2.12 Dissenting Shares

Notwithstanding anything in this Agreement to the contrary, any Company Share issued and outstanding immediately before the Effective Time held by a holder who is entitled to demand and properly demands appraisal of such Company Shares (the *Dissenting Shares*), pursuant to, and who complies in all respects with, Section 262 of the DGCL (the *Appraisal Rights*), shall not be converted into the right to receive the Merger Consideration, but instead shall be converted into the right to receive such consideration as may be due such holder pursuant to Section 262 of the DGCL unless such holder fails to perfect, withdraws or otherwise loses

Table of Contents

such holder's right to such payment or appraisal. From and after the Effective Time, a holder of Dissenting Shares shall not have and shall not be entitled to exercise any of the voting rights or other rights of a stockholder of the Company or the Surviving Corporation. If, after the Effective Time, such holder fails to perfect, withdraws or otherwise loses any such Appraisal Rights, each such share of such holder shall no longer be considered a Dissenting Share and shall be deemed to have converted as of the Effective Time into the right to receive the Merger Consideration in accordance with *Section 2.06(a)(iii)*. The Company shall give prompt notice to Parent of any demands received by the Company for appraisal of Company Shares, withdrawals of such demands and any other instruments served pursuant to the DGCL received by the Company, and Parent shall have the right to control all negotiations and proceedings with respect to such demands. Before the Effective Time, the Company shall not, except with the prior written consent of Parent, voluntarily make any payment with respect to, or settle or offer to settle, any such demands or agree to do or commit to do any of the foregoing.

ARTICLE III**REPRESENTATIONS AND WARRANTIES OF THE COMPANY**

The Company hereby represents and warrants to Parent and Merger Sub that except as set forth in the letter delivered by the Company to Parent immediately before the execution of this Agreement (the *Company Disclosure Letter*) or the Company SEC Documents either filed with or furnished to the SEC before the date of this Agreement (the *Filed Company SEC Documents*) (it being understood that any matter set forth in the Company Disclosure Letter or in such Filed Company SEC Documents shall be deemed disclosed with respect to any Section of this *Article III* to which the matter relates, to the extent the relevance of such matter to such Section is reasonably apparent):

Section 3.01 Organization, Standing and Corporate Power.

(a) The Company is a corporation duly organized, validly existing and in good standing under the Legal Requirements of the State of Delaware and has all requisite corporate power and authority necessary to own or lease all of its properties and assets and to carry on its business as it is now being conducted. The Company is duly licensed or qualified to do business and is in good standing in each jurisdiction in which the nature of the business conducted by it or the character or location of the properties and assets owned or leased or held under license by it makes such licensing or qualification necessary, except where the failure to be so licensed, qualified or in good standing would not, individually or in the aggregate, reasonably be expected to have a Company Material Adverse Effect, impair in any material respect the ability of the Company to perform its obligations hereunder or prevent or materially delay consummation of the Transactions.

(b) Each Company Subsidiary is a corporation or other organization duly organized, validly existing and in good standing under the Legal Requirements of the jurisdiction of its organization. Each Company Subsidiary is duly licensed or qualified to do business and is in good standing in each jurisdiction in which the nature of the business conducted by it or the character or location of the properties and assets owned or leased or held under license by it makes such licensing or qualification necessary, except where the failure to be so licensed, qualified or in good standing would not, individually or in the aggregate, reasonably be expected to have a Company Material Adverse Effect. *Section 3.01(b)* of the Company Disclosure Letter sets forth a true and complete list of each Company Subsidiary and the jurisdiction of organization of each Company Subsidiary. All the outstanding shares of capital stock of, or other equity interests in, each Company Subsidiary are duly authorized, have been validly issued, are fully paid, non-assessable and free of preemptive rights, and are owned directly or indirectly by the Company free and clear of all Encumbrances, except for such transfer restrictions of general applicability as may be provided under the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder (the *Securities Act*) and other applicable securities laws and rules and regulations promulgated thereunder.

Table of Contents

(c) The Company has delivered to Parent complete and correct copies of the certificate of incorporation and bylaws (or other comparable organizational documents) of the Company and each Company Subsidiary, in each case as amended through the date of this Agreement (the *Company Charter Documents*). The Company has made available to Parent and its representatives true and complete copies of the minutes (or, in the case of minutes that have not yet been finalized, a brief summary of the meeting, including in each case a summary of any resolutions adopted by the Company Board) of all meetings of the stockholders, the Company Board and each committee of the Company Board held since January 1, 2007 and equivalent documents of each Company Subsidiary.¹

Section 3.02 Capitalization.

(a) The authorized capital stock of the Company consists of: (i) 150,000,000 shares of common stock, par value \$0.025 per share (each, a *Company Share* and, collectively, the *Company Shares*) and (ii) 10,000,000 shares of Preferred Stock, par value \$0.025 per share (*Company Preferred Stock*). At the close of business on August 20, 2009, (i) 68,974,080 Company Shares were issued and outstanding (and no Company Shares were issued and held by the Company in its treasury), (ii) 7,451,124 Company Shares were reserved for issuance under the Company Equity Plans (of which 3,878,932 Company Shares were subject to outstanding Company Options granted under the Company Equity Plans), (iii) no Company Shares were subject to outstanding Company Options granted other than under the Company Equity Plans, (iv) 12,758,343 Company Shares were subject to outstanding Company Warrants and (v) no shares of Company Preferred Stock were issued or outstanding. All Company Shares, and Company Shares reserved for issuance upon exercise of the Company Options or the Company Warrants, have been duly authorized and are, or upon issuance in accordance with the terms of the Company Options will be, validly issued, fully paid, non-assessable and free of preemptive rights. *Section 3.02(a)* of the Company Disclosure Letter sets forth a correct and complete list, as of August 20, 2009, of: (i) the outstanding Company Options, the number of Company Shares underlying such Company Options and the holders, exercise prices and expiration dates thereof and (ii) the outstanding Company Warrants, the number of Company Shares underlying such Company Warrants and the holders, exercise prices and expiration dates thereof. Since January 1, 2009, the Company has not issued, or reserved for issuance, any shares of its capital stock or any securities convertible into or exchangeable or exercisable for any shares of its capital stock, other than pursuant to the Company Options and Company Warrants referred to above that are outstanding as of the date of this Agreement.

(b) There are no outstanding contractual obligations of the Company or any Company Subsidiary (i) restricting the transfer of, (ii) affecting the voting rights of, (iii) requiring the issuance, sale, repurchase, redemption or disposition of, or containing any right of first refusal with respect to, (iv) requiring the registration for sale of, or (v) granting any preemptive or anti-dilutive right with respect to, any Company Shares or any capital stock of the Company or any Company Subsidiary, except pursuant to the Company Options and the Company Warrants. There are no bonds, debentures, notes or other indebtedness or liabilities of the Company or any Company Subsidiary having the right to vote (or convertible into or exchangeable for securities having the right to vote) on any matters on which the stockholders of the Company or any Company Subsidiary may vote.

Section 3.03 Authority; Non-contravention; Voting Requirements.

(a) The Company has all necessary corporate power and authority to execute and deliver this Agreement and the CVR Agreements and, subject to obtaining the approval of the holders of the Company Shares of the adoption of this Agreement as contemplated by *Section 5.05* (the *Company Stockholder Approval*), to perform its obligations hereunder and to consummate the Transactions. The execution, delivery and performance by the Company of this Agreement and the CVR Agreements, and the consummation by it of the Transactions, have been duly authorized and approved by the Company Board, and except for obtaining the Company Stockholder

¹ The Company will provide all minutes relating to the strategic process undertaken by the Company upon signing of this Agreement.

Table of Contents

Approval, no other corporate action on the part of the Company or any stockholder of the Company is necessary to authorize the execution, delivery and performance by the Company of this Agreement and the CVR Agreements and the consummation by it of the Transactions. This Agreement has been duly executed and delivered by the Company and, assuming due authorization, execution and delivery hereof by the other parties hereto, constitutes a legal, valid and binding obligation of the Company, enforceable against the Company in accordance with its terms, except that such enforceability (i) may be limited by bankruptcy, insolvency, fraudulent transfer, reorganization, moratorium and other similar Legal Requirements of general application affecting or relating to the enforcement of creditors' rights generally and (ii) is subject to general principles of equity, whether considered in a proceeding at law or in equity (the *Bankruptcy and Equity Exception*).

(b) The Company Board has, upon the terms and subject to the conditions set forth in this Agreement, unanimously duly adopted resolutions (i) determining that the Transactions are advisable and in the best interests of the Company and its stockholders, (ii) approving this Agreement and the Transactions, including the Merger, in accordance with the DGCL, (iii) directing that this Agreement be submitted to the stockholders of the Company for adoption, and (iv) recommending that the stockholders of the Company adopt this Agreement (the *Company Recommendation*).

(c) Neither the execution and delivery of this Agreement nor the CVR Agreements by the Company nor the consummation by the Company of the Transactions, nor compliance by the Company with any of the terms or provisions hereof, will (i) conflict with or violate any provision of the Company Charter Documents or (ii) assuming that the authorizations, consents and approvals referred to in *Section 3.04* and the Company Stockholder Approval are obtained and the filings referred to in *Section 3.04* are made, (x) violate any Legal Requirements applicable to the Company or any Company Subsidiary or (y) violate or constitute a default under any Company Contract, except, in the case of clause (ii), for such violations or defaults as would not, individually or in the aggregate, reasonably be expected to have a Company Material Adverse Effect, impair in any material respect the ability of the Company to perform its obligations hereunder or prevent or materially delay consummation of the Transactions.

(d) The affirmative vote (in person or by proxy) of the holders of a majority of the issued and outstanding Company Shares in favor of the adoption of this Agreement is the only vote or approval of the holders of any class or series of capital stock of the Company which is necessary to adopt this Agreement and approve the Merger.

Section 3.04 Governmental Approvals.

Except for (i) the filing with the SEC of the Proxy Statement in definitive form, and other filings required under, and compliance with other applicable requirements of, the Exchange Act and the rules of the Exchange, and (ii) the filing of the Certificate of Merger with the Secretary of State of the State of Delaware pursuant to the DGCL, no consents or approvals of, or filings, declarations or registrations with, any Governmental Entity are necessary for the execution and delivery of this Agreement and the CVR Agreements by the Company and the consummation by the Company of the Transactions, other than such consents, approvals, filings, declarations or registrations that, if not obtained, made or given, would not, individually or in the aggregate, reasonably be expected to have a Company Material Adverse Effect, impair in any material respect the ability of the Company to perform its obligations hereunder or prevent or materially delay consummation of the Transactions.

Section 3.05 Company SEC Documents; Financial Statements.

(a) The Company has filed all required registration statements, prospectuses, forms, reports and proxy statements with the SEC, together with all certifications required pursuant to the Sarbanes-Oxley Act of 2002 (the *Sarbanes-Oxley Act*), from and after January 1, 2006 (collectively, the *Company SEC Documents*). As of their respective effective dates (in the case of Company SEC Documents that are registration statements filed pursuant to the requirements of the Securities Act) and as of their respective SEC filing dates (in the case of all

Table of Contents

other Company SEC Documents), the Company SEC Documents complied in all material respects with the requirements of the Exchange Act and the Securities Act, as the case may be, applicable to such Company SEC Documents, and none of the Company SEC Documents as of such respective dates contained any untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading.

(b) The consolidated financial statements of the Company included in the Company SEC Documents (the *Company Financial Statements*) have been prepared in accordance with GAAP (except, in the case of unaudited interim statements, as indicated in the notes thereto) applied on a consistent basis during the periods involved (except as may be indicated in the notes thereto) and fairly present in all material respects the consolidated financial position of the Company and the consolidated Company Subsidiaries as of the dates thereof and the consolidated results of their operations and cash flows for the periods then ended (subject, in the case of unaudited interim statements, to normal year-end audit adjustments).

(c) Neither the Company nor any Company Subsidiary has any liabilities of any nature (whether accrued, absolute, determined, determinable, fixed or contingent) which would be required to be reflected or reserved against on a consolidated balance sheet of the Company prepared in accordance with GAAP, except liabilities (A) reflected or reserved against in the consolidated balance sheet included in its Quarterly Report filed on Form 10-Q for the quarterly period ended June 30, 2009 (including the notes thereto), included in the Company SEC Documents, (B) incurred pursuant to this Agreement or in connection with the Transactions, (C) incurred since June 30, 2009 in the ordinary course of business, or (D) that have not had, and would not reasonably be expected to have, individually or in the aggregate, a cash expenditure or exposure in excess of \$75,000.

(d) Since June 30, 2009, except for actions taken in connection with this Agreement and the Transactions, (i) the Company and the Company Subsidiaries have conducted their businesses in all material respects in the ordinary course, and (ii) there has not been any Company Material Adverse Effect or any change, event, development, condition, occurrence or effect that has had or would reasonable be expected to have, individually or in the aggregate, a Company Material Adverse Effect.

(e) The Company and the Company Subsidiaries have designed and maintain a system of internal controls over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) of the Exchange Act) sufficient to provide reasonable assurances regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP. The Company (i) has designed and maintains disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) of the Exchange Act) to ensure that material information required to be disclosed by the Company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and is accumulated and communicated to the Company's management as appropriate to allow timely decisions regarding required disclosure, and (ii) has disclosed, to the Knowledge of the Company, based on its most recent evaluation of such disclosure controls and procedures before the date hereof, to the Company's auditors and the audit committee of the Company Board (and has specified in the Company Disclosure Letter) (A) any significant deficiencies and material weaknesses in the design or operation of internal controls over financial reporting that are reasonably likely to adversely affect in any material respect the Company's ability to record, process, summarize and report financial information and (B) any fraud, whether or not material, that involves management or other employees who have a significant role in the Company's internal controls over financial reporting. For purposes of this Agreement, the terms significant deficiency and material weakness shall have the meanings assigned to them by the Public Company Accounting Oversight Board in Auditing Standard No. 2, as in effect on the date hereof.

Section 3.06 Legal Proceedings.

As of the date hereof, there is no pending or, to the Knowledge of the Company, threatened Legal Proceeding against or relating to the Company or any Company Subsidiary, nor is there any injunction, order, judgment, ruling or decree imposed upon the Company or any Company Subsidiary, in each case, by or before

Table of Contents

any Governmental Entity, that would, individually or in the aggregate, reasonably be expected to result in a judgment against the Company in excess of \$75,000 or have a Company Material Adverse Effect, impair in any material respect the ability of the Company to perform its obligations hereunder or prevent or materially delay consummation of the Transactions.

Section 3.07 Compliance With Legal Requirements; Governmental Authorizations; FDA Laws.

(a) The Company and the Company Subsidiaries are in compliance with all Legal Requirements applicable to the Company or any Company Subsidiary, as applicable, except for such non-compliance as would not, individually or in the aggregate, reasonably be expected to have a Company Material Adverse Effect. The Company and the Company Subsidiaries hold all Governmental Authorizations necessary for the lawful conduct of their respective businesses, and all such Governmental Authorizations are valid and in full force and effect, except where the failure to hold the same or of the same to be valid and in full force and effect would not, individually or in the aggregate, reasonably be expected to have a Company Material Adverse Effect. The Company and the Company Subsidiaries are in compliance with the terms of all Governmental Authorizations, except for such non-compliance as would not, individually or in the aggregate, reasonably be expected to have a Company Material Adverse Effect.

(b) All facilities operated by the Company and the Company Subsidiaries in connection with the operation of their businesses that are subject to the FDA have been operated in compliance with the Federal Food Drug and Cosmetic Act (21 U.S.C. §§ 301, et seq.) and regulations and guidelines thereunder to the extent applicable, and all similar Legal Requirements applicable to the operation of the business and operations of the Company and the Company Subsidiaries (collectively, the *FDA Laws*), except for such failures to be in compliance as would not, individually or in the aggregate, reasonably be expected to have a Company Material Adverse Effect.

(c) To the Knowledge of the Company, all clinical trials conducted by the Company have been, and are being, conducted in substantial compliance with the requirements of current good clinical practice and all applicable requirements relating to protection of human subjects contained in Title 21, Parts 50, 54, 56 and 312 of the United States Code of Federal Regulations.

(d) Other than as disclosed in *Section 3.07(d)* of the Company Disclosure Letter, there have been no significant adverse events with respect to the Aplindore Program.

(e) As of the date hereof, to the Knowledge of the Company, Merck has not announced publicly or disclosed to the Company any significant drug-related adverse events with respect to the VR1 program under the Merck Agreement, and has not terminated or expressed an intent to terminate the Merck Agreement.

Section 3.08 Information Supplied.

(a) The Proxy Statement, and any amendments or supplements thereto, at (A) the time the Registration Statement is declared effective, (B) the time the Proxy Statement (or any amendment thereof or supplement thereto) is first mailed to the stockholders of the Company, (C) the time of the Special Meeting, and (D) the Effective Time, will comply as to form in all material respects with the applicable requirements of the Securities Act, the Exchange Act and other applicable Legal Requirements.

(b) The Proxy Statement, and any amendments or supplements thereto, do not, and will not, at (A) the time the Registration Statement is declared effective, (B) the time the Proxy Statement (or any amendment thereof or supplement thereto) is first mailed to the stockholders of the Company, (C) the time of the Special Meeting, or (D) the Effective Time, contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary in order to make the statements made therein, in light of the circumstances under which they were made, not misleading.

(c) The representations and warranties contained in this *Section 3.08* will not apply to statements or omissions included in the Proxy Statement based upon information furnished in writing to the Company by Parent or Merger Sub specifically for use therein.

Table of Contents

Section 3.09 Tax Matters.

(a)(i) Each of the Company and the Company Subsidiaries has timely filed, or has caused to be timely filed on its behalf (taking into account any extension of time within which to file), all material Tax Returns required to be filed by it, and all such filed Tax Returns are correct and complete in all material respects; (ii) all Taxes shown to be due on such Tax Returns have been timely paid; (iii) no deficiency with respect to Taxes has been proposed, asserted or assessed in writing against the Company or any Company Subsidiary which have not been fully paid or adequately reserved in the Company SEC Documents; and (iv) to the Knowledge of the Company, no audit or other administrative or court proceedings are pending with any Governmental Entity with respect to Taxes of the Company or any Company Subsidiary, and no written notice thereof has been received.

(b) Neither the Company nor any Company Subsidiary is a party to or bound by any material Tax allocation or sharing agreement (other than any such agreement solely between or among the Company and any of its Subsidiaries).

(c) To the Knowledge of the Company, neither the Company nor any Company Subsidiary (i) has been a member of an affiliated group filing a consolidated federal income Tax Return (other than a group the common parent of which was the Company) or (ii) has any liability for the Taxes of any Person (other than the Company or any Company Subsidiary) under United States Treasury Regulation Section 1.1502-6 (or any similar provision of any Legal Requirement), as a transferee or successor, by Contract, or otherwise.

(d) There are no liens for Taxes upon any material property or other material assets of the Company or any Company Subsidiary, except liens for Taxes not yet due and payable and liens for Taxes that are being contested in good faith by appropriate proceedings.

(e) All material Taxes required to be withheld, collected or deposited by or with respect to the Company and each of the Company Subsidiaries have been timely withheld, collected or deposited, as the case may be, and to the extent required, have been paid to the relevant Tax authority or other Governmental Entity, and to the Knowledge of the Company no Taxes so required have not been.

(f) Neither the Company nor any Company Subsidiary is a party to any agreement, contract, arrangement or plan that has resulted or would result, individually or in the aggregate, in the payment of any excess parachute payment within the meaning of Section 280G of the Code (or any corresponding provision of state, local or foreign Tax law).

(g) No material deduction by the Company or any Company Subsidiary in respect of any applicable employee remuneration (within the meaning of Section 162(m) of the Code) has been disallowed or is subject to disallowance by reason of Section 162(m) of the Code.

Section 3.10 Employee Benefits and Labor Matters.

(a) *Section 3.10(a)* of the Company Disclosure Letter lists each employee benefit plan (as defined in Section 3(3) of ERISA), and any other material employee plan or agreement maintained by the Company or any Company Subsidiary and with respect to which the Company or any Company Subsidiary would reasonably be expected to have any material liability (each, a *Company Plan*). The Company has made available to Parent correct and complete copies of (i) each Company Plan (or, in the case of any such Company Plan that is unwritten, descriptions of the material terms thereof), (ii) the most recent annual report on Form 5500 required to be filed with the Internal Revenue Service (the *IRS*) with respect to each Company Plan (if any such report was required), (iii) the most recent summary plan description for each Company Plan for which such summary plan description is required and (iv) each material trust agreement and insurance or group annuity Contract relating to any Company Plan. Each Company Plan maintained, contributed to or required to be contributed to by the Company or any Company Subsidiary has been administered in all material respects in accordance with its terms.

Table of Contents

The Company Subsidiaries and all the Company Plans are all in material compliance with the applicable provisions of ERISA, the Code and all other applicable Legal Requirements. All Company Plans that constitute employee pension plans (as defined in Section 3(3) of ERISA) and are intended to be Tax qualified under Section 401(a) of the Code (each, a *Company Pension Plan*) have received an opinion or determination letter from the IRS and are expressly identified as such in Section 3.10(a) of the Company Disclosure Letter. The Company has made available to Parent a correct and complete copy of the most recent opinion or determination letter received with respect to each Company Pension Plan maintained, contributed to or required to be contributed to by the Company or any Company Subsidiary, as well as a correct and complete copy of each pending application for an opinion or a determination letter, if any. Neither the Company nor any Company Subsidiary has contributed or has been obligated to contribute to an employee benefit plan subject to Title IV of ERISA, a multiemployer plan, as defined in Section 3(37) of ERISA, or an employee benefit plan subject to Sections 4063 or 4064 of ERISA.

(b) Neither the Company, nor any Company Subsidiary has any material liability for life, health, medical or other welfare benefits for former employees or beneficiaries or dependents thereof under Company Plans, other than Company Pension Plans and other than as required by Section 4980B of the Code, Part 6 of Title I of ERISA or other applicable Legal Requirement.

(c) There are no pending or, to the Company's Knowledge, threatened, claims, lawsuits, arbitrations or audits asserted or instituted against any Company Plan, any fiduciary (as defined by Section 3(21) of ERISA) thereto, the Company, any Company Subsidiary or any employee or administrator thereof in connection with the existence, operation or administration of a Company Plan, other than routine claims for benefits.

(d) Neither the Company nor any Company Subsidiary is a party to a collective bargaining agreement and no labor union has been certified to represent any employee of the Company or any Company Subsidiary or, to the Knowledge of the Company, has applied to represent or is attempting to organize so as to represent such employees.

(e) *Section 3.10(e)* of the Company Disclosure Letter lists each material (i) stay or severance or bonus or employment agreement with directors, officers or employees of or consultants to the Company or any Company Subsidiary; or (ii) stay or severance or bonus program or policy of the Company or any Company Subsidiary with or relating to its employees.

Section 3.11 Contracts.

(a) Except for Contracts filed as exhibits to the Filed Company SEC Documents, *Section 3.11(a)* of the Company Disclosure Letter sets forth a correct and complete list, and the Company has made available to Parent correct and complete copies, of all Contracts (including all material amendments, modifications, extensions or renewals with respect thereto, but excluding all names, terms and conditions that have been redacted in compliance with the terms of each such Contract or with applicable Legal Requirements governing the sharing of information) to which the Company or any Company Subsidiary is a party as of the date of this Agreement (collectively, the *Company Contracts*):

(i) required to be filed as an exhibit to any report of the Company filed pursuant to the Exchange Act of the type described in Item 601(b) of Regulation S-K promulgated by the SEC;

(ii) that contain a covenant restricting the ability of the Company or any Company Subsidiary to compete in any business or with any Person or in any geographic area;

(iii) with any Affiliate of the Company;

(iv) which primarily relates to (A) the granting to the Company or any Company Subsidiary of any IP License in or to any Company Intellectual Property owned by a third party, with annual license fees of more than \$50,000, or (B) the granting by the Company or any Company Subsidiary to a third party of any IP

Table of Contents

License in or to any Company Intellectual Property, with annual license fees of more than \$25,000, excluding click-wrap or shrink-wrap agreements, agreements contained in or pertaining to off-the-shelf Software, or the terms of use or service for any web site;

(v) relating to any material joint venture, partnership or other similar arrangement involving co-investment, collaboration or partnering with a third party;

(vi) with a Governmental Entity (other than ordinary course Contracts with Governmental Entities as a customer);

(vii) pursuant to which any Indebtedness of the Company or any Company Subsidiary is outstanding or may be incurred or pursuant to which the Company or any Company Subsidiary has guaranteed any Indebtedness of any other Person (other than the Company or any Company Subsidiary and excluding Company trade payables arising in the ordinary course of business);

(viii) pursuant to which the Company, any Company Subsidiary or any other party thereto has continuing obligations, rights or interests relating to the research, development, clinical trial, distribution, supply, manufacture, marketing or co-promotion of, or collaboration with respect to, any product or product candidate for which the Company or any Company Subsidiary is currently engaged in research or development, including manufacture or supply services or Contracts with contract research organizations for clinical trials-related services; and

(ix) which are to any extent executory and relate to (A) the disposition or acquisition of any material assets or properties, other than dispositions or acquisitions in the ordinary course of business, or (B) any merger or other business combination transaction.

(b) Each Company Contract is valid and binding on the Company and each Company Subsidiary which is party thereto and, to the Knowledge of the Company, each other party thereto, and is in full force and effect, and the Company and each Company Subsidiary has performed all obligations required to be performed by it before the date hereof under each Company Contract and, to the Knowledge of the Company, each other party to each Company Contract has performed all obligations required to be performed by it before the date hereof under such Company Contract, except for such failures to be in compliance as would not, individually or in the aggregate, reasonably be expected to result in a material breach thereof.

(c) The Company has not received or enjoyed any benefit, inducement or incentive from any Governmental Entity which will, as a result of this Agreement or the Transactions or the sale of the Real Estate or the cessation of the Company's business operations in the geographic area where they are currently conducted or the termination of all or substantially all Company employees, result in any clawback, recapture, recoupment, repayment obligation, penalty, Tax or other such liability.

(d) The redacted provisions of the copy of the Merck Agreement which has been provided to Parent for review in such redacted form do not include any term which would result in a material reduction of the benefits provided by the Merck Agreement to the Company or Parent from the terms in the unredacted provisions of the Merck Agreement and described in the Summary of Merck Financial Related Information furnished to Parent on the date hereof.

Section 3.12 Environmental Matters.

(a) To the Knowledge of the Company, the Company and each Company Subsidiary is in compliance with (i) all applicable Legal Requirements concerning pollution or protection of the environment, including without limitation all those relating to the presence, use, production, generation, handling, transportation, treatment, storage, disposal, distribution, labeling, testing, processing, discharge, release, threatened release, control or cleanup of any hazardous materials, substances or wastes, as such requirements are enacted and in effect on the date hereof (*Environmental Laws*), and (ii) any Governmental Authorizations required under applicable Environmental Laws for the current operations of the Company and each Company Subsidiary.

Table of Contents

(b) Neither the Company nor any Company Subsidiary has received any written notice or report in the past three (3) years regarding any actual or alleged violation of any applicable Environmental Law or any liabilities arising under applicable Environmental Laws. The Company has delivered, or made available to Parent, copies of all environmental assessments, reports, audits, studies, analyses or tests possessed by, or reasonably available to, the Company and Company Subsidiaries pertaining to compliance with, or liability under, any Environmental Laws, in each case relating to the Real Estate or other assets and properties of the Company and the Company Subsidiaries.

(c) The Company has delivered to Parent complete and accurate copies of all environmental reports or assessments referenced on *Section 3.12(c)* of the Company Disclosure Letter and, since the date of such reports or assessments, to the Knowledge of the Company, no facts or conditions have arisen or been discovered which would reasonably be expected to materially alter or modify such reports or assessments if they were to be updated.

Section 3.13 Intellectual Property.

(a) *Section 3.13(a)* of the Company Disclosure Letter sets forth as of the date hereof a true, complete and correct list of all U.S. and foreign (i) Patents; (ii) Trademarks; (iii) Copyrights; (iv) internet domain registrations; and (v) Software, in each case owned or purported to be owned or licensed by the Company or any Company Subsidiary and used or held for use in the conduct of the business of the Company or any Company Subsidiary as of the date of this Agreement. The Company or a Company Subsidiary is the sole and exclusive assignee of all of the Company Intellectual Property set forth in *Section 3.13(a)* of the Company Disclosure Letter, except for in-licensed Intellectual Property set forth on such *Section 3.13(a)* of the Company Disclosure Letter, all of which is licensed by the Company pursuant to valid and subsisting licenses under agreements of which, to the Knowledge of the Company, neither party is in breach and which neither party has terminated nor expressed an intent to do so. The name of each licensor and the date of the license agreement are set forth next to the respective item of in-licensed Intellectual Property on such *Section 3.13(a)* of the Company Disclosure Letter.

(b) To the Knowledge of the Company, the Company or the Company Subsidiaries own or possess appropriate licenses or other legal rights to use, sell or license all Company Intellectual Property.

(c) All Trademark registrations, Patents issued and Copyright registrations owned by the Company or any Company Subsidiary and included in the Company Intellectual Property are subsisting, in full force and effect and have not lapsed, expired or been abandoned, and, to the Knowledge of the Company, are not the subject of any opposition filed with the United States Patent and Trademark Office or any other Intellectual Property registry, or the subject of any proceeding challenging their validity or enforceability.

(d) To the Knowledge of the Company, the conduct of the businesses of the Company and the Company Subsidiaries does not and has not been alleged to infringe, misappropriate, or otherwise violate (and is not, as a practical matter, blocked by) any Intellectual Property rights of any third party; and no settlement agreements, consents, orders, forbearances to sue or similar obligations to which the Company or any Company Subsidiary is a party limit or restrict any rights of the Company or any Company Subsidiary in and to any Company Intellectual Property that is owned by the Company or any Company Subsidiary.

Section 3.14 Insurance.

The Company's policies or Contracts of insurance are in full force and effect and together constitute an insurance program that is customary for NASDAQ-listed pre-revenue biotechnology companies. There is no material claim pending under any policies or Contracts of insurance maintained by the Company or any Company Subsidiary as to which coverage has been questioned, denied or disputed by the underwriters of such policies or Contracts. All premiums due and payable to date under all such policies and Contracts have been paid and the Company and the Company Subsidiaries are otherwise in compliance in all material respects with the terms of such policies and Contracts.

Table of Contents

Section 3.15 Certain Business Relationships with Affiliates.

Except as disclosed in the Filed Company SEC Documents, from and after January 1, 2009 and before the date hereof, no event has occurred, and there has been no transaction, or series of similar transactions, agreements, arrangements or understandings to which the Company or any Company Subsidiary is a party, that would be required to be reported pursuant to Item 404 of Regulation S-K promulgated by the SEC.

Section 3.16 Opinion of Financial Advisor.

The Company Board has received the opinion of MTS Securities LLC to the effect that, as of the date of this Agreement, and subject to the various assumptions and qualifications set forth therein, the Merger Consideration is fair to holders of Company Shares from a financial point of view.

Section 3.17 Brokers and Other Advisors.

Except for MTS Securities LLC, the fees and expenses of which will be paid by the Company, no broker, investment banker, financial advisor, agent or other Person is entitled to any broker's, finder's, financial advisor's, agent's or other similar fee or commission in connection with the Transactions based upon arrangements made by or on behalf of the Company or any Company Subsidiary.

Section 3.18 Section 203 of the DGCL Not Applicable; State Takeover Statutes.

Assuming the accuracy of Parent's representation and warranty contained in Section 4.12, the Company has taken all necessary actions so that the provisions of Section 203 of the DGCL will not apply to this Agreement or the Merger. To the Knowledge of the Company, no other state takeover statute is applicable to the Merger. The Company does not have any poison pill or similar antitakeover device.

Section 3.19 No Reliance.

Notwithstanding anything contained in this Agreement to the contrary, the Company acknowledges and agrees that (a) neither Parent or Merger Sub nor any Person on behalf of Parent or Merger Sub is making any representations or warranties whatsoever, express or implied, beyond those expressly made by Parent or Merger Sub in *Article IV* or in the certificate to be delivered pursuant to Section 6.03(a), and (b) the Company has not been induced by, or relied upon, any representations, warranties or statements (written or oral), whether express or implied, made by any Person, that are not expressly set forth in *Article IV* or in the certificate to be delivered pursuant to Section 6.03(a). Without limiting the generality of the foregoing, the Company acknowledges that no representations or warranties are made with respect to any projections, forecasts, estimates, budgets or information as to prospects with respect to Parent and its Subsidiaries that may have been made available to the Company or any of its Representatives.

Table of Contents

ARTICLE IV

REPRESENTATIONS AND WARRANTIES OF PARENT AND MERGER SUB

Parent and Merger Sub hereby jointly and severally represent and warrant to the Company that except as set forth in the letter delivered by Parent to the Company immediately before the execution of this Agreement (the *Parent Disclosure Letter*) or the Parent SEC Documents filed with or furnished to the SEC before the date of this Agreement (the *Filed Parent SEC Documents*) (it being understood that any matter set forth in the Parent Disclosure Letter or in such Filed Parent SEC Documents shall be deemed disclosed with respect to any Section of this *Article IV* to which the matter relates, to the extent the relevance of such matter to such Section is reasonably apparent):

Section 4.01 Organization and Standing.

(a) Parent is a corporation duly organized, validly existing and in good standing under the Legal Requirements of the State of Delaware and Merger Sub is a limited liability company duly organized, validly existing and in good standing under the Legal Requirements of the State of Delaware. Each of Parent and Merger Sub has all requisite corporate or limited liability company, as the case may be, power and authority necessary to own or lease all of its properties and assets and to carry on its business as it is now being conducted. Each of Parent and Merger Sub is duly licensed or qualified to do business and is in good standing in each jurisdiction in which the nature of the business conducted by it or the character or location of the properties and assets owned or leased or held under license by it makes such licensing or qualification necessary, except where the failure to be so licensed, qualified or in good standing would not, individually or in the aggregate, reasonably be expected to have a Parent Material Adverse Effect, impair in any material respect the ability of Parent or Merger Sub to perform its obligations hereunder or prevent or materially delay consummation of the Transactions.

(b) Parent has delivered to the Company complete and correct copies of the certificate of incorporation and bylaws of Parent, in each case as amended through the date of this Agreement (the *Parent Charter Documents*).

Section 4.02 Capitalization.

(a) The authorized capital stock of Parent consists of: (i) 200,000,000 shares of Parent Common Stock and (ii) 5,000,000 shares of convertible preferred stock. At the close of business on June 30, 2009, (i) 112,996,225 shares of Parent Common Stock were issued and outstanding (and 6,607,905 shares of Parent Common Stock were issued and held by Parent in its treasury), (ii) 12,923,596 shares of Parent Common Stock were reserved for issuance under the Parent Equity Plans (of which 4,680,274 shares of Parent Common Stock were subject to outstanding Parent Options granted under the Parent Equity Plans), and (iii) no shares of convertible preferred stock were issued or outstanding. All shares of Parent Common Stock, and shares of Parent Common Stock reserved for issuance upon exercise of the Parent Options, have been duly authorized and are, or upon issuance in accordance with the terms of the Parent Options will be, validly issued, fully paid, non-assessable and free of preemptive rights. Since June 30, 2009, Parent has not issued, or reserved for issuance, any shares of its capital stock or any securities convertible into or exchangeable or exercisable for any shares of its capital stock, other than pursuant to the Parent Options referred to above that are outstanding as of the date of this Agreement.

(b) There are no outstanding contractual obligations of Parent or any Parent Subsidiary (i) restricting the transfer of, (ii) affecting the voting rights of, (iii) requiring the issuance, sale, repurchase, redemption or disposition of, or containing any right of first refusal with respect to, (iv) requiring the registration for sale of, or (v) granting any preemptive or anti-dilutive right with respect to, any shares of Parent Common Stock or any capital stock of Parent, except pursuant to the Parent Options. There are no bonds, debentures, notes or other indebtedness of Parent or any Parent Subsidiary having the right to vote (or convertible into or exchangeable for securities having the right to vote) on any matters on which stockholders of Parent may vote.

Table of Contents

(c) The shares of Parent Common Stock to be issued in connection with the Merger, when issued as contemplated herein, will be duly authorized, validly issued, fully paid and nonassessable and will not be issued in violation of any preemptive rights.

Section 4.03 Authority; Non-contravention.

(a) Each of Parent and Merger Sub has all necessary corporate or limited liability company, as the case may be, power and authority to (as applicable) execute and deliver this Agreement and the CVR Agreements, to perform their respective obligations hereunder and to consummate the Transactions. The execution, delivery and performance by Parent and Merger Sub of (as applicable) this Agreement and the CVR Agreements, and the consummation by Parent and Merger Sub of the Transactions (including the issuance of shares of Parent Common Stock in accordance with the Merger), have been duly authorized and approved by their respective board of directors and Manager and adopted by Parent as the sole limited liability company interest holder of Merger Sub, and no other corporate or limited liability company action on the part of Parent and Merger Sub or any stockholders of Parent is necessary to authorize the execution, delivery and performance by Parent and Merger Sub of (as applicable) this Agreement and the CVR Agreements and the consummation by them of the Transactions. This Agreement has been duly executed and delivered by Parent and Merger Sub and, assuming due authorization, execution and delivery hereof by the Company, constitutes a legal, valid and binding obligation of each of Parent and Merger Sub, enforceable against each of them in accordance with its terms, subject to the Bankruptcy and Equity Exception.

(b) Neither the execution and delivery of this Agreement by Parent and Merger Sub, nor the execution and delivery of the CVR Agreements by Parent, nor the consummation by Parent or Merger Sub of the Transactions (including the issuance of shares of Parent Common Stock in accordance with the Merger), nor compliance by Parent or Merger Sub with any of the terms or provisions hereof, will (i) conflict with or violate any provision of the certificate of incorporation or bylaws or operating agreement of Parent or Merger Sub or (ii) assuming that the authorizations, consents and approvals referred to in *Section 4.04* are obtained and the filings referred to in *Section 4.04* are made, (x) violate any Legal Requirement of any Governmental Entity applicable to Parent or any of its Subsidiaries, or (y) violate or constitute a default under any of the terms, conditions or provisions of any Contract to which Parent, Merger Sub or any of their respective Subsidiaries is a party, except, in the case of clause (ii), for such violations or defaults as would not, individually or in the aggregate, reasonably be expected to have a Parent Material Adverse Effect, impair in any material respect the ability of Parent or Merger Sub to perform their obligations hereunder or prevent or materially delay consummation of the Transactions (including the issuance of shares of Parent Common Stock in accordance with the Merger).

(c) No vote of the holders of any class or series of Parent's capital stock or other securities is necessary for the consummation by Parent of the Transactions (including the issuance of shares of Parent Common Stock in accordance with the Merger).

Section 4.04 Governmental Approvals.

Except for (i) the filing with the SEC of the Registration Statement and other filings required under, and compliance with other applicable requirements of, the Exchange Act and the rules of the Exchange, and (ii) the filing of the Certificate of Merger with the Secretary of State of the State of Delaware pursuant to the DGCL, no consents or approvals of, or filings, declarations or registrations with, any Governmental Entity are necessary for the execution, delivery and performance of this Agreement by Parent and Merger Sub, the execution, delivery and performance of the CVR Agreements by Parent or the consummation by Parent and Merger Sub of the Transactions (including the issuance of shares of Parent Common Stock in accordance with the Merger), other than such other consents, approvals, filings, declarations or registrations that, if not obtained, made or given, would not, individually or in the aggregate, reasonably be expected to have a Parent Material Adverse Effect, impair in any material respect the ability of Parent or Merger Sub to perform their obligations hereunder or prevent or materially delay consummation of the Transactions (including the issuance of shares of Parent Common Stock in accordance with the Merger).

Table of Contents

Section 4.05 Parent SEC Documents; Financial Statements.

(a) Parent has filed all required registration statements, prospectuses, forms, reports and proxy statements with the SEC, together with all certifications required pursuant to the Sarbanes-Oxley Act, from and after January 1, 2006 (collectively, the *Parent SEC Documents*). As of their respective effective dates (in the case of Parent SEC Documents that are registration statements filed pursuant to the requirements of the Securities Act) and as of their respective SEC filing dates (in the case of all other Parent SEC Documents), the Parent SEC Documents complied in all material respects with the requirements of the Exchange Act and the Securities Act, as the case may be, applicable to such Parent SEC Documents, and none of the Parent SEC Documents as of such respective dates contained any untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading.

(b) The consolidated financial statements of Parent included in the Parent SEC Documents (the *Parent Financial Statements*) have been prepared in accordance with GAAP (except, in the case of unaudited interim statements, as indicated in the notes thereto) applied on a consistent basis during the periods involved (except as may be indicated in the notes thereto) and fairly present in all material respects the consolidated financial position of Parent and the consolidated Parent Subsidiaries as of the dates thereof and the consolidated results of their operations and cash flows for the periods then ended (subject, in the case of unaudited interim statements, to normal year-end audit adjustments).

(c) Neither Parent nor any Parent Subsidiary has any liabilities of any nature (whether accrued, absolute, determined, determinable, fixed or contingent) which would be required to be reflected or reserved against on a consolidated balance sheet of Parent prepared in accordance with GAAP, except liabilities (i) reflected or reserved against in its consolidated balance sheet included in its Quarterly Report filed on Form 10-Q for the quarterly period ended March 31, 2009 (including the notes thereto), included in the Parent SEC Documents, (ii) incurred pursuant to this Agreement or in connection with the Transactions, (iii) incurred since March 31, 2009 in the ordinary course of business, or (iv) that have not had, and would not reasonably be expected to have, individually or in the aggregate, a Parent Material Adverse Effect.

(d) Since March 31, 2009, except for actions taken in connection with this Agreement and the Transactions, (i) Parent and the Parent Subsidiaries have conducted their businesses in the ordinary course, and (ii) there has not been any Parent Material Adverse Effect or any change, event, development, condition, occurrence or effect that has had or would reasonably be expected to have, individually or in the aggregate, a Parent Material Adverse Effect.

(e) Parent and the Parent Subsidiaries have designed and maintain a system of internal controls over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) of the Exchange Act) sufficient to provide reasonable assurances regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP. Parent (i) has designed and maintains disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) of the Exchange Act) to ensure that material information required to be disclosed by Parent in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and is accumulated and communicated to Parent's management as appropriate to allow timely decisions regarding required disclosure, and (ii) to the Knowledge of Parent, has disclosed, based on its most recent evaluation of such disclosure controls and procedures before the date hereof, to Parent's auditors and the audit committee of the Board of Directors of Parent (A) any significant deficiencies and material weaknesses in the design or operation of internal controls over financial reporting that are reasonably likely to adversely affect in any material respect Parent's ability to record, process, summarize and report financial information and (B) any fraud, whether or not material, that involves management or other employees who have a significant role in Parent's internal controls over financial reporting.

Table of Contents

Section 4.06 Legal Proceedings.

As of the date hereof, there is no pending or, to the Knowledge of Parent, threatened Legal Proceeding against or relating to Parent or any Parent Subsidiary, nor is there any injunction, order, judgment, ruling or decree imposed upon Parent or any Parent Subsidiary, in each case, by or before any Governmental Entity, that would, individually or in the aggregate, reasonably be expected to have a Parent Material Adverse Effect, impair in any material respect the ability of Parent or Merger Sub to perform their obligations hereunder or prevent or materially delay consummation of the Transactions (including the issuance of shares of Parent Common Stock in accordance with the Merger).

Section 4.07 Compliance With Legal Requirements.

Parent and the Parent Subsidiaries are in compliance with all Legal Requirements applicable to Parent or any Parent Subsidiary, as applicable, except for such non-compliance as would not, individually or in the aggregate, reasonably be expected to have a Parent Material Adverse Effect. Parent and the Parent Subsidiaries hold all Governmental Authorizations necessary for the lawful conduct of their respective businesses, and all such Governmental Authorizations are valid and in full force and effect, except where the failure to hold the same or of the same to be valid and in full force and effect would not, individually or in the aggregate, reasonably be expected to have a Parent Material Adverse Effect. Parent and the Parent Subsidiaries are in compliance with the terms of all Governmental Authorizations, except for such non-compliance as would not, individually or in the aggregate, reasonably be expected to have a Parent Material Adverse Effect.

Section 4.08 Information Supplied.

(a) The Registration Statement, together with any amendments or supplements thereto, at (A) the time the Registration Statement is declared effective, (B) the time the Proxy Statement (or any amendment thereof or supplement thereto) is first mailed to the stockholders of the Company, (C) the time of the Special Meeting, and (D) the Effective Time, will comply as to form in all material respects with the applicable requirements of the Securities Act, the Exchange Act and other applicable Laws.

(b) The Registration Statement, and any amendments or supplements thereto, do not, and will not, at (A) the time the Registration Statement is declared effective, (B) the time the Proxy Statement (or any amendment thereof or supplement thereto) is first mailed to the stockholders of the Company, (C) the time of the Special Meeting, or (D) the Effective Time, contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary in order to make the statements made therein, in light of the circumstances under which they were made, not misleading.

(c) The representations and warranties contained in this *Section 4.08* will not apply to statements or omissions included in the Registration Statement based upon information furnished in writing to Parent or Merger Sub by the Company specifically for use therein.

Section 4.09 Tax Matters.

(a) Except for those matters that would not, individually or in the aggregate, reasonably be expected to have a Parent Material Adverse Effect: (i) each of Parent and the Parent Subsidiaries has timely filed, or has caused to be timely filed on its behalf (taking into account any extension of time within which to file), all material Tax Returns required to be filed by it, and all such filed Tax Returns are correct and complete in all material respects; (ii) all Taxes shown to be due on such Tax Returns have been timely paid; (iii) no deficiency with respect to Taxes has been proposed, asserted or assessed in writing against Parent or any Parent Subsidiary which have not been fully paid or adequately reserved in the Parent SEC Documents; and (iv) to the Knowledge of Parent, no audit or other administrative or court proceedings are pending with any Governmental Entity with respect to Taxes of Parent or any Parent Subsidiary (except for pending audits of Parent's 2006 and 2007 federal income tax returns), and no written notice thereof has been received.

(b) Neither Parent nor any Parent Subsidiary is a party to or bound by any material Tax allocation or sharing agreement (other than any such agreement solely between or among Parent and any of the Parent Subsidiaries).

Table of Contents

(c) To the Knowledge of Parent, neither Parent nor any Parent Subsidiary (i) has been a member of an affiliated group filing a consolidated federal income Tax Return (other than a group the common parent of which was Parent) or (ii) has any liability for the Taxes of any Person (other than Parent or any Parent Subsidiary) under United States Treasury Regulation Section 1.1502-6 (or any similar provision of any Legal Requirement), as a transferee or successor, by Contract, or otherwise.

(d) There are no liens for Taxes upon any material property or other material assets of Parent or any Parent Subsidiary, except liens for Taxes not yet due and payable and liens for Taxes that are being contested in good faith by appropriate proceedings.

(e) All material Taxes required to be withheld, collected or deposited by or with respect to Parent and each of Parent Subsidiaries have been timely withheld, collected or deposited, as the case may be, and to the extent required, have been paid to the relevant Tax authority or other Governmental Entity, except for such failure to do any of the foregoing as would not, individually or in the aggregate, reasonably be expected to have a Parent Material Adverse Effect.

Section 4.10 Ownership and Operations of Merger Sub.

Parent owns beneficially and of record all of the outstanding limited liability company interests of Merger Sub. Merger Sub was formed solely for the purpose of engaging in the Transactions, has engaged in no other business activities and has conducted its operations only as contemplated hereby.

Section 4.11 Brokers and Other Advisors.

No broker, investment banker, financial advisor, agent or other Person is entitled to any broker's, finder's, financial advisor's, agent's or other similar fee or commission in connection with the Transactions based upon arrangements made by or on behalf of Parent or any Parent Subsidiary.

Section 4.12 Ownership of Company Shares.

Neither Parent nor any of its Affiliates beneficially owns (as defined in Rule 13d-3 of the Exchange Act) any Company Shares as of the date hereof.

Section 4.13 No Other Representations or Warranties.

Except for the representations and warranties made by Parent in this *Article IV* or in the certificate to be delivered pursuant to *Section 6.03(a)*, neither Parent nor any other Person makes any representation or warranty with respect to Parent or the Parent Subsidiaries or their respective businesses, operations, assets, liabilities, condition (financial or otherwise) or prospects, notwithstanding the delivery or disclosure to the Company or any of its Affiliates or Representatives of any documentation, forecasts or other information with respect to any one or more of the foregoing.

Section 4.14 No Reliance.

Notwithstanding anything contained in this Agreement to the contrary, each of Parent and Merger Sub acknowledges and agrees that (a) neither the Company nor any Person on behalf of the Company is making any representations or warranties whatsoever, express or implied, beyond those expressly made by the Company in *Article III* or in the certificate to be delivered pursuant to *Section 6.02(a)*, and (b) none of Parent or Merger Sub has been induced by, or relied upon, any representations, warranties or statements (written or oral), whether express or implied, made by any Person, that are not expressly set forth in *Article III* or in the certificate to be delivered pursuant to *Section 6.02(a)*. Without limiting the generality of the foregoing, each of Parent and Merger Sub acknowledges that no representations or warranties are made with respect to any projections, forecasts, estimates, budgets or information as to prospects with respect to the Company and the Company Subsidiaries that may have been made available to Parent, Merger Sub or any of their respective Representatives.

Table of Contents

ARTICLE V

COVENANTS

Section 5.01 Interim Operations of the Company.

(a) The Company agrees that, during the period from the date of this Agreement through the earlier of the Effective Time or the date of termination of this Agreement, except: (i) to the extent Parent shall otherwise consent in writing (which consent shall not be unreasonably withheld, delayed or conditioned); (ii) as set forth in *Section 5.01(a)* of the Company Disclosure Letter; or (iii) as expressly required by this Agreement, the Company shall and shall cause each Company Subsidiary to (A) use its reasonable best efforts to (1) conduct their businesses in the ordinary course of business, (2) preserve intact their present business organizations, (3) maintain satisfactory relations with and keep available the services of their current officers and other key employees and (4) preserve existing relationships with material customers, lenders, suppliers, distributors and others having material business relationships with the Company or any Company Subsidiary and (B) not:

(1) amend its certificate of incorporation or bylaws or equivalent organizational documents;

(2) split, combine, subdivide or reclassify any shares of its capital stock;

(3) declare, set aside or pay any dividend (whether payable in cash, stock or property) with respect to any shares of its capital stock (except with respect to shares of the capital stock of a Company Subsidiary that is directly or indirectly wholly owned by the Company);

(4) issue, sell, pledge, transfer, deliver, dispose of or encumber any shares of, or securities convertible or exchangeable for, or options or rights to acquire, any shares of its capital stock, voting securities, phantom stock, phantom stock rights, stock based performance units or other securities that derive their value by reference to such capital stock or voting securities, other than: (i) the issuance of Company Shares upon the exercise of Company Options and (ii) the grant of Company Options under the Company's 2000 Non-Employee Directors Stock Option Program in the ordinary course of business consistent with past practice;

(5) transfer, lease or license to any third party, or subject to an Encumbrance (except for Permitted Encumbrances), any assets of the Company or any Company Subsidiary other than: (i) sales in the ordinary course of business; (ii) dispositions of obsolete assets; or (iii) the sale or disposition of the Aplindore Program or the Real Estate in accordance with *Section 5.14*;

(6) repurchase, redeem or otherwise acquire or offer to repurchase, redeem or otherwise acquire any shares of its capital stock other than pursuant to the forfeiture provisions applicable to the Company Options or pursuant to the exercise or tax withholding provisions applicable to the Company Options;

(7) acquire (whether pursuant to merger, stock or asset purchase or otherwise) or lease (i) any asset or assets, except for (A) purchases of raw materials, equipment and supplies in the ordinary course of business or (B) capital expenditures (which are subject to *Section 5.01(a)(15)*), or (ii) except pursuant to the sale of the Aplindore Program in accordance with *Section 5.14*, any equity interests in any Person or any business or division of any Person (except for marketable securities acquired by the Company from time to time in connection with its normal cash management activities);

(8) incur, issue, repurchase, modify or assume any Indebtedness or guarantee any such Indebtedness;

(9) make any loans, advances or capital contributions to, or investments in, any other Person other than (i) loans, advances or capital contributions to, or investments in, a Company Subsidiary that is directly or indirectly wholly owned by the Company in the ordinary course of business, (ii) advances to employees in respect of travel and other expenses in the ordinary course of business, and (iii) investments made by the Company in marketable securities in connection with its normal cash management activities;

(10)(i) increase benefits under any Company Plan, (ii) increase or otherwise change the method for funding or insuring benefits under any Company Plan, except as required by applicable Legal Requirements, (iii) (A) establish, adopt, enter into, amend or terminate any Company Plan that is an employee benefit

Table of Contents

plan as defined in Section 3(3) of ERISA or other any other arrangement that would be an employee benefit plan under ERISA if it were in existence as of the date of this Agreement, except as required by applicable Legal Requirements, or (B) establish, adopt, enter into, amend or terminate any collective bargaining agreement, Company Plan that is not an employee benefit plan under ERISA or any plan, agreement, program, policy, trust, fund or other arrangement that would be a Company Plan that is not an employee benefit plan under ERISA if it were in existence as of the date of this Agreement, except in the ordinary course of business or as required by applicable Legal Requirements (including, without limitation, Section 409A of the Code), (iv) grant any increase in the rates of salaries, compensation or fringe or other benefits payable to any Executive (other than as required by applicable Legal Requirements or pursuant to non-discretionary provisions of Contracts in effect as of the date hereof), (v) grant any increase in the rates of salaries, compensation or fringe or other benefits payable to any employee, except increases that are required by Legal Requirements or pursuant to non-discretionary provisions of Contracts in effect as of the date hereof, (vi) grant or pay any bonus of any kind or amount whatsoever to any current or former director or officer or any employee of the Company or any Company Subsidiary (other than pursuant to the non-discretionary provisions of Contracts in effect as of the date of this Agreement) or (vii) grant or pay any stay or severance or termination pay or increase in any manner the stay or severance or termination pay of any current or former director, officer, employee or consultant of the Company or any Company Subsidiary other than as required by applicable Legal Requirements or pursuant to non-discretionary provisions of Contracts in effect as of the date hereof;

(11) settle or compromise any Legal Proceeding (whether or not commenced before the date of this Agreement), other than settlements or compromises of Legal Proceedings where the amount paid (after giving effect to insurance proceeds actually received) in settlement or compromise does not exceed the Company's reserves on its books therefor by more than \$10,000, or for any Legal Proceeding for which the Company has not yet reserved, in an amount therefor that does not exceed \$20,000;

(12) enter into any new, or amend or prematurely terminate any current, Company Contract or waive, release or assign any rights or claims under any Company Contract (except (i) in the ordinary course of business or (ii) where the failure to amend or terminate a Company Contract would, in the reasonable judgment of the Company Board, have a Company Material Adverse Effect or (iii) the termination of any contract relating to the development of Aplindore);

(13) change any of its methods of accounting or accounting practices in any material respect, other than changes required by GAAP or Legal Requirements;

(14) make any material Tax election (except for elections made in the ordinary course of business);

(15) make any capital expenditure that is not contemplated by the capital expenditure budget set forth in *Section 5.01(a)(15)* of the Company Disclosure Letter (a *Non-Budgeted Capital Expenditure*), except that the Company or any Company Subsidiary: (A) may make any Non-Budgeted Capital Expenditure that does not individually exceed \$5,000 in amount; and (B) may make any Non-Budgeted Capital Expenditure that, when added to all other Non-Budgeted Capital Expenditures made by the Company and the Company Subsidiaries since the date of this Agreement, would not exceed \$25,000 in the aggregate;

(16) adopt a plan of complete or partial liquidation or dissolution;

(17) take any action that is intended or would reasonably be expected to result in any of the conditions to the Merger set forth in *Article VI* not being satisfied on or before the Outside Date; or

(18) authorize or enter into any agreement or otherwise make any commitment to do any of the foregoing.

(b) Without in any way limiting any party's rights or obligations under this Agreement, the parties understand and agree that (i) nothing contained in this Agreement shall give Parent or Merger Sub, directly or indirectly, the right to control or direct the Company's operations before the Effective Time, and (ii) before the Effective Time, the Company shall exercise, consistent with the terms and conditions of this Agreement, complete control and supervision over its operations.

Table of Contents

Section 5.02 Interim Operations of Parent.

(a) Parent agrees that, during the period from the date of this Agreement through the earlier of the Effective Time or the date of termination of this Agreement, except: (i) to the extent the Company shall otherwise consent in writing (which consent shall not be unreasonably withheld, delayed or conditioned); (ii) as set forth in *Section 5.02* of the Parent Disclosure Letter; or (iii) as expressly required by this Agreement, Parent shall and shall cause each Parent Subsidiary to (A) use its reasonable best efforts to (1) conduct their businesses in the ordinary course of business or otherwise to an anticipated advantage, (2) preserve intact their present business organizations, and (3) preserve existing relationships with material customers, lenders, suppliers, distributors and others having material business relationships with Parent or any Parent Subsidiary and (B) not:

- (1) amend its certificate of incorporation or bylaws or equivalent organizational documents;
- (2) split, combine, subdivide or reclassify any shares of its capital stock;
- (3) declare, set aside or pay any dividend (whether payable in cash, stock or property) with respect to any shares of its capital stock (except with respect to shares of the capital stock of a Parent Subsidiary that is directly or indirectly wholly owned by Parent);
- (4) change any of its methods of accounting or accounting practices in any material respect, other than changes required by GAAP or Legal Requirements;
- (5) adopt a plan of complete or partial liquidation or dissolution;
- (6) make any material Tax election (except for elections made in the ordinary course of business);
- (7) take any action that is intended or would reasonably be expected to result in any of the conditions to the Merger set forth in *Article VI* not being satisfied on or before the Outside Date; or
- (8) authorize or enter into any agreement or otherwise make any commitment to do any of the foregoing.

Section 5.03 No Solicitation.

(a) At all times during the period commencing with the execution and delivery of this Agreement and continuing until the earlier to occur of the termination of this Agreement pursuant to *Section 7.01* and the Effective Time, the Company shall not, shall cause all of the Company Subsidiaries not to and shall use its reasonable best efforts to cause the Company's and such Company Subsidiaries' directors, officers, employees, investment bankers, attorneys and other agents or representatives (collectively, *Representatives*) not to, directly or indirectly, (i) solicit, initiate, knowingly encourage or knowingly induce the making, submission or announcement of an Acquisition Proposal; (ii) furnish to any Person any non-public information relating to the Company in response to or in connection with an Acquisition Proposal (for avoidance of doubt, it being understood that the foregoing shall not prohibit the Company, any Company Subsidiary or any of their respective Representatives from furnishing, in the ordinary course of business, any non-public information to (A) any actual or potential customer, supplier, distributor, licensor, licensee, partner or other Person to the extent necessary to facilitate any business dealings between the Company and such actual or potential customer, supplier, distributor, licensor, licensee, partner or other Person that are unrelated to any Acquisition Proposal, or (B) a Governmental Entity); (iii) participate or engage in discussions or negotiations with any Person with respect to an Acquisition Proposal (for avoidance of doubt, it being understood that the foregoing shall not prohibit the Company, any Company Subsidiary or any of its Representatives from making such Person aware of the restrictions of this *Section 5.03* in response to the receipt of an Acquisition Proposal, nor shall it prohibit the Company from engaging in discussions with its Representatives to the extent reasonably necessary to assist the Company in determining how to properly respond to such Acquisition Proposal); or (iv) approve, endorse or recommend to the stockholders of the Company any Acquisition Proposal; *provided, however*, that notwithstanding anything to the contrary contained in this Agreement, at any time before obtaining the Company Stockholder Approval, the Company may, directly or indirectly through its Representatives, (A) engage or participate in discussions or negotiations with any Person (and may engage or participate in discussions or negotiations with such Person's

Table of Contents

Representatives and potential financing sources) that has made an Acquisition Proposal that the Company Board determines in good faith (after consultation with its outside legal counsel and financial advisor) constitutes or is reasonably likely to lead to a Superior Proposal, and (B) furnish to any such Person described in clause (A) above (including to such Person's Representatives and potential financing sources) any non-public information relating to the Company and the Company Subsidiaries pursuant to a confidentiality agreement (whether executed before or after the date of this Agreement), the terms of which are no less favorable in any material respect to the Company than those contained in the letter agreement, dated February 4, 2009, between Parent and the Company (the *Confidentiality Agreement*) (provided that, for the avoidance of doubt, such confidentiality agreement is not required to contain standstill provisions); and *provided further*, that in the case of any action taken pursuant to clause (A) or clause (B) above, the Company Board shall first have determined in good faith (after consultation with its outside legal counsel) that the failure to take such action is inconsistent with its fiduciary obligations to the stockholders of the Company under applicable Legal Requirements; and contemporaneously with furnishing any nonpublic information to such Person, the Company furnishes such nonpublic information to Parent (to the extent such information has not been previously furnished by the Company to Parent).

(b) Upon the execution and delivery of this Agreement, the Company shall immediately cease and cause to be terminated any active discussions with any Person that relate to any Acquisition Proposal.

(c) Unless the Company Board shall first have determined in good faith (after consultation with its outside legal counsel) that the failure to take the following actions is inconsistent with its fiduciary obligations to the stockholders of the Company under applicable Legal Requirements, the Company agrees not to release or permit the release of any Person from, or to waive or permit the waiver of any provision of, any confidentiality, standstill or similar agreement to which the Company is a party or under which the Company has any rights; *provided, however*, that the expiration or termination of such agreement or provision of such agreement by its own terms shall not be considered to be a violation of the foregoing by the Company.

Section 5.04 Company Board Recommendation.

(a) Subject to *Section 5.04(c)*, the Company Board shall (i) make the Company Recommendation and (ii) include the Company Recommendation in the Proxy Statement.

(b) Subject to *Section 5.04(c)*, neither the Company Board nor any committee thereof shall (i) withdraw, qualify, modify, change or amend in any manner adverse to Parent or Merger Sub, the Company Recommendation, (ii) approve or recommend any Acquisition Proposal, (iii) except in connection with a termination of this Agreement pursuant to *Section 7.01(f)*, permit the Company or any Company Subsidiary to enter into any Contract (other than a confidentiality agreement as contemplated by *Section 5.03(a)*) with respect to any Acquisition Proposal, or (iv) except in connection with a termination of this Agreement pursuant to *Section 7.01(f)*, resolve or propose to take any action described in clauses (i) through (iii) (each of the foregoing actions described in clauses (i) through (iii) being referred to as a *Company Change in Recommendation*)

(c) Notwithstanding anything to the contrary contained in this Agreement, the Company Board may effect a Company Change in Recommendation at any time before receipt of the Company Stockholder Approval, if either:

(i)(A) the Company Board has received an Acquisition Proposal (that has not been withdrawn) that constitutes a Superior Proposal, (B) the Company Board determines in good faith (after consultation with its outside legal counsel and financial advisor and after considering in good faith any counter-offer or proposal made by Parent during the five (5) day period contemplated by clause (D) below) that the failure to effect a Company Change in Recommendation in light of such Superior Proposal is inconsistent with its fiduciary obligations to the stockholders of the Company under applicable Legal Requirements, (C) at least five (5) days before such Company Change in Recommendation, the Company shall have provided to Parent a written notice (a *Notice of Recommendation Change*) of its intention to make such Company Change in

Table of Contents

Recommendation (which notice shall not be deemed to be, in and of itself, a Company Change in Recommendation), specifying the material terms and conditions of such Superior Proposal, including a copy of such Superior Proposal and identifying the Person making such Superior Proposal, (D) during the five (5) day period following Parent's receipt of a Notice of Recommendation Change, the Company shall have given Parent the opportunity to meet with the Company and its Representatives, and at Parent's request, shall have negotiated in good faith regarding the terms of possible revisions to the terms of this Agreement, and (E) Parent shall not, within five (5) days following Parent's receipt of a Notice of Recommendation Change, have made an offer that the Company Board determines in good faith (after consultation with its outside legal counsel and financial advisor) to be at least as favorable to the stockholders of the Company as such Superior Proposal; or

(ii) other than in connection with a Superior Proposal (it being understood and hereby agreed that the Company Board shall not effect a Company Change in Recommendation in connection with a Superior Proposal other than pursuant to the immediately preceding clause (i) of this Section 5.04(c)), (A) the Company Board determines in good faith (after consultation with its outside legal counsel) that the failure to effect a Company Change in Recommendation is inconsistent with its fiduciary obligations to the stockholders of the Company under applicable Legal Requirements, (B) at least five (5) days prior to such Company Change in Recommendation, the Company shall have provided to Parent a Notice of Recommendation Change of its intention to make such Company Change in Recommendation (which notice shall not be deemed to be, in and of itself a Company Change in Recommendation), specifying in reasonable detail the circumstances for such proposed Company Change in Recommendation, and (C) during the five (5) day period following Parent's receipt of a Notice of Recommendation Change, the Company shall have given Parent the opportunity to meet with the Company and its Representatives, and at Parent's request, shall have negotiated in good faith regarding the terms of possible revisions to the terms of this Agreement.

(d) Nothing in this Agreement shall prohibit the Company Board from (i) taking and disclosing to the stockholders of the Company a position contemplated by Rule 14e-2(a) promulgated under the Exchange Act or complying with the provisions of Rule 14d-9 promulgated under the Exchange Act or (ii) making any disclosures to any stockholder of the Company that the Company Board determines in good faith (after consultation with its outside legal counsel) that the Company Board is required to make in order to comply with its fiduciary obligations to the stockholders of the Company under applicable Legal Requirements or with any other applicable Legal Requirements. In addition, it is understood and agreed that, for purposes of this Section 5.04, a factually accurate public statement by the Company that describes the Company's receipt of an Acquisition Proposal and the operation of this Agreement with respect thereto and contains a stop-look-and-listen communication shall not be deemed a Company Change in Recommendation.

(e) Notwithstanding anything to the contrary contained in this Agreement, (i) the obligation of the Company to call, give notice of, convene and hold the Special Meeting shall not be limited or otherwise affected by the commencement, disclosure, announcement or submission to it of any Acquisition Proposal or by any Company Change in Recommendation, and (ii) the Company shall not submit to the vote of its stockholders any Acquisition Proposal, unless and until this Agreement is terminated in accordance with its terms.

(f) The Company shall not take any action to exempt any Person (other than Parent, Merger Sub and their respective Affiliates) from the restrictions on business combinations contained in Section 203 of the DGCL (or any similar provisions of any other Legal Requirement) or otherwise cause such restrictions not to apply unless such actions are taken simultaneously with a termination of this Agreement pursuant to Section 7.01(f).

Section 5.05 Registration Statement; Proxy Statement; Special Meeting.

(a) As promptly as practicable after the execution of this Agreement, Parent and the Company shall prepare and file with the SEC a proxy statement relating to the Special Meeting (together with any amendments thereof or supplements thereto, the *Proxy Statement*), and Parent shall prepare and file with the SEC a registration statement on Form S-4 (together with all amendments thereto, the *Registration Statement*) in which the Proxy Statement shall be included as a prospectus, in connection with the registration under the Securities Act of the

Table of Contents

shares of Parent Common Stock to be issued to the stockholders of the Company pursuant to the Merger. Each of Parent and the Company will use all reasonable efforts to respond to any comments made by the SEC with respect to the Proxy Statement, and to cause the Registration Statement to become effective as promptly as practicable. Before the effective date of the Registration Statement, Parent shall take all or any action required under any applicable federal or state securities laws in connection with the issuance of shares of Parent Common Stock in the Merger. Each of Parent and the Company shall furnish all information concerning it and the holders of its capital stock as the other may reasonably request in connection with such actions and the preparation of the Registration Statement and the Proxy Statement. As promptly as practicable after the Registration Statement shall have become effective, the Company shall mail the Proxy Statement to its stockholders. The Proxy Statement shall (subject to *Section 5.04(c)*) include the Company Recommendation.

(b) Subject to *Section 5.04(c)*, no amendment or supplement (other than pursuant to Rule 425 of the Securities Act with respect to releases made in compliance with *Section 5.08*) to the Proxy Statement or the Registration Statement will be made by Parent or the Company without the approval of the other party (which approval shall not be unreasonably withheld, delayed or conditioned). Parent and the Company each will advise the other, promptly after it receives notice thereof, of the time when the Registration Statement has become effective or any supplement or amendment has been filed, of the issuance of any stop order, the suspension of the qualification of the Parent Common Stock issuable in connection with the Merger for offering or sale in any jurisdiction, or any request by the SEC for amendment of the Proxy Statement or the Registration Statement or comments thereon and responses thereto or requests by the SEC for additional information.

(c) If at any time before the Effective Time, any event or circumstance relating to Parent or any Parent Subsidiary, or their respective officers or directors, should be discovered by Parent which should be set forth in an amendment or a supplement to the Registration Statement or the Proxy Statement, Parent shall promptly inform the Company. All documents that Parent is responsible for filing with the SEC in connection with the transactions contemplated herein will comply as to form and substance in all material respects with the applicable requirements of the Securities Act and the rules and regulations thereunder, the Exchange Act and the rules and regulations thereunder, and other applicable Legal Requirements (provided, that Parent shall not be responsible hereunder for the substance of statements or omissions included in the Registration Statement or Proxy Statement based upon information furnished in writing to Parent by the Company specifically for use therein).

(d) If at any time before the Effective Time, any event or circumstance relating to the Company or any Company Subsidiary, or their respective officers or directors, should be discovered by the Company which should be set forth in an amendment or a supplement to the Registration Statement or the Proxy Statement, the Company shall promptly inform Parent. All documents that the Company is responsible for filing with the SEC in connection with the transactions contemplated herein will comply as to form and substance in all material respects with the applicable requirements of the Securities Act and the rules and regulations thereunder, the Exchange Act and the rules and regulations thereunder, and other applicable Legal Requirements (provided, that the Company shall not be responsible hereunder for the substance of statements or omissions included in the Proxy Statement based upon information furnished in writing to the Company by Parent or Merger Sub specifically for use therein).

(e) The Company, acting through the Company Board, shall (i) duly set a record date for, call and establish a date for, and give notice of, the Special Meeting (with the record date and meeting date each set for a date as soon as reasonably practicable and in consultation with Parent), and (ii) convene and hold the Special Meeting as soon as reasonably practicable after the date on which the Registration Statement becomes effective. The Special Meeting shall be scheduled to be held approximately thirty (30) days after the mailing of the Proxy Statement. Notwithstanding anything to the contrary contained in this Agreement, the Company may adjourn or postpone the Special Meeting (x) to the extent necessary to ensure that any necessary supplement or amendment to the Proxy Statement is provided to all stockholders of the Company in advance of the vote to be taken at the Special Meeting, or (y) if as of any time the Special Meeting is scheduled (as set forth in the Proxy Statement) there are insufficient Company Shares represented (either in person or by proxy) to constitute a quorum necessary to conduct the business for which the Special Meeting was called.

Table of Contents

Section 5.06 Filings; Other Action.

(a) Each of the Company, Parent and Merger Sub shall: (i) promptly make and effect all registrations, filings and submissions required to be made or effected by it pursuant to the Exchange Act and other applicable Legal Requirements with respect to the Transactions; and (ii) use its reasonable best efforts to cause to be taken, on a timely basis, all other actions necessary or appropriate for the purpose of consummating and effectuating the transactions contemplated by this Agreement. Without limiting the generality of the foregoing, each of the Company, Parent and Merger Sub shall promptly provide all information requested by any Governmental Entity in connection with the Transactions.

(b) Without limiting the generality of anything contained in *Section 5.06(a)* or *Section 5.06(c)*, each party hereto shall: (i) give the other parties prompt notice of the making or commencement of any request, inquiry, investigation, action or Legal Proceeding by or before any Governmental Entity with respect to the Transactions; (ii) keep the other parties informed as to the status of any such request, inquiry, investigation, action or Legal Proceeding; and (iii) promptly inform the other parties of any communication to or from any Governmental Entity regarding the Transactions. Each party hereto will consult and cooperate with the other parties and will consider in good faith the views of the other parties in connection with any analysis, appearance, presentation, memorandum, brief, argument, opinion or proposal made or submitted in connection with any such request, inquiry, investigation, action or Legal Proceeding. In addition, except as may be prohibited by any Governmental Entity or by any Legal Requirement, in connection with any such request, inquiry, investigation, action or Legal Proceeding, each party hereto will permit authorized representatives of the other parties to be present at each meeting or conference relating to such request, inquiry, investigation, action or Legal Proceeding and to have access to and be consulted in connection with any document, opinion or proposal made or submitted to any Governmental Entity in connection with such request, inquiry, investigation, action or Legal Proceeding.

(c) In furtherance and not in limitation of the covenants of the parties contained in this *Section 5.06*, each of the parties hereto shall use its reasonable best efforts to resolve such objections, if any, as may be asserted by a Governmental Entity or other Person with respect to the Transactions. Without limiting any other provision hereof, Parent and the Company shall each use its reasonable best efforts to (i) avoid the entry of, or to have vacated or terminated, any decree, order or judgment that would restrain, prevent or delay the consummation of the Transactions on or before the Outside Date, including by defending through litigation on the merits any claim asserted in any court by any Person, and (ii) avoid or eliminate each and every impediment under any Antitrust Law that may be asserted by any Governmental Entity with respect to the Transactions so as to enable the consummation of the Transactions to occur as soon as reasonably possible (and in any event no later than the Outside Date); except that Parent need do no such thing that would prevent it from achieving in substantial measure all of the benefits it intended to achieve via the Transactions.

Section 5.07 Access.

Upon reasonable advance written notice, each party hereto shall, and shall cause its Subsidiaries to, afford the other party and its Representatives reasonable access, during normal business hours throughout the period before the Effective Time, to its books and records and, during such period, shall, and shall cause its Subsidiaries to, furnish promptly to the other party all readily available information concerning its business as such other party may reasonably request (and the Company shall also, upon such request, provide such access to its facilities, personnel and to the extent practicable, contract parties); *provided, however*, that no party or any of its Subsidiaries shall be required to permit any inspection or other access, or to disclose any information, that in its reasonable judgment would: (a) constitute, or result in any, disclosure (whether or not to a third party) of any of its Trade Secrets in such a way as would destroy their trade-secret status; (b) result in the disclosure of any Trade Secrets of third parties; (c) violate any of its obligations to third persons with respect to confidentiality; (d) jeopardize protections afforded it under the attorney-client privilege or the attorney work product doctrine; (e) violate any Legal Requirement; or (f) materially interfere with the conduct of its business. All information obtained by Parent or its Representatives pursuant to this *Section 5.07* shall be treated as Evaluation Material for purposes of the Confidentiality Agreement.

Table of Contents

Section 5.08 Publicity.

The initial press release relating to this Agreement shall be a joint press release issued by the Company and Parent, and thereafter the parties hereto shall consult with each other and give due consideration to any reasonable additions, deletions or changes suggested by the other party and its counsel before issuing any press releases or otherwise making public statements with respect to the Transactions and before making any filings with any Governmental Entity with respect to the Transactions; *provided, however*, that the Company need not consult with Parent in connection with any press release or public statement to be issued or made with respect to any Acquisition Proposal or with respect to any Company Change in Recommendation.

Section 5.09 Employee Benefits.

(a) *Employment; Severance.* If and to the extent so requested by Parent in writing (and with such exceptions as Parent may designate), the Company shall as of immediately before the Effective Time terminate (and/or provide written notice of termination in accordance with any employment or consulting agreement requiring advance notice of termination of) the service relationship with the Company and the Company Subsidiaries of all employees, consultants and directors of the Company and the Company Subsidiaries and take all customary ancillary actions in connection with such termination (including giving them written notice of such termination). Notwithstanding anything to the contrary contained herein, the Company Board shall provide the Chief Executive Officer of the Company with a notice of termination (as an employee) immediately before the Effective Time, with such termination to be effective 30 days thereafter.

Any such termination of employment shall be treated as a termination without cause or benefits eligible termination (or equivalent term) by the Company entitling such employees to full severance payments and benefits under the employment agreements or the severance plan listed on Section 5.09 of the Company Disclosure Letter, determined on the basis that such termination has occurred in connection with a change in control, as applicable to individual employees. Section 5.09 of the Company Disclosure Letter sets forth the amounts of the cash severance payments applicable as of the Effective Time to each employee covered by an employment agreement with the Company. Before the Effective Time, the Company Board may in its sole discretion deliver letters to individual employees setting forth their severance payments and benefits upon termination of employment, on a basis consistent with this *Section 5.09*.

From and after the Effective Time, Parent shall, or shall cause a Parent Subsidiary, the Surviving Corporation or a Subsidiary of the Surviving Corporation, to honor the terms of the employment agreements and the severance plan listed on Section 5.09 of the Company Disclosure Letter. The severance amounts payable under such employment agreements and/or such severance plan to any Company employee who continues in the employ of the Surviving Corporation shall be paid to such employee by the Surviving Corporation or Parent on the earlier of the first Business Day after such employee's employment with the Surviving Corporation terminates or (even if on such 120th calendar day the employee is still employed by the Surviving Corporation) the 120th calendar day after the Closing Date.

(b) *401(k) Plan.* If so requested by Parent in writing, the Company shall before the Effective Time amend the Company's 401(k) plan to require, in the event of plan termination, in-kind distribution of any CVRs in a participant's account, and take all customary ancillary actions in connection with such amendment; provided that, if Parent so requests, Parent shall pay directly all reasonable out-of-pocket expenses incurred by the Company in connection with such amendment, including reasonable legal fees.

If so requested by Parent in writing, and whether or not such amendment shall have been requested, the Company shall as of immediately before the Effective Time terminate the Company's 401(k) plan and take all customary ancillary actions in connection with such termination.

(c) *Health Care.* From and after the Effective Time, Parent shall, or shall cause a Parent Subsidiary, the Surviving Corporation or a Subsidiary of the Surviving Corporation, to (i) honor in accordance with their terms the obligations of the Company to provide continued medical and dental coverage to employees under the terms

Table of Contents

of the employment agreements and the severance plan listed on Section 5.09 of the Company Disclosure Letter, and (ii) as and to the extent required by applicable law, continue to provide COBRA continuation coverage to former employees of the Company.

Section 5.10 Indemnification; Directors and Officers Insurance.

(a) From and after the Effective Time, Parent will cause the Surviving Corporation and its Subsidiaries to fulfill and honor in all respects the obligations of the Company and the Company Subsidiaries pursuant to (i) each indemnification agreement in effect on the date of this Agreement between the Company or any of the Company Subsidiaries and any Indemnified Party; and (ii) any indemnification provision and any exculpation provision in favor of an Indemnified Party that is set forth in the certificate of incorporation or bylaws of the Company and the equivalent organizational documents of any Company Subsidiary in effect as of the date of this Agreement. The certificate of incorporation and bylaws of the Surviving Corporation shall contain the provisions with respect to indemnification and exculpation from liability set forth in the Company's certificate of incorporation and bylaws on the date of this Agreement, and, from and after the Effective Time, such provisions shall not be amended, repealed or otherwise modified in any manner that could adversely affect the rights thereunder of any Indemnified Party.

(b) Without limiting the provisions of *Section 5.10(a)*, during the period commencing at the Effective Time and ending on the sixth anniversary of the Effective Time, Parent shall indemnify and hold harmless each Indemnified Party against and from any costs, fees and expenses (including reasonable attorneys' fees and investigation expenses), judgments, fines, losses, claims, damages, liabilities and amounts paid in settlement in connection with any Legal Proceeding, arbitration, investigation or inquiry, whether civil, criminal, administrative or investigative, to the extent such Legal Proceeding, arbitration, investigation or inquiry arises directly or indirectly out of or pertains directly or indirectly to: (i) any action or omission or alleged action or omission in such Indemnified Party's capacity as a director, officer, employee or agent of the Company or any Company Subsidiary or other Affiliates (regardless of whether such action or omission, or alleged action or omission, occurred before, at or after the Effective Time); or (ii) any of the transactions contemplated by this Agreement; *provided, however*, that if, at any time before the sixth anniversary of the Effective Time, any Indemnified Party delivers to the Company, the Surviving Corporation or Parent, as applicable, a written notice asserting a claim for indemnification under this *Section 5.10(b)*, then the claim asserted in such notice shall survive the sixth anniversary of the Effective Time until such time as such claim is fully and finally resolved. In the event of any such Legal Proceeding, arbitration, investigation or inquiry: (A) any counsel retained by the Indemnified Parties with respect to the defense thereof for any period after the Effective Time must be reasonably satisfactory to Parent; and (B) Parent will pay the reasonable fees and expenses of such counsel, promptly after statements therefor are received; *provided* that the individual to whom expenses are advanced provides an undertaking to repay such advances to the extent required by applicable Legal Requirements. The Indemnified Parties as a group may retain only one law firm (in addition to local counsel) to represent them with respect to any single action unless counsel for any Indemnified Party determines in good faith that, under applicable standards of professional conduct, a conflict exists or is reasonably likely to arise on any material issue between the positions of any two or more Indemnified Parties. Notwithstanding anything to the contrary contained in this *Section 5.10(b)* or elsewhere in this Agreement, Parent agrees that it will not settle or compromise or consent to the entry of any judgment or otherwise seek termination with respect to any Legal Proceeding, arbitration, investigation or inquiry for which indemnification may be sought under this Agreement unless such settlement, compromise, consent or termination includes an unconditional release of all Indemnified Parties from all liability arising out of such Legal Proceeding, arbitration, investigation or inquiry.

(c) Through the sixth anniversary of the Effective Time, Parent will cause the Surviving Corporation to maintain in effect, for the benefit of the Company's directors and officers that are insured under the Company's current directors' and officers' liability insurance policy in effect as of the date of this Agreement (the *D&O Insurance Policy*), the current level and similar scope of directors' and officers' liability insurance coverage as set forth in the D&O Insurance Policy with a carrier selected by Parent; *provided, however*, that in no event shall

Table of Contents

the Surviving Corporation be required pursuant to this *Section 5.10(c)* to expend in any one year an amount in excess of 100% of the annual premium currently payable by the Company with respect to such current D&O Insurance Policy, it being understood that if the annual premiums payable for such insurance coverage exceed such amount, the Surviving Corporation shall be obligated to obtain a policy with what Parent determines in good faith to be the most favorable coverage available for a cost equal to such amount. At any time before the Effective Time, notwithstanding anything to the contrary set forth in this Agreement, the Company may purchase a customary tail prepaid policy on the D&O Insurance Policy covering a period of six years from the Effective Time. In the event that the Company shall purchase such a customary tail prepaid policy prior to the Effective Time, Parent will cause the Surviving Corporation to maintain such tail policy in full force and effect and continue to honor its respective obligations thereunder, in lieu of all other obligations of Parent under the first sentence of this *Section 5.10(c)*, for so long as such tail policy shall be maintained in full force and effect.

(d) Parent and the Surviving Corporation jointly and severally agree to pay all expenses, including attorneys' fees, that may be incurred by the Indemnified Parties in enforcing their indemnity rights and other rights provided in this *Section 5.10*.

(e) This *Section 5.10* shall survive the Effective Time and the consummation of the Merger. This *Section 5.10* is intended to benefit, and may be enforced by, the Indemnified Parties and their respective heirs, representatives, successors and assigns, and shall be binding on all successors and assigns of Parent and the Surviving Corporation.

Section 5.11 Section 16 Matters.

Before the Effective Time, Parent and the Company shall take all such steps as may be required to cause any dispositions of Company Shares (including derivative securities with respect to Company Shares) resulting from the Merger by each individual who is subject to the reporting requirements of Section 16(a) of the Exchange Act with respect to the Company to be exempt under Rule 16b-3 promulgated under the Exchange Act.

Section 5.12 Stock Exchange Listing.

Parent shall promptly prepare and submit to the Exchange and any other applicable exchange a listing application covering the shares of Parent Common Stock to be issued in the Merger and shall use its reasonable best efforts to cause such shares to be approved for listing on such Exchange, subject to official notice of issuance, before the Effective Time.

Section 5.13 Plan of Reorganization.

The parties agree that the Merger shall not be, and they shall not report the Merger as, a tax-free reorganization within the meaning of Section 368 of the Code.

Section 5.14 Sale of the Aplindore Program and the Real Estate Before the Effective Time

(a) The Company shall use commercially reasonable efforts to consummate the sale of the Aplindore Program and the Real Estate before the Effective Time, on such terms and conditions as determined in the Company's sole discretion; *provided* that the consummation of either such sale shall not be a condition to the parties' obligations to consummate the Merger in accordance with the terms of this Agreement. The Company shall consult with Parent from time to time after the date of this Agreement and before the Effective Time on the progress of any such sales, as Parent may reasonably request. In the event the Aplindore Program and/or the Real Estate is sold before the Effective Time, the Aplindore Program Consideration and the Real Estate Consideration shall be paid to the stockholders of the Company as provided in *Section 2.6*.

(b) Unless the Company shall have timely terminated the license under the Wyeth License Agreement, the Company shall pay to Wyeth the Wyeth Maintenance Fee at the time such payment is due.

Table of Contents

(c) At any time before the Effective Time, the Company shall have the right in its sole discretion to terminate the license under the Wyeth License Agreement, the Aplindore Program and all efforts to sell the Aplindore Program, and in the event of such termination, Parent shall have no further obligation to issue any Aplindore CVR in the Merger.

Section 5.15 Sale of the Aplindore Program and the Real Estate After the Effective Time

(a) If the Aplindore Program is not terminated or sold by the Company before the Effective Time, then at the Effective Time, the Company shall deliver the Expense Reserve Amount to Parent to cover reasonable and documented expenses and costs incurred by Parent solely in connection with operating (in Parent's sole discretion, subject to the proviso at the end of this *Section 5.15(a)*) the Aplindore Program after the Effective Time; *provided* that Parent shall provide a written statement of all such expenses and costs to the Consulting Committee on the first (1st) Business Day of each month following the Effective Time, and to the extent Parent chooses to incur post-Effective-Time expenses and costs in connection with operating the Aplindore Program after the Effective Time which exceed the Expense Reserve Amount, Parent shall be solely responsible for any such excess and shall have no right to deduct any such excess from the Aplindore Program Consideration; and *provided further* that if the Closing occurs before November 22, 2009, Parent shall apply \$250,000 of the Expense Reserve Amount to the payment of the Wyeth Maintenance Fee.

(b) If the Aplindore Program is not terminated or sold by the Company before the Effective Time or all the Real Estate is not sold by the Company before the Effective Time, Parent shall engage in the efforts to sell each of the Aplindore Program and the Real Estate in accordance with the Aplindore CVR Agreement and the Real Estate CVR Agreement, respectively.

(c) In furtherance of its obligations under the preceding paragraph, before the Effective Time, Parent shall use commercially reasonable efforts to negotiate and agree to terms with as many of the individuals listed on *Exhibit E* attached hereto as possible (referred to herein as the *Consulting Committee*), to assist in Parent's efforts toward such sales.

(d) It is understood that Parent's Board of Directors and management shall have the ultimate authority to lead, direct and approve the sale process described in paragraph (b) of this *Section 5.15* and to determine in good faith whether or not to accept any proposed offer to purchase the Aplindore Program or the Real Estate, and that Parent shall have no liability for good-faith decisions, actions and inactions in this regard.

Section 5.16 Repayment of Company Loans

Before the Effective Time, the Company shall repay in full the amounts outstanding under (i) the construction loan made by Connecticut Innovations, Inc. on or around October 1999, and (ii) any and all loans secured by the Real Estate, and shall discharge all other obligations of the Company or any Company Subsidiary thereunder, if any, and obtain full releases of any property of the Company or any Company Subsidiary pledged as collateral thereunder.

Section 5.17 Efforts to Satisfy Closing Conditions

Each of Parent and the Company shall use its reasonable best efforts to cause the conditions to the other party's obligations to effect the Merger and the other Transactions to be satisfied and, to the extent Parent so requests, the Company shall request the consent of the counterparty to any Company Contract to the consummation by the Company of the Merger; *provided* that obtaining any such consent shall in no event be a condition to closing under Article VI.

Table of Contents

ARTICLE VI

CONDITIONS TO EACH PARTY'S OBLIGATION TO EFFECT THE MERGER

Section 6.01 Conditions to Obligations of Each Party Under This Agreement.

The respective obligations of each party to effect the Merger and the other Transactions shall be subject to the satisfaction at or before the Effective Time of the following conditions, any or all of which may be waived, in whole or in part, to the extent permitted by applicable Legal Requirements:

- (a) The Registration Statement shall have been declared effective by the SEC under the Securities Act. No stop order suspending the effectiveness of the Registration Statement shall have been issued by the SEC and no proceedings for that purpose shall have been initiated or, to the knowledge of Parent or the Company, threatened by the SEC.
- (b) The Company Stockholder Approval shall have been obtained.
- (c) No temporary, preliminary or permanent order or injunction shall have been issued by a court of competent jurisdiction and shall be continuing that prohibits the consummation of the Merger, and no Legal Prohibition shall have been enacted since the date of this Agreement and shall remain in effect.
- (d) The shares of Parent Common Stock issuable to the stockholders of the Company in the Merger shall have been approved for listing on the Exchange, subject to official notice of issuance.

Section 6.02 Additional Conditions to Obligations of Parent and Merger Sub.

The obligations of Parent and Merger Sub to effect the Merger and the other transactions contemplated herein are also subject to the following conditions:

- (a) Each of the representations and warranties of the Company set forth in the Agreement (without giving effect to any Company Material Adverse Effect or other materiality qualifications contained in such representations and warranties) shall be true and correct as of the Effective Time as though made on and as of the Effective Time (except that those representations and warranties which address matters only as of a particular date need only be true and correct as of such date), except for such inaccuracies, individually or in the aggregate, that would not reasonably be expected to have a Company Material Adverse Effect, and Parent shall have received a certificate of an executive officer of the Company to that effect.
- (b) The covenants of the Company contained in the Agreement that are required to have been performed by the Company before the Effective Time shall have been performed in all material respects, and Parent shall have received a certificate of an executive officer of the Company to that effect and to the effect that *Section 6.02(c)*, *Section 6.02(d)* and *Section 6.02(e)* have been satisfied.
- (c) Since the date of this Agreement, there shall not have occurred and be continuing any event or development which, individually or in the aggregate, has had or would reasonably be expected to have a Company Material Adverse Effect.
- (d) No more than 6,800,000 Outstanding Company Shares shall be eligible to be Dissenting Shares.
- (e) The Company shall have delivered to Parent the resignations of each director and officer of the Company and each Company Subsidiary, as such, each effective as of the Effective Time.
- (f) Parent shall have received from the Company (i) a properly executed statement, dated as of the Effective Time, stating under penalties of perjury that the Company is not, and has not been, a United States real property holding corporation as defined in Section 897(c)(2) of the Code during the applicable period described in Section 897(c)(1)(A)(ii) of the Code, in form and substance reasonably acceptable to Parent, and (ii) proof reasonably satisfactory to Parent that the Company has provided notice of such verification to the Internal Revenue Service in accordance with the provisions of Treasury Regulations Section 1.897-2(h)(2).

Table of Contents

Section 6.03 Additional Conditions to Obligations of the Company.

The obligation of the Company to effect the Merger and the other transactions contemplated herein are also subject to the following conditions:

(a) Each of the representations and warranties of Parent and Merger Sub set forth in the Agreement (without giving effect to any Parent Material Adverse Effect or other materiality qualifications contained in such representations and warranties) shall be true and correct as of the Effective Time as though made on and as of the Effective Time (except that those representations and warranties which address matters only as of a particular date need only be true and correct as of such date), except for such inaccuracies, individually or in the aggregate, that would not reasonably be expected to have a Parent Material Adverse Effect, and the Company shall have received a certificate of an executive officer of Parent to that effect.

(b) The covenants of Parent and Merger Sub contained in the Agreement that are required to have been performed by Parent and Merger Sub before the Effective Time shall have been performed in all material respects, and the Company shall have received a certificate of an executive officer of Parent to that effect and to the effect that *Section 6.03(c)* has been satisfied.

(c) Since the date of this Agreement, there shall not have occurred and be continuing any event or development which, individually or in the aggregate, has had or would reasonably be expected to have a Parent Material Adverse Effect.

Section 6.04 Estoppel.

Notwithstanding anything to the contrary contained herein, no party whose failure to take any action required to fulfill or satisfy any of the conditions set forth in this *Article VI* may claim failure of such condition as grounds for termination pursuant to *Article VII* of this Agreement.

ARTICLE VII

TERMINATION

Section 7.01 Termination.

This Agreement may be terminated and the Merger may be abandoned (before or after the obtaining of the Company Stockholder Approval):

(a) by mutual written consent of the Company and Parent at any time before the Effective Time;

(b) by either Parent or the Company if the Company Stockholder Approval shall not have been obtained by reason of the failure to obtain the required vote at the Special Meeting or at any adjournment thereof;

* (c) by Parent or the Company at any time after December 24, 2009 (the *Outside Date*) if the Effective Time shall not have occurred on or before the Outside Date (*provided* that the right to terminate this Agreement pursuant to this *Section 7.01(c)* shall not be available to any party where the failure of such party (or any Affiliate or Representative of such party) to fulfill any obligation under this Agreement or any voting agreement has resulted in the failure of the Effective Time to have occurred on or before the Outside Date;

(d) by Parent or the Company if there shall be any Legal Prohibition in effect preventing the consummation of the Merger; *provided, however*, that a party shall not be permitted to terminate this Agreement pursuant to this *Section 7.01(d)* if the existence of the Legal Prohibition is attributable to the failure of such party (or any Affiliate or Representative of such party) to perform in any material respect any covenant in this Agreement required to be performed by such party (or any Affiliate or Representative of

* Changed by amendment to read as stated herein pursuant to the Amendment No. 2 to Agreement and Plan of Merger dated November 2, 2009.

Table of Contents

such party) at or before the Effective Time, and *provided, further*, that the party seeking to terminate this Agreement pursuant to this *Section 7.01(d)* shall have used its reasonable best efforts to prevent such Legal Prohibition and to cause any such Legal Prohibition to be vacated or otherwise rendered of no effect;

(e) by Parent within five (5) Business Days following the date on which the Company Board shall have made a Company Change in Recommendation;

(f) by the Company if the Company Board authorizes the Company, subject to complying with the terms of this Agreement, to accept (or to enter into a written agreement for a transaction constituting) a Superior Proposal; *provided* that immediately before (or contemporaneous with) the termination of this Agreement pursuant to this paragraph, the Company shall pay to Parent the Termination Fee payable pursuant to *Section 7.03(c)*;

(g) by Parent at any time before the Effective Time if: (i) the representations and warranties of the Company set forth in this Agreement shall not be true and correct on and as of the date of such determination as if made on such date (other than those representations and warranties that address matters only as of a particular date, which shall be true and correct as of such date), except where the failure of any such representation or warranty to be true and correct (without giving effect to any Company Material Adverse Effect or other materiality qualifications set forth therein) would not, individually or in the aggregate, reasonably be expected to have a Company Material Adverse Effect or impair in any material respect the ability of the Company to perform its obligations under this Agreement; or (ii) the Company shall have, in any material respect, breached or failed to perform or comply with any obligation, agreement or covenant required by this Agreement to be performed or complied with by it, which breach or failure (in each case under clauses (i) and (ii)), following written notice thereof from Parent to the Company, is not cured, or is incapable of being cured, on or before the Outside Date;

(h) by the Company at any time before the Effective Time if: (i) the representations and warranties of Parent or Merger Sub set forth in this Agreement shall not be true and correct on and as of the date of such determination as if made on such date (other than those representations and warranties that address matters only as of a particular date, which shall be true and correct as of such date), except where the failure of any such representation or warranty to be true and correct (without giving effect to any Parent Material Adverse Effect or other materiality qualifications set forth therein) would not, individually or in the aggregate, reasonably be expected to have a Parent Material Adverse Effect or impair in any material respect the ability of Parent or Merger Sub to perform their obligations under this Agreement; or (ii) Parent or Merger Sub shall have, in any material respect, breached or failed to perform or comply with any obligation, agreement or covenant required by this Agreement to be performed or complied with by them, which breach or failure (in each case under clauses (i) and (ii)), following written notice thereof from the Company to Parent, is not cured, or is incapable of being cured, on or before the Outside Date; or

(i) by the Company at any time at least three Business Days before the erstwhile Closing Date if the result that would be obtained by multiplying (A) the sum of (x) the total number of shares of Parent Common Stock issuable pursuant to *Section 2.06(a)(iii)*, after giving effect to the application of the Maximum Amount and assuming that there are no Dissenting Shares, plus (y) the Excess Shares, by (B) the Volume Weighted Average Price on the Trading Day immediately preceding the Determination Date is less than the Adjusted Reference Amount, unless on the Business Day next following the day on which Parent receives actual notice in writing from the Company of termination pursuant to this *Section 7.01(i)*, Parent agrees to irrevocably waive in full the application of the Maximum Amount in the proviso to *Section 2.06(a)(iii)*, in which case the termination pursuant to this *Section 7.01(i)* shall thereby be deemed to be nullified ab initio.

Table of Contents

Section 7.02 Effect of Termination.

In the event of the termination of this Agreement as provided in *Section 7.01*, written notice thereof shall forthwith be given to the other party or parties specifying the provision hereof pursuant to which such termination is made and this Agreement shall be of no further force or effect; *provided, however*, that: (a) this *Section 7.02*, *Section 7.03*, and *Section 8.06*, and the Confidentiality Agreement and the Confidentiality and Exclusivity Agreement shall survive the termination of this Agreement and shall remain in full force and effect; and (b) except as provided in *Section 7.03*, the termination of this Agreement shall not relieve any party from any liability or damage that was the result of fraud or the willful and material breach of any representation, warranty or covenant contained in this Agreement.

Section 7.03 Termination Fee.

(a) If: (i) this Agreement is validly terminated by either Parent or the Company pursuant to *Section 7.01(b)* or *Section 7.01(c)* or by Parent pursuant to *Section 7.01(g)*; (ii) neither Parent nor Merger Sub shall have materially breached any of its representations, warranties or covenants contained in this Agreement; and (iii) at or before the time of any such termination of this Agreement an Acquisition Proposal shall have been made (and such Acquisition Proposal shall not have been withdrawn before the time of the termination of this Agreement) and within twelve (12) months after the date of termination of this Agreement, the Company or any Company Subsidiary consummates an Acquisition Transaction or enters into a Contract to consummate an Acquisition Transaction that is subsequently consummated, then, within two (2) Business Days after such Acquisition Transaction is consummated the Company shall pay the Termination Fee to Parent; *provided, however*, that solely for purposes of this *Section 7.03(a)*, the term Acquisition Transaction shall have the meaning set forth in the definition of Acquisition Transaction contained in *Article I*, but if any such Acquisition Transaction is for less than 50% of the assets, voting securities or equity interests of the Company, as the case may be, then notwithstanding anything to the contrary contained herein, the Termination Fee shall be \$362,500.

(b) If this Agreement is validly terminated by the Company pursuant to *Section 7.01(i)* (and such termination is not nullified pursuant to *Section 7.01(i)*) or by Parent pursuant to *Section 7.01(e)*, then, within two (2) Business Days after such termination, the Company shall pay the Termination Fee to Parent.

(c) If this Agreement is validly terminated by the Company pursuant to *Section 7.01(f)*, before (or contemporaneously with) and as a condition to the effectiveness of such termination, the Company shall pay the Termination Fee to Parent.

(d) Each of the parties hereto acknowledges that the agreements contained in this *Section 7.03* are an integral part of the transactions contemplated by this Agreement and that the Termination Fee is not a penalty, but rather is liquidated damages in a reasonable amount that will compensate Parent and Merger Sub, as the case may be, in the circumstances in which such Termination Fee is payable for the efforts and resources expended and opportunities foregone while negotiating this Agreement and in reliance on this Agreement and on the expectation of the consummation of the Transactions, which amount would otherwise be impossible to calculate with precision.

(e) In circumstances under which the Termination Fee is payable and has been paid, Parent and Merger Sub agree that (i) to the extent they have incurred losses or damages in connection with this Agreement other than as a result of fraud or intentional misconduct, their sole and exclusive remedy against the Company and any of its directors, officers, Affiliates or Representatives for any breach, loss or damage shall be to receive payment of the Termination Fee to the extent provided in *Section 7.03* and (ii) upon payment in full of such amounts, (x) neither Parent nor Merger Sub shall have any other rights or claims or seek damages against the Company or any of its directors, officers, Affiliates or Representatives under this Agreement or otherwise, whether at law or equity, in contract, in tort or otherwise, and (y) neither the Company nor any of its directors, officers, Affiliates or Representatives shall have any further liability or obligations relating to or arising out of this Agreement or the Transactions.

Table of Contents

ARTICLE VIII

MISCELLANEOUS PROVISIONS

Section 8.01 Amendment.

This Agreement may be amended with the written approval of the respective parties at any time before the Effective Time; *provided, however*, that after the Company Stockholder Approval shall have been obtained, no amendment shall be made which by applicable Legal Requirements or any rule of any relevant national securities exchange requires further approval of the stockholders of the Company, without such further approval.

Section 8.02 Waiver.

(a) No failure on the part of any party to exercise any power, right, privilege or remedy under this Agreement, and no delay on the part of any party in exercising any power, right, privilege or remedy under this Agreement, shall operate as a waiver of such power, right, privilege or remedy; and no single or partial exercise of any such power, right, privilege or remedy shall preclude any other or further exercise thereof or of any other power, right, privilege or remedy.

(b) No party shall be deemed to have waived any claim arising out of this Agreement, or any power, right, privilege or remedy under this Agreement, unless the waiver of such claim, power, right, privilege or remedy is expressly set forth in a written instrument duly executed and delivered on behalf of such party; and any such waiver shall not be applicable or have any effect except in the specific instance in which it is given.

Section 8.03 No Survival of Representations and Warranties.

None of the representations, warranties, covenants and other agreements of the parties contained in this Agreement, or any claim with respect thereto, shall survive the Effective Time, except for (and only to the extent that) those covenants, agreements and other provisions contained herein that by their terms apply or are to be performed in whole or in part after the Effective Time.

Section 8.04 Entire Agreement; Counterparts.

This Agreement, the CVR Agreements, the other agreements referred to herein, the Confidentiality Agreement and the Confidentiality and Exclusivity Agreement constitute the entire agreement of the parties hereto and supersede all prior or contemporaneous agreements and understandings, both written and oral, among or between any of the parties hereto with respect to the subject matter hereof and thereof. This Agreement may be executed in counterparts, each of which shall be deemed an original and all of which shall constitute one and the same instrument.

Section 8.05 Applicable Legal Requirements; Jurisdiction; Waiver of Jury Trial.

(a) This Agreement is made under, and shall be construed and enforced in accordance with, the Legal Requirements of the State of Delaware applicable to agreements made and to be performed solely therein. The parties hereto agree that any Legal Proceeding seeking to enforce any provision of, or based on any matter arising out of or in connection with, this Agreement or the transactions contemplated hereby shall be brought in the Court of Chancery of the State of Delaware, and each of the parties hereby irrevocably consents to the jurisdiction of such court (and of the appropriate appellate courts therefrom) in any such Legal Proceeding and irrevocably waives, to the fullest extent permitted by Legal Requirements, any objection that it may now or hereafter have to the laying of the venue of such Legal Proceeding in any such court or that any such Legal Proceeding brought in any such court has been brought in an inconvenient forum. Each of the parties hereto agrees that a final judgment in any such Legal Proceeding shall be conclusive and may be enforced in other jurisdictions by suit on the judgment or in any other manner provided by Legal Requirements. Each party to this Agreement irrevocably consents to service of process in the manner provided for notices in *Section 8.09*. Nothing

Table of Contents

in this Agreement will affect the right of any party to this Agreement to serve process in any other manner permitted by Legal Requirements. Each party hereto agrees not to commence any legal proceedings relating to or arising out of this Agreement or the transactions contemplated hereby in any jurisdiction or courts other than as provided herein.

(b) EACH PARTY ACKNOWLEDGES AND AGREES THAT ANY CONTROVERSY WHICH MAY ARISE UNDER THIS AGREEMENT IS LIKELY TO INVOLVE COMPLICATED AND DIFFICULT ISSUES, AND THEREFORE IT HEREBY IRREVOCABLY AND UNCONDITIONALLY WAIVES ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY IN RESPECT OF ANY LITIGATION DIRECTLY OR INDIRECTLY ARISING OUT OF OR RELATING TO THIS AGREEMENT AND ANY OF THE AGREEMENTS DELIVERED IN CONNECTION HERewith OR THE TRANSACTIONS CONTEMPLATED HEREBY OR THEREBY. EACH PARTY CERTIFIES AND ACKNOWLEDGES THAT (A) NO REPRESENTATIVE, AGENT OR ATTORNEY OF ANY OTHER PARTY HAS REPRESENTED, EXPRESSLY OR OTHERWISE, THAT SUCH OTHER PARTY WOULD NOT, IN THE EVENT OF LITIGATION, SEEK TO ENFORCE EITHER OF SUCH WAIVERS, (B) IT UNDERSTANDS AND HAS CONSIDERED THE IMPLICATIONS OF SUCH WAIVERS, (C) IT MAKES SUCH WAIVERS VOLUNTARILY, AND (D) IT HAS BEEN INDUCED TO ENTER INTO THIS AGREEMENT BY, AMONG OTHER THINGS, THE MUTUAL WAIVERS AND CERTIFICATIONS IN THIS *Section 8.05(b)*.

Section 8.06 Payment of Expenses.

Whether or not the Merger is consummated, each party hereto shall pay its own expenses incident to preparing for, entering into and carrying out this Agreement and the Transactions. Nothing contained in this Agreement shall be deemed to limit the right or ability of any party to this Agreement to pay such expenses, as and when due and payable.

Section 8.07 Transfer Taxes.

All transfer, documentary, sales, use, stamp, registration and other substantially similar Taxes and fees (including any penalties and interest) incurred in connection with this Agreement (collectively, *Transfer Taxes*) shall be paid by Parent and Merger Sub when due, and Parent and Merger Sub will, at their own expense, file all necessary Tax Returns and other documentation with respect to all such Transfer Taxes.

Section 8.08 Assignability; No Third Party Rights.

Neither this Agreement nor any of the rights, interests or obligations hereunder shall be assigned, in whole or in part, by operation of a Legal Requirement or otherwise, by any of the parties without the prior written consent of the other parties. This Agreement shall be binding upon, and shall be enforceable by and inure to the benefit of, the parties hereto and their respective successors and assigns. Except (i) for the rights of stockholders and holders of other securities to receive payment in accordance with *Article II* after the Effective Time, (ii) as set forth in *Section 5.09* and *Section 5.10* and (iii) for the right of the Company (but not of the Surviving Corporation), on behalf of its stockholders, to pursue damages in the event of Parent's or Merger Sub's breach of this Agreement, nothing in this Agreement, express or implied, is intended to or shall confer upon any Person, other than the parties hereto, any right, benefit or remedy of any nature. In circumstances in which the stockholders of the Company do not have the right to seek remedies at law or equity, the obligations of Parent and Merger Sub under this Agreement are material to the Company's execution of this Agreement and any failure by Parent or Merger Sub to comply with the terms of this Agreement shall enable the Company (but not the Surviving Corporation) to seek all remedies available at law or equity to it and on behalf of the stockholders.

Section 8.09 Notices.

All notices, requests, demands and other communications under this Agreement shall be in writing and shall be deemed to have been duly given or made as follows: (a) if sent by registered or certified mail in the United States return receipt requested, upon receipt; (b) if sent designated for overnight delivery by nationally

Table of Contents

recognized overnight air courier (such as Federal Express), upon receipt of proof of delivery; (c) if sent by facsimile transmission before 5:00 p.m. New York time, when transmitted and receipt is confirmed; (d) if sent by facsimile transmission after 5:00 p.m. New York time and receipt is confirmed, on the following Business Day; and (e) if otherwise actually personally delivered, when delivered, *provided* that such notices, requests, demands and other communications are delivered to the address set forth below, or to such other address as any party shall provide by like notice to the other parties to this Agreement:

if to Parent or Merger Sub:

Ligand Pharmaceuticals Incorporated

10275 Science Center Drive

San Diego, CA 92121

Attention: John Higgins

Facsimile: (858) 550-5646

with a copy to:

Stradling Yocca Carlson & Rauth

4365 Executive Drive, Suite 1500

San Diego, CA 92121

Attention: Hayden Trubitt, Esq.

Facsimile: (858) 926-3001

if to the Company:

Neurogen Corporation

45 Northeast Industrial Road

Branford, CT 06405

Attention: Stephen Davis

Facsimile: (203) 488-4863

with a copy to:

Milbank, Tweed, Hadley & McCloy LLP

1 Chase Manhattan Plaza

New York, NY 10005

Attention: Robert S. Reder, Esq.

Facsimile: (212) 822-5680

Section 8.10 Severability.

Any term or provision of this Agreement that is invalid or unenforceable in any situation in any jurisdiction shall not affect the validity or enforceability of the remaining terms and provisions hereof or the validity or enforceability of the offending term or provision in any other situation or in any other jurisdiction. If the final judgment of a court of competent jurisdiction declares that any term or provision hereof is invalid or unenforceable, the parties hereto agree that the court making such determination shall have the power to limit the term or provision, to delete specific words or phrases or to replace any invalid or unenforceable term or provision with a term or provision that is valid and enforceable and that comes closest to expressing the intention of the invalid or unenforceable term or provision, and this Agreement shall be enforceable as so modified. In the event such court does not exercise the power granted to it in the prior sentence, the parties hereto agree to negotiate in good faith to replace such invalid or unenforceable term or provision with a valid and enforceable term or provision that will achieve, to the extent possible, the economic, business and other purposes of such invalid or unenforceable term.

A-47

Table of Contents

Section 8.11 Obligation of Parent.

Parent shall ensure that each of Merger Sub and the Surviving Corporation duly performs, satisfies and discharges on a timely basis each of the covenants, obligations and liabilities of Merger Sub and the Surviving Corporation under this Agreement.

Section 8.12 Specific Performance.

The parties hereto agree that irreparable damage would occur in the event any of the provisions of this Agreement were not to be performed in accordance with the terms hereof and that the parties shall be entitled to specific performance of the terms hereof in addition to any other remedies at law or in equity. Each party agrees to waive any requirement for the posting of, or securing of, a bond in connection with any such remedy.

Section 8.13 Remedies.

All rights and remedies of either party hereto are cumulative of each other and of every other right or remedy such party may otherwise have at law or in equity, and the exercise of one or more rights or remedies shall not prejudice or impair the concurrent or subsequent exercise of other rights or remedies.

Section 8.14 Construction.

(a) For purposes of this Agreement, whenever the context requires: the singular number shall include the plural, and vice versa; the masculine gender shall include the feminine and neuter genders; the feminine gender shall include the masculine and neuter genders; and the neuter gender shall include the masculine and feminine genders.

(b) The parties hereto agree that any rule of construction to the effect that ambiguities are to be resolved against the drafting party shall not be applied in the construction or interpretation of this Agreement.

(c) As used in this Agreement, the words include and including, and variations thereof, shall not be deemed to be terms of limitation, but rather shall be deemed to be followed by the words without limitation.

(d) Except as otherwise indicated, all references in this Agreement to Articles Sections, Annexes, Exhibits and Schedules are intended to refer to Articles, Sections, Annexes, Exhibits or Schedules to this Agreement, as the case may be.

(e) All references in this Agreement to a document or instrument having been made available to such Party shall be deemed to include the making available of such document or instrument to any Representative of such Party.

(f) All references in this Agreement to \$ are intended to refer to U.S. dollars.

(g) Unless otherwise specifically provided for herein, the term or shall not be deemed to be exclusive.

(h) The titles, captions or headings of the Sections and Subsections herein are inserted for convenience of reference only and are not intended to be a part of or to affect the meaning or interpretation of this Agreement.

Section 8.15 Further Action.

The parties hereto shall execute and deliver such certificates and other documents and take such other actions as may be reasonably necessary or appropriate in order to effect and to more perfectly evidence the Merger and the Transactions, including, but not limited to, making filings, recordings or publications required under the DGCL. Without limitation, if at any time after the Effective Time any further action is necessary to vest in the Surviving Corporation the title to all property or rights of Merger Sub or the Company, the officers of the Surviving Entity are fully authorized in the name of Merger Sub or the Company, as the case may be, to take, and shall take, any and all such lawful action.

Table of Contents

IN WITNESS WHEREOF, Parent, Merger Sub and the Company have caused this Agreement to be executed as of the date first written above.

LIGAND PHARMACEUTICALS INCORPORATED

By: /s/ JOHN L. HIGGINS
Name: **John L. Higgins**
Title: **President and Chief Executive Officer**

NEON SIGNAL, LLC

By: Ligand Pharmaceuticals Incorporated,
its Member-Manager

By: /s/ JOHN L. HIGGINS
Name: **John L. Higgins**
Title: **President and Chief Executive Officer**

NEUROGEN CORPORATION

By: /s/ STEVE DAVIS
Name: **Steve Davis**
Title: **President & CEO**

A-49

Table of Contents

EXHIBIT A: Aplindore CVR Agreement

A-50

Table of Contents

EXHIBIT B: H3 CVR Agreement

A-51

Table of Contents

EXHIBIT C: Merck CVR Agreement

A-52

Table of Contents

EXHIBIT D: Real Estate CVR Agreement

A-53

Table of Contents

EXHIBIT E: List of Potential Consultants

Stephen Davis

Thomas Pitler

Kenneth Sprenger

George Maynard

A-54

Table of Contents

Annex B

Form of Aplindore CVR Agreement

CONTINGENT VALUE RIGHTS AGREEMENT

THIS CONTINGENT VALUE RIGHTS AGREEMENT, dated as of [], 2009 (this *Agreement* , is entered into by and among Ligand Pharmaceuticals Incorporated, a Delaware corporation (*Buyer*), Neurogen Corporation, a Delaware corporation (*Target*), and [], a [], as Rights Agent (the *Rights Agent*) and as initial Aplindore CVR Registrar (as defined herein).

Preamble

Buyer, Neon Signal, LLC, a Delaware limited liability company and wholly-owned subsidiary of Buyer (*Sub*), and Target have entered into an Agreement and Plan of Merger dated as of August 23, 2009 (the *Merger Agreement*), pursuant to which Sub will merge with and into Target (the *Merger*), with Target surviving the Merger as a subsidiary of Buyer.

Pursuant to the Merger Agreement, Buyer agreed to create and issue to Target's stockholders of record immediately before the effective time of the Merger, contingent value rights as hereinafter described.

The parties have done all things necessary to make the contingent value rights, when issued pursuant to the Merger Agreement and hereunder, the valid obligations of Buyer and to make this Agreement a valid and binding agreement of Buyer, in accordance with its terms.

NOW, THEREFORE, for and in consideration of the premises and the consummation of the transactions referred to above, it is mutually covenanted and agreed, for the equal and proportionate benefit of all Holders (as hereinafter defined), as follows:

ARTICLE I

DEFINITIONS

Section 1.1. Definitions.

(a) For all purposes of this Agreement, except as otherwise expressly provided or unless the context otherwise requires:

(i) the terms defined in this Article have the meanings assigned to them in this Article, and include the plural as well as the singular;

(ii) all accounting terms used herein and not expressly defined herein shall have the meanings assigned to such terms in accordance with United States generally accepted accounting principles, as in effect on the date hereof;

(iii) the words herein, hereof and hereunder and other words of similar import refer to this Agreement as a whole and not to any particular Article, Section or other subdivision;

(iv) unless the context otherwise requires, words describing the singular number shall include the plural and vice versa, words denoting any gender shall include all genders and words denoting natural Persons shall include corporations, partnerships and other Persons and vice versa; and

(v) all references to including shall be deemed to mean including without limitation.

Table of Contents

(b) Capitalized terms used but not otherwise defined herein shall have the meanings ascribed thereto in the Merger Agreement. The following terms shall have the meanings ascribed to them as follows:

Achievement Certificate has the meaning set forth in Section 2.4(a).

Aplindore Expense Reserve Balance means the balance, if any, as of the CVR Outside Date of funds not paid or payable from the Expense Reserve Amount received by Buyer as provided in Section 5.15(a) of the Merger Agreement.

Aplindore CVR Payment Amount means an amount equal to (x) the aggregate cash proceeds and/or (to the extent such shares of stock received are listed for trading on a U.S. national securities exchange) shares of stock received by Buyer, or any of its subsidiaries, after the effective time of the Merger and before the CVR Outside Date, from any purchaser (other than Buyer) of all or substantially all of the assets and property of the Aplindore Program, with respect to a purchase thereof which closed or closes on or before the CVR Outside Date, plus (y) any Aplindore Expense Reserve Balance, less (i) any costs and expenses reasonably incurred by the Buyer, or any of its subsidiaries, in connection with the sale of all or substantially all of the assets and property of the Aplindore Program (including commissions and amounts paid to the Consulting Committee as contemplated by Section 5.15(c) of the Merger Agreement) and (ii) any amounts previously paid to the Holders pursuant to the Aplindore CVRs. For the avoidance of doubt, any amounts deducted from Net Cash Amount as accounts payable relating to the Aplindore Program and any amounts paid by Buyer from the Expense Reserve Amount shall not be considered costs and expenses incurred by Buyer hereunder.

Aplindore CVR Payment Date means the date (if any and if ever) that an Aplindore CVR Payment Amount is payable by Buyer to the Holders, which date shall be established pursuant to Section 2.4.

Aplindore CVR Payment Event means the receipt by Buyer of cash proceeds and/or (to the extent such shares of stock received are listed for trading on a U.S. national securities exchange) shares of stock of any purchaser (other than Buyer) from the sale of all or substantially all of the assets and property of the Aplindore Program.

Aplindore CVR Register has the meaning set forth in Section 2.3(b).

Aplindore CVR Registrar has the meaning set forth in Section 2.3(b).

Aplindore CVRs means the Aplindore Contingent Value Rights issued by Buyer pursuant to the Merger Agreement and this Agreement.

Aplindore Sale means the sale of all or substantially all of the assets and property of the Aplindore Program to a Person other than Buyer.

Board of Directors means the board of directors of Buyer.

Board Resolution means a copy of a resolution certified by the secretary or an assistant secretary of Buyer to have been duly adopted by the Board of Directors and to be in full force and effect on the date of such certification, and delivered to the Rights Agent.

Business Day means any day other than a Saturday, Sunday or a day on which banking institutions in New York, New York are authorized or obligated by law or executive order to remain closed.

CVR Outside Date means [insert date that is six months from the Effective Date].

Table of Contents

Holder means a Person in whose name an Aplindore CVR is registered in the Aplindore CVR Register.

Non-Achievement Certificate has the meaning set forth in Section 2.4(b).

Notice of Objection has the meaning set forth in Section 2.4(d).

Objection Period has the meaning set forth in Section 2.4(d).

Officer's Certificate means a certificate signed by the chief executive officer, president, chief financial officer, any vice president, the controller, the treasurer or the secretary, in each case, of Buyer, in his or her capacity as such an officer, and delivered to the Rights Agent.

Permitted Transfer means: (i) the transfer of any or all of the Aplindore CVRs (upon the death of the Holder) by will or intestacy; (ii) transfer by instrument to an inter vivos or testamentary trust in which the Aplindore CVRs are to be passed to beneficiaries upon the death of the trustee; (iii) transfers made pursuant to a court order of a court of competent jurisdiction (such as in connection with divorce, bankruptcy or liquidation); (iv) if the Holder is a partnership or limited liability company, a distribution by the transferring partnership or limited liability company to its partners or members, as applicable; (v) a transfer made by operation of law (including a consolidation or merger) or in connection with the dissolution, liquidation or termination of any corporation, limited liability company, partnership or other entity; (vi) a transfer from a participant's account in a tax-qualified employee benefit plan to the participant or to such participant's account in a different tax-qualified employee benefit plan or to a tax-qualified individual retirement account for the benefit of such participant; or (vii) a transfer from a participant in a tax-qualified employee benefit plan, who received the Aplindore CVRs from such participant's account in such tax-qualified employee benefit plan, to such participant's account in a different tax-qualified employee benefit plan or to a tax-qualified individual retirement account for the benefit of such participant.

Person means any natural person, corporation, partnership, limited liability company, trust, estate, other firm or entity, or governmental body.

Rights Agent means the Rights Agent named in the first paragraph of this Agreement, until a successor Rights Agent shall have become such pursuant to the applicable provisions of this Agreement, and thereafter "Rights Agent" shall mean such successor Rights Agent.

Rights Agent Fee means the agreed-upon fee of the Rights Agent to act in such capacity pursuant to the terms of this Agreement.

Surviving Person has the meaning set forth in Section 6.1(a)(i).

ARTICLE II

CONTINGENT VALUE RIGHTS

Section 2.1. Issuance of Aplindore CVRs; Appointment of Rights Agent.

(a) The Aplindore CVRs shall be issued pursuant to the Merger Agreement at the time and in the manner set forth in the Merger Agreement.

(b) Buyer hereby appoints [] as the Rights Agent to act as rights agent for Buyer in accordance with the instructions hereinafter set forth in this Agreement, and the Rights Agent hereby accepts such appointment.

Section 2.2. Nontransferable.

The Aplindore CVRs shall not be sold, assigned, transferred, pledged, encumbered or in any other manner transferred or disposed of, in whole or in part, other than through a Permitted Transfer.

Table of Contents

Section 2.3. No Certificate; Registration; Registration of Transfer; Change of Address.

(a) The Aplindore CVRs shall not be evidenced by a certificate or other instrument.

(b) The Rights Agent shall keep a register (the *Aplindore CVR Register*) for the registration of Aplindore CVRs. The Rights Agent is hereby initially appointed *Aplindore CVR Registrar* for the purpose of registering Aplindore CVRs and transfers of Aplindore CVRs as herein provided. Upon any change to the identity of the Rights Agent, the successor Rights Agent shall automatically also become the successor Aplindore CVR Registrar.

(c) Subject to the restriction on transferability set forth in Section 2.2, every request made to transfer an Aplindore CVR must be in writing and accompanied by a written instrument or instruments of transfer and any other requested documentation in a form reasonably satisfactory to Buyer and the Aplindore CVR Registrar, duly executed by the registered Holder or Holders thereof or by the duly appointed legal representative thereof or by a duly authorized attorney, such signature to be guaranteed by a participant in a recognized Signature Guarantee Medallion Program. A request for a transfer of an Aplindore CVR shall be accompanied by such documentation establishing that the transfer is a Permitted Transfer as may be reasonably requested by Buyer and/or the Aplindore CVR Registrar (including opinions of counsel), if appropriate. Upon receipt of such written request and materials, the Aplindore CVR Registrar shall, subject to its reasonable determination that the transfer instrument is in proper form and the transfer otherwise complies with the other terms and conditions herein, register the transfer of the Aplindore CVRs in the Aplindore CVR Register. All duly transferred Aplindore CVRs registered in the Aplindore CVR Register shall be the valid obligations of Buyer, evidencing the same right and shall entitle the transferee to the same benefits and rights under this Agreement, as those previously held by the transferor. No transfer of an Aplindore CVR shall be valid until registered in the Aplindore CVR Register, and any transfer not duly registered in the Aplindore CVR Register will be void ab initio. Any transfer or assignment of the Aplindore CVRs shall be without charge (other than the cost of any transfer tax which shall be the responsibility of the transferor) to the Holder.

(d) A Holder may make a written request to the Aplindore CVR Registrar to change such Holder's address of record in the Aplindore CVR Register. The written request must be duly executed by the Holder. Upon receipt of such written notice, the Aplindore CVR Registrar shall promptly record the change of address in the Aplindore CVR Register.

Section 2.4. Payment Procedures.

(a) Promptly following the occurrence of any Aplindore CVR Payment Event, but in no event later than five Business Days after the occurrence of such Aplindore CVR Payment Event, Buyer shall deliver to the Rights Agent a certificate (the *Achievement Certificate*), certifying that the Holders are entitled to receive such Aplindore CVR Payment Amount. No transaction described in Section 6.1(a) hereof shall give the Holders the right to receive an Aplindore CVR Payment Amount.

(b) If the Aplindore Sale has not occurred on or before the CVR Outside Date, then, within five Business Days after the CVR Outside Date, Buyer shall deliver to the Rights Agent a certificate (the *Non-Achievement Certificate*), stating that the Aplindore Sale has not occurred on or before the CVR Outside Date and no Aplindore CVR Payment Event can occur.

(c) Except as otherwise requested by any Holder, the Rights Agent shall promptly (and in no event later than five Business Days after receipt thereof) send each Holder a copy of any Achievement Certificate or Non-Achievement Certificate at its registered address.

(d) Upon demand by any Holder or Holders of at least 20% in the aggregate of the outstanding Aplindore CVRs within 45 calendar days after distribution by the Rights Agent of a Non-Achievement Certificate (the *Objection Period*), the Rights Agent shall deliver a written notice to Buyer prepared by such Holder or Holders

Table of Contents

specifying that such Holder or Holders object to the determination of Buyer that the Aplindore Sale did not timely occur (a **Notice of Objection**) and stating the reason upon which such Holder or Holders have determined that the Aplindore Sale occurred on or before the CVR Outside Date. Any dispute arising from a Notice of Objection shall be resolved in accordance with the procedure set forth in Section 7.12, which decision shall be binding on the parties hereto and every Holder (including Holders not participating therein).

(e) If a Notice of Objection has not been delivered to Buyer within the Objection Period, then the Holders shall have no right to receive any Aplindore CVR Payment Amount, and Buyer and the Rights Agent shall have no further obligations with respect to the Aplindore CVR Payment Amount(s).

(f) If (i) Buyer delivers an Achievement Certificate to the Rights Agent or (ii) an Aplindore CVR Payment Amount is determined to be payable pursuant to Section 2.4(d) above or (iii) an Aplindore Expense Reserve Balance exists at the CVR Outside Date, then Buyer shall establish an Aplindore CVR Payment Date that is within 15 calendar days after the date of the Achievement Certificate or the date of final determination pursuant to Section 2.4(d) above, as applicable. At least five Business Days before such Aplindore CVR Payment Date, Buyer shall cause the Aplindore CVR Payment Amount to be delivered to the Rights Agent, who will in turn, on the Aplindore CVR Payment Date, distribute the Aplindore CVR Payment Amount to the Holders (each Holder being entitled to receive its *pro rata* share of the Aplindore CVR Payment Amount based on the number of Aplindore CVRs held (as of the date of the Achievement Certificate or the date of final determination pursuant to Section 2.4(d) above, as applicable) by such Holder as reflected on the Aplindore CVR Register) (i) by check mailed to the address of each such respective Holder as reflected in the Aplindore CVR Register as of the close of business on the last Business Day before such Aplindore CVR Payment Date, or, (ii) with respect to any Holder that is due payment pursuant to this Agreement in excess of \$1,000,000 who has provided the Rights Agent with wire transfer instructions, by wire transfer of immediately available funds to such account.

(g) Buyer shall be entitled to deduct and withhold, or cause to be deducted or withheld, from each Aplindore CVR Payment Amount otherwise payable pursuant to this Agreement, such amounts as Buyer or the applicable subsidiary of Buyer is required to deduct and withhold with respect to the making of such payment under the Internal Revenue Code, or any provision of state, local or foreign tax law. To the extent that amounts are so withheld or paid over to or deposited with the relevant governmental entity, such withheld amounts shall be treated for all purposes of this Agreement as having been paid to the Holder in respect of which such deduction and withholding was made.

(h) Subject to prior execution and delivery by the Rights Agent of a reasonable and customary confidentiality/nonuse agreement, Buyer shall promptly furnish to the Rights Agent all information and documentation in connection with this Agreement and the Aplindore CVRs that the Rights Agent or any Holder or Holders of at least 20% in the aggregate of the outstanding Aplindore CVRs may reasonably request in connection with the determination of whether an Aplindore CVR Payment Event has occurred. Subject to prior execution and delivery by the applicable Holders of a reasonable and customary confidentiality/nonuse agreement, the Rights Agent shall forward any information and documentation it receives to the Holders who request such information.

Section 2.5. No Voting, Dividends or Interest; No Equity or Ownership Interest in Buyer.

(a) The Aplindore CVRs shall not have any voting or dividend rights, and interest shall not accrue on any amounts payable on the Aplindore CVRs to any Holder.

(b) The Aplindore CVRs shall not represent any equity or ownership interest in Buyer or in any constituent company to the Merger.

Table of Contents

Section 2.6. Sole Discretion and Decision Making Authority; No Fiduciary Duty.

(a) (a) Notwithstanding anything else in this Agreement to the contrary, Buyer shall attempt to sell the Aplindore Program for the benefit of the Holders of the Aplindore CVRs, but shall have sole discretion and decision making authority, which shall be exercised in good faith and with commercial reasonableness, over (a) any continued operation of, development of or investment in the Aplindore Program and (b) when (if ever) to consummate the sale of all or any portion of the Aplindore Program to any purchaser, and upon what terms and conditions; *provided, however,* that before the CVR Outside Date Buyer shall not sell all or any portion of the Aplindore Program for any consideration other than cash or shares of stock listed for trading on a U.S. national securities exchange. If Buyer, after engaging in the efforts described above in this paragraph, is unable to sell the Aplindore Program at any price by the CVR Outside Date, then Buyer shall deliver to the Rights Agent a certificate of an executive officer of Buyer to that effect on the CVR Outside Date.

ARTICLE III

THE RIGHTS AGENT

Section 3.1. Certain Duties and Responsibilities.

(a) The Rights Agent shall not have any liability for any actions taken or not taken in connection with this Agreement, except to the extent of its willful misconduct, bad faith or gross negligence. No provision of this Agreement shall require the Rights Agent to expend or risk its own funds or otherwise incur any financial liability in the performance of any of its duties hereunder or in the exercise of any of its rights or powers.

(b) Any Holder or Holders of at least 20% in the aggregate of the outstanding Aplindore CVRs may direct the Rights Agent to act on behalf of the Holders in enforcing any of its or their rights hereunder, including, without limitation, the delivery of any Notice of Objection and negotiation or arbitration pursuant to Section 7.12. The Rights Agent shall be under no obligation to institute any action, suit or legal proceeding or to take any other action likely to involve material expense unless such Holder or Holders shall furnish the Rights Agent with reasonable security and indemnity for any costs and expenses which may be incurred. All rights of action under this Agreement may be enforced by the Rights Agent, and any action, suit or proceeding instituted by the Rights Agent shall be brought in its name as Rights Agent, and any recovery of judgment shall be for the ratable benefit of all the Holders, as their respective rights or interests may appear.

Section 3.2. Certain Rights of Rights Agent.

The Rights Agent undertakes to perform such duties and only such duties as are specifically set forth in this Agreement, and no implied covenants or obligations shall be read into this Agreement against the Rights Agent. In addition:

(a) the Rights Agent may rely and shall be protected in acting or refraining from acting upon any resolution, certificate, statement, instrument, opinion, report, notice, request, direction, consent, order or other paper or document believed by it to be genuine and to have been signed or presented by the proper party or parties;

(b) whenever the Rights Agent shall deem it desirable that a matter be proved or established before taking, suffering or omitting any action hereunder, the Rights Agent may, in the absence of willful misconduct, bad faith or gross negligence on its part, rely upon an Officer's Certificate;

(c) the Rights Agent may engage and consult with counsel of its selection and the written advice of such counsel or any opinion of counsel shall be full and complete authorization and protection in respect of any action taken, suffered or omitted by it hereunder in good faith and in reliance thereon;

(d) in the event of arbitration, the Rights Agent may engage and consult with tax experts, valuation firms and other experts and third parties that it, in its sole and absolute discretion, deems appropriate or necessary to enable it to discharge its duties hereunder;

Table of Contents

- (e) the permissive rights of the Rights Agent to do things enumerated in this Agreement shall not be construed as a duty;
- (f) the Rights Agent shall not be required to give any note or surety in respect of the execution of such powers or otherwise in respect of the premises;
- (g) Buyer agrees to indemnify the Rights Agent for, and hold the Rights Agent harmless against, any loss, liability, claim, demands, suits or expense (in each case pertaining to the Rights Agent's own account only) arising out of or in connection with the Rights Agent's duties under this Agreement, including the costs and expenses of defending the Rights Agent against any claims, charges, demands, suits or loss, unless such loss shall have been determined by a court of competent jurisdiction to be a result of the Rights Agent's willful misconduct, bad faith or gross negligence; and
- (h) Buyer agrees (i) to pay the fees and expenses of the Rights Agent in connection with this Agreement, as set forth on Schedule 1 hereto, and (ii) to reimburse the Rights Agent for all taxes and governmental charges, reasonable expenses and other charges of any kind and nature incurred by the Rights Agent in the execution of this Agreement (other than taxes measured by the Rights Agent's net income). The Rights Agent shall also be entitled to reimbursement from Buyer for all reasonable and necessary out-of-pocket expenses (including reasonable fees and expenses of the Rights Agent's counsel and agent) paid or incurred by it in connection with the administration by the Rights Agent of its duties hereunder. An invoice for the Rights Agent Fee will be rendered a reasonable time before, and paid on, the effective date of the applicable transaction. An invoice for any out-of-pocket expenses and per item fees realized will be rendered and payable within 30 calendar days after receipt by Buyer. Buyer agrees to pay to Rights Agent any amounts, including fees and expenses, payable in favor of the Rights Agent in connection with any dispute, resolution or arbitration arising under or in connection with the Agreement; provided, however, that in the event of a resolution in favor of Buyer, any amounts, including fees and expenses, payable by Buyer in favor of the Rights Agent or payable in favor of Buyer related to such dispute, resolution or arbitration shall be offset against the Aplindore CVR Payment Amount, if any, or any payment to be made thereafter under any of the other CVR Agreements.

Section 3.3. Resignation and Removal; Appointment of Successor.

- (a) The Rights Agent may resign at any time by giving written notice thereof to Buyer specifying a date when such resignation shall take effect, which notice shall be sent at least 30 days before the date so specified.
- (b) If the Rights Agent shall resign, be removed or become incapable of acting, Buyer, by way of a Board Resolution, shall promptly appoint a qualified successor Rights Agent who may (but need not) be a Holder but shall not be an officer of Buyer. The successor Rights Agent so appointed shall, forthwith upon its acceptance of such appointment in accordance with this Section 3.3(b), become the successor Rights Agent.
- (c) Buyer shall give notice of each resignation and each removal of a Rights Agent and each appointment of a successor Rights Agent by mailing written notice of such event by first-class mail, postage prepaid, to the Holders as their names and addresses appear in the Aplindore CVR Register. Each notice shall include the name and address of the successor Rights Agent. If Buyer fails to send such notice within ten days after acceptance of appointment by a successor Rights Agent, the successor Rights Agent shall cause such notice to be mailed at the expense of Buyer.

Section 3.4. Acceptance of Appointment by Successor.

Every successor Rights Agent appointed hereunder shall execute, acknowledge and deliver to Buyer and to the retiring Rights Agent an instrument accepting such appointment and a counterpart of this Agreement, and thereupon such successor Rights Agent, without any further act, deed or conveyance, shall become vested with all the rights, powers, trusts and duties of the retiring Rights Agent; provided, that upon the request of Buyer or

Table of Contents

the successor Rights Agent, such retiring Rights Agent shall execute and deliver an instrument transferring to such successor Rights Agent all the rights, powers and trusts of the retiring Rights Agent and shall cooperate in the transfer of all relevant data, including the Aplindore CVR Register, to the successor Rights Agent.

ARTICLE IV

COVENANTS

Section 4.1. List of Holders.

Buyer shall furnish or cause to be furnished to the Rights Agent in such form as Buyer receives from its transfer agent (or other agent performing similar services for Buyer), the names, addresses and shareholdings of the Holders, within five Business Days after the effective time of the Merger.

Section 4.2. Payment of Aplindore CVR Payment Amount.

Buyer shall duly and promptly pay each Aplindore CVR Payment Amount, if any, in immediately available funds, to the Rights Agent to be distributed to the Holders in the manner provided for in Section 2.4 and in accordance with the terms of this Agreement.

Section 4.3. Section 4.3 Assignments

Buyer shall not, in whole or in part, assign any of its obligations under this Agreement other than in accordance with the terms of Section 6.1 hereof.

ARTICLE V

AMENDMENTS

Section 5.1. Amendments Without Consent of Holders.

(a) Without the consent of any Holders or the Rights Agent, Buyer, when authorized by a Board Resolution, at any time and from time to time, may enter into one or more amendments hereto, for any of the following purposes:

(i) to evidence the succession of another Person to Buyer and the assumption by any such successor of the covenants of Buyer herein in a transaction contemplated by Section 6.1 hereof; or

(ii) to evidence the termination of the Aplindore CVR Registrar and the succession of another Person as a successor Aplindore CVR Registrar and the assumption by any successor of the obligations of the Aplindore CVR Registrar herein.

(b) Without the consent of any Holders, Buyer, when authorized by a Board Resolution, and the Rights Agent, in the Rights Agent's sole and absolute discretion, at any time and from time to time, may enter into one or more amendments hereto, for any of the following purposes:

(i) to evidence the succession of another Person as a successor Rights Agent and the assumption by any successor of the covenants and obligations of the Rights Agent herein;

(ii) to add to the covenants of Buyer such further covenants, restrictions, conditions or provisions as the Board of Directors and the Rights Agent shall consider to be for the protection of the Holders; provided, that in each case, such provisions shall not adversely affect the interests of the Holders;

Edgar Filing: LIGAND PHARMACEUTICALS INC - Form S-4/A

(iii) to cure any ambiguity, to correct or supplement any provision herein that may be defective or inconsistent with any other provision herein, or to make any other provisions with respect to matters or questions arising under this Agreement; provided, that in each case, such provisions shall not adversely affect the interests of the Holders; or

B-8

Table of Contents

(iv) to add, eliminate or change any provision of this Agreement unless such addition, elimination or change is adverse to the interests of the Holders.

(c) Promptly after the execution by Buyer and the Rights Agent of any amendment pursuant to the provisions of this Section 5.1, Buyer shall mail a notice thereof by first-class mail to each of the Holders at their addresses as they shall appear on the Aplindore CVR Register, setting forth in general terms the substance of such amendment.

Section 5.2. Amendments With Consent of Holders.

(a) Subject to Section 5.1 (which amendments pursuant to Section 5.1 may be made without the consent of the Holders), with the consent of the Holders of not less than a majority of the outstanding Aplindore CVRs, whether evidenced in writing or taken at a meeting of the Holders, Buyer, when authorized by a Board Resolution, and the Rights Agent may enter into one or more amendments hereto for the purpose of adding, eliminating or changing any provisions of this Agreement, even if such addition, elimination or change is in any way adverse to the interests of the Holders.

(b) Promptly after the execution by Buyer and the Rights Agent of any amendment pursuant to the provisions of this Section 5.2, Buyer shall mail a notice thereof by first-class mail to the Holders at their addresses as they shall appear on the Aplindore CVR Register, setting forth in general terms the substance of such amendment.

Section 5.3. Execution of Amendments.

In executing any amendment permitted by this Article V, the Rights Agent shall be entitled to receive, and shall be fully protected in relying upon, an opinion of counsel stating that the execution of such amendment is authorized or permitted by this Agreement. The Rights Agent may, but is not obligated to, enter into any such amendment that affects the Rights Agent's own rights, privileges, covenants or duties under this Agreement or otherwise.

Section 5.4. Effect of Amendments.

Upon the execution of any amendment under this Article V, this Agreement shall be modified in accordance therewith, such amendment shall form a part of this Agreement for all purposes and every Holder shall be bound thereby.

ARTICLE VI

CONSOLIDATION, MERGER, SALE OR CONVEYANCE

Section 6.1. Buyer May Consolidate, Etc.

(a) Buyer shall not consolidate with or merge into any other Person or convey, transfer or lease its properties and assets substantially as an entirety to any Person, unless:

(i) the Person formed by such consolidation or into which Buyer is merged or the Person that acquires by conveyance or transfer, or that leases, the properties and assets of Buyer substantially as an entirety (the *Surviving Person*) shall expressly assume payment (if and to the extent required hereunder) of amounts on all the Aplindore CVRs and the performance of every duty and covenant of this Agreement on the part of Buyer to be performed or observed; and

(ii) Buyer has delivered to the Rights Agent an Officer's Certificate, stating that such consolidation, merger, conveyance, transfer or lease complies with this Article VI and that all conditions precedent herein provided for relating to such transaction have been complied with.

Table of Contents

(b) In the event Buyer conveys, transfers or leases its properties and assets substantially as an entirety in accordance with the terms and conditions of this Section 6.1, Buyer and the Surviving Person shall be jointly and severally liable for the payment of the Aplindore CVR Payment Amount and the performance of every duty and covenant of this Agreement on the part of the Buyer to be performed or observed.

Section 6.2. Successor Substituted.

Upon any consolidation of or merger by Buyer with or into any other Person, or any conveyance, transfer or lease of the properties and assets substantially as an entirety to any Person in accordance with Section 6.1, the Surviving Person shall succeed to, and be substituted for, and may exercise every right and power of, Buyer under this Agreement with the same effect as if the Surviving Person had been named as Buyer herein, and thereafter the predecessor Person shall be relieved of all obligations and covenants under this Agreement and the Aplindore CVRs.

ARTICLE VII

OTHER PROVISIONS OF GENERAL APPLICATION

Section 7.1. Notices to Rights Agent and Buyer.

Any request, demand, authorization, direction, notice, consent, waiver or other document provided or permitted by this Agreement shall be sufficient for every purpose hereunder if in writing and sent by facsimile transmission, delivered personally, or by certified or registered mail (return receipt requested and first-class postage prepaid) or sent by a nationally recognized overnight courier (with proof of service), addressed as follows, and shall be deemed to have been given upon receipt:

(a) if to the Rights Agent, addressed to it at [], facsimile at [], or at any other address previously furnished in writing to the Holders and Buyer by the Rights Agent in accordance with this Section 7.1; or

(b) if to Buyer, addressed to it at 10275 Science Center Drive, San Diego, California 92121, facsimile at (858) 550-7272, or at any other address previously furnished in writing to the Rights Agent and the Holders by Buyer in accordance with this Section 7.1.

Section 7.2. Notice to Holders.

Where this Agreement provides for notice to Holders, such notice shall be sufficiently given (unless otherwise herein expressly provided) if in writing and mailed, first-class postage prepaid, to each Holder affected by such event, at his, her or its address as it appears in the Aplindore CVR Register, not later than the latest date, and not earlier than the earliest date, prescribed for the giving of such notice. In any case where notice to Holders is given by mail, neither the failure to mail such notice, nor any defect in any notice so mailed, to any particular Holder shall affect the sufficiency of such notice with respect to other Holders.

Section 7.3. Effect of Headings.

The Article and Section headings herein are for convenience only and shall not affect the construction hereof.

Section 7.4. Successors and Assigns.

All covenants and agreements in this Agreement by Buyer shall bind its successors and assigns, whether so expressed or not.

Table of Contents

Section 7.5. Benefits of Agreement.

Nothing in this Agreement, express or implied, shall give to any Person (other than the parties hereto, the Holders and their permitted successors and assigns hereunder) any benefit or any legal or equitable right, remedy or claim under this Agreement or under any covenant or provision herein contained, all such covenants and provisions being for the sole benefit of the parties hereto, the Holders and their permitted successors and assigns. The Holders shall have no rights or remedies hereunder except as expressly set forth herein.

Section 7.6. Governing Law.

This Agreement and the Aplindore CVRs shall be governed by and construed in accordance with the laws of the State of Delaware without regards to its rules of conflicts of laws.

Section 7.7. Legal Holidays.

In the event that an Aplindore CVR Payment Date shall not be a Business Day, then, notwithstanding any provision of this Agreement to the contrary, any payment required to be made in respect of the Aplindore CVRs on such date need not be made on such date, but may be made on the next succeeding Business Day with the same force and effect as if made on the Aplindore CVR Payment Date.

Section 7.8. Severability Clause.

In case any one or more of the provisions contained in this Agreement shall for any reason be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provisions of this Agreement, but this Agreement shall be construed as if such invalid or illegal or unenforceable provision had never been contained herein. Upon such determination that any term or other provision is invalid, illegal or unenforceable, the court or other tribunal making such determination is authorized and instructed to modify this Agreement so as to effect the original intent of the parties as closely as possible so that the transactions and agreements contemplated herein are consummated as originally contemplated to the fullest extent possible.

Section 7.9. Counterparts.

This Agreement may be signed in any number of counterparts (which may be effectively delivered by facsimile or other electronic means), each of which shall be deemed to constitute but one and the same instrument

Section 7.10. Termination.

This Agreement shall terminate and be of no further force or effect, and the parties hereto shall have no liability hereunder, upon the earliest to occur of (a) the payment of the last possible Aplindore CVR Payment Amount, (b) in the event that a Notice of Objection is not delivered within the Objection Period, the expiration of the Objection Period or (c) in the event of the delivery of a Notice of Objection, either (i) the final determination in accordance with this Agreement that the Aplindore Sale was not closed on or before the CVR Outside Date or (ii) the fulfillment of the last possible payment or other obligation required pursuant to a final determination made in accordance with this Agreement.

Section 7.11. Entire Agreement.

This Agreement and the Merger Agreement represent the entire understanding of the parties hereto with reference to the Aplindore CVRs and this Agreement supersedes any and all other oral or written agreements made with respect to the Aplindore CVRs, except for the Merger Agreement. If and to the extent that any provision of this Agreement is inconsistent or conflicts with the Merger Agreement, this Agreement shall govern and be controlling.

Table of Contents

Section 7.12. Negotiation; Arbitration.

(a) Before any arbitration pursuant to Section 7.12(b), Buyer, the Rights Agent and, if available, any Holder or Holders of at least 20% in the aggregate of the outstanding Aplindore CVRs shall negotiate in good faith for a period of 30 days to resolve any controversy or claim arising out of or relating to this Agreement or the breach thereof.

(b) After expiration of the 30-day period contemplated by Section 7.12(a), such controversy or claim, including any claims for breach of this Agreement, shall be settled by arbitration administered by the American Arbitration Association under its Commercial Arbitration Rules, and judgment on the award rendered by the arbitrators may be entered in any court having jurisdiction thereof. Buyer, the Rights Agent and/or any Holder or Holders of at least 20% in the aggregate of the outstanding Aplindore CVRs may initiate an arbitration for any matter relating to this Agreement. However, in the event of a dispute arising from the delivery of a Notice of Objection, the sole matter to be settled by arbitration shall be whether an Aplindore Sale was closed on or before the CVR Outside Date. The number of arbitrators shall be three. Within 15 days after the commencement of arbitration, each party shall select one person to act as arbitrator, and the two selected shall select a third arbitrator within 15 days of their appointment. If the arbitrators selected by the parties are unable or fail to agree upon the third arbitrator, the third arbitrator shall be selected by the American Arbitration Association. The place of the arbitration shall be San Diego, California. The arbitrators shall be lawyers or retired judges with experience in the life sciences industry and with mergers and acquisitions. Except as may be required by law, neither a party nor an arbitrator may disclose the existence, content or results of any arbitration hereunder without the prior written consent of both parties (provided that the Rights Agent may disclose to the Holders any such information without the consent of Buyer). Any award payable in favor of the Holders or the Rights Agent as a result of arbitration shall be distributed to the Holders on a pro rata basis, based on the number of Aplindore CVRs held by each Holder. Buyer shall pay all fees and expenses of the arbitration forum, including the costs and expenses billed by the arbitrators in connection with the performance of their duties described herein; provided, however, that if the arbitrator rules in favor of Buyer, the Arbitrator's fees and expenses shall be offset against the current or any future Aplindore CVR Payment Amount, if any, or any payment to be made thereafter under any of the other CVR Agreements. Each party shall be responsible for its own attorney fees, expenses and costs of investigation.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

Table of Contents

IN WITNESS WHEREOF, each of the parties has caused this Agreement to be executed on its behalf by its duly authorized officers as of the day and year first above written.

LIGAND PHARMACEUTICALS INCORPORATED

By:
Name:
Title:

NEUROGEN CORPORATION

By:
Name:
Title:

[RIGHTS AGENT]

By:
Name:
Title:

B-13

Table of Contents

Annex C

Form of H3 CVR Agreement

CONTINGENT VALUE RIGHTS AGREEMENT

THIS CONTINGENT VALUE RIGHTS AGREEMENT, dated as of [], 2009 (this *Agreement* , is entered into by and among Ligand Pharmaceuticals Incorporated, a Delaware corporation (*Buyer*), Neurogen Corporation, a Delaware corporation (*Target*), and [], a [], as Rights Agent (the *Rights Agent*) and as initial H3 CVR Registrar (as defined herein).

Preamble

Buyer, Neon Signal, LLC, a Delaware limited liability company and wholly-owned subsidiary of Buyer (*Sub*), and Target have entered into an Agreement and Plan of Merger dated as of August 23, 2009 (the *Merger Agreement*), pursuant to which Sub will merge with and into Target (the *Merger*), with Target surviving the Merger as a subsidiary of Buyer.

Pursuant to the Merger Agreement, Buyer agreed to create and issue to Target's stockholders of record immediately before the effective time of the Merger, contingent value rights as hereinafter described.

The parties have done all things necessary to make the contingent value rights, when issued pursuant to the Merger Agreement and hereunder, the valid obligations of Buyer and to make this Agreement a valid and binding agreement of Buyer, in accordance with its terms.

NOW, THEREFORE, for and in consideration of the premises and the consummation of the transactions referred to above, it is mutually covenanted and agreed, for the equal and proportionate benefit of all Holders (as hereinafter defined), as follows:

ARTICLE I

DEFINITIONS

Section 1.1. Definitions.

(a) For all purposes of this Agreement, except as otherwise expressly provided or unless the context otherwise requires:

(i) the terms defined in this Article have the meanings assigned to them in this Article, and include the plural as well as the singular;

(ii) all accounting terms used herein and not expressly defined herein shall have the meanings assigned to such terms in accordance with United States generally accepted accounting principles, as in effect on the date hereof;

(iii) the words herein, hereof and hereunder and other words of similar import refer to this Agreement as a whole and not to any particular Article, Section or other subdivision;

(iv) unless the context otherwise requires, words describing the singular number shall include the plural and vice versa, words denoting any gender shall include all genders and words denoting natural Persons shall include corporations, partnerships and other Persons and vice versa; and

(v) all references to including shall be deemed to mean including without limitation.

Table of Contents

(b) Capitalized terms used but not otherwise defined herein shall have the meanings ascribed thereto in the Merger Agreement. The following terms shall have the meanings ascribed to them as follows:

Achievement Certificate has the meaning set forth in Section 2.4(a).

Board of Directors means the board of directors of Buyer.

Board Resolution means a copy of a resolution certified by the secretary or an assistant secretary of Buyer to have been duly adopted by the Board of Directors and to be in full force and effect on the date of such certification, and delivered to the Rights Agent.

Business Day means any day other than a Saturday, Sunday or a day on which banking institutions in New York, New York are authorized or obligated by law or executive order to remain closed.

Holder means a Person in whose name a H3 CVR is registered in the H3 CVR Register.

H3 Antagonist Program means the antagonist program conducted before the Merger by Target intended to create an H3 receptor drug, and as may be continued after the Merger by Buyer.

H3 CVR Payment Amount means, as applicable, an H3 Licensing Option Payment Amount, an H3 Sale Option Payment Amount, the H3 Licensing Payment or the H3 Sale Payment Amount (together with any H3 Licensing Option Payment Amount). For purposes of clarity, the Holders shall only be entitled to either the H3 Licensing Payment or the H3 Sale Payment Amount (together with any H3 Licensing Option Payment Amount), or neither of them, but in no circumstances both.

H3 CVR Payment Date means the date (if any and if ever) that an H3 CVR Payment Amount is payable by Buyer to the Holders, which date shall be established pursuant to Section 2.4.

H3 CVR Payment Event means, as applicable, an H3 Licensing Option Event, an H3 Licensing Event, an H3 Sale Option Event or an H3 Sale Event.

H3 CVR Register has the meaning set forth in Section 2.3(b).

H3 CVR Registrar has the meaning set forth in Section 2.3(b).

H3 CVRs means the H3 Contingent Value Rights issued by Buyer pursuant to the Merger Agreement and this Agreement.

H3 Licensing Event means the licensing (but not to include a license in a transaction which includes no royalty nor milestone payments) by Buyer to any Person (other than to Buyer) of a drug candidate or technology or Intellectual Property from the H3 Antagonist Program.

H3 Licensing Option Event means the grant of an option by Buyer to any Person (other than Buyer) to enter into an H3 Licensing Event.

H3 Licensing Option Payment Amount means an amount equal to 50% of the aggregate cash proceeds actually received by Buyer, or any of its subsidiaries or Affiliates, after the Effective Time and prior to the Outside Date, in connection with an H3 Licensing Option Event, less any costs and expenses reasonably incurred by Buyer, or any of its subsidiaries or Affiliates, in connection with the H3 Licensing Option Event (including attorneys fees and brokers commissions).

H3 Licensing Payment means, in the event of an H3 Licensing Event, an aggregate amount equal to \$4,000,000 in cash less any H3 Licensing Option Payment Amount.

Table of Contents

H3 Sale Event means the consummation of the sale or other similar transfer (that does not qualify as a H3 Licensing Event) by Buyer to any Person (other than Buyer) of a drug candidate or technology or Intellectual Property from the H3 Antagonist Program.

H3 Sale Option Event means the grant of an option by Buyer to any Person (other than Buyer) to enter into a H3 Sale Event.

H3 Sale Option Payment Amount means an amount equal to 50% of the aggregate cash proceeds actually received by Buyer, or any of its subsidiaries or Affiliates, after the Effective Time and prior to the Outside Date, in connection with an H3 Sale Option Event, less any costs and expenses reasonably incurred by Buyer, or any of its subsidiaries or Affiliates, in connection with the H3 Sale Option Event (including attorneys fees and brokers commissions).

H3 Sale Payment Amount means an amount equal to 50% of the aggregate cash proceeds actually received by Buyer, or any of its subsidiaries or Affiliates, after the Effective Time and prior to the Outside Date, in connection with an H3 Sale Event, less any costs and expenses reasonably incurred by Buyer, or any of its subsidiaries or Affiliates, in connection with the H3 Sale Event (including attorneys fees and brokers commissions).

Non-Achievement Certificate has the meaning set forth in Section 2.4(b).

Notice of Objection has the meaning set forth in Section 2.4(d).

Objection Period has the meaning set forth in Section 2.4(d).

Officer s Certificate means a certificate signed by the chief executive officer, president, chief financial officer, any vice president, the controller, the treasurer or the secretary, in each case, of Buyer, in his or her capacity as such an officer, and delivered to the Rights Agent.

Outside Date means [insert date that is three years from the Effective Date]; provided, that if pursuant to the preceding subsections the Outside Date has not already occurred by the H3 Licensing Event, then the Outside Date shall mean immediately after the H3 Licensing Event; and provided further, that in the event of an H3 Licensing Option Event or an H3 Sale Option Event, the Outside Date shall not occur before the earliest of the exercise, expiration or termination of such option.

Permitted Transfer means: (i) the transfer of any or all of the H3 CVRs (upon the death of the Holder) by will or intestacy; (ii) transfer by instrument to an inter vivos or testamentary trust in which the H3 CVRs are to be passed to beneficiaries upon the death of the trustee; (iii) transfers made pursuant to a court order of a court of competent jurisdiction (such as in connection with divorce, bankruptcy or liquidation); (iv) if the Holder is a partnership or limited liability company, a pro-rata distribution by the transferring partnership or limited liability company to its partners or members, as applicable; (v) a transfer made by operation of law (including a consolidation or merger) or in connection with the dissolution, liquidation or termination of any corporation, limited liability company, partnership or other entity; (vi) a transfer from a participant s account in a tax-qualified employee benefit plan to the participant or to such participant s account in a different tax-qualified employee benefit plan or to a tax-qualified individual retirement account for the benefit of such participant; or (vii) a transfer from a participant in a tax-qualified employee benefit plan, who received the H3 CVRs from such participant s account in such tax-qualified employee benefit plan, to such participant s account in a different tax-qualified employee benefit plan or to a tax-qualified individual retirement account for the benefit of such participant.

Person means any natural person, corporation, partnership, limited liability company, trust, estate, other firm or entity, or governmental body.

Table of Contents

Rights Agent means the Rights Agent named in the first paragraph of this Agreement, until a successor Rights Agent shall have become such pursuant to the applicable provisions of this Agreement, and thereafter **Rights Agent** shall mean such successor Rights Agent.

Rights Agent Fee means the agreed-upon fee of the Rights Agent to act in such capacity pursuant to the terms of this Agreement.

Surviving Person has the meaning set forth in Section 6.1(a)(i).

ARTICLE II

CONTINGENT VALUE RIGHTS

Section 2.1. Issuance of H3 CVRs; Appointment of Rights Agent.

(a) The H3 CVRs shall be issued pursuant to the Merger Agreement at the time and in the manner set forth in the Merger Agreement.

(b) Buyer hereby appoints [] as the Rights Agent to act as rights agent for Buyer in accordance with the instructions hereinafter set forth in this Agreement, and the Rights Agent hereby accepts such appointment.

Section 2.2. Nontransferable.

The H3 CVRs shall not be sold, assigned, transferred, pledged, encumbered or in any other manner transferred or disposed of, in whole or in part, other than through a Permitted Transfer.

Section 2.3. No Certificate; Registration; Registration of Transfer; Change of Address.

(a) The H3 CVRs shall not be evidenced by a certificate or other instrument.

(b) The Rights Agent shall keep a register (the **H3 CVR Register**) for the registration of H3 CVRs. The Rights Agent is hereby initially appointed **H3 CVR Registrar** for the purpose of registering H3 CVRs and transfers of H3 CVRs as herein provided. Upon any change in the identity of the Rights Agent, the successor Rights Agent shall automatically also become the successor H3 CVR Registrar.

(c) Subject to the restriction on transferability set forth in Section 2.2, every request made to transfer a H3 CVR must be in writing and accompanied by a written instrument or instruments of transfer and any other requested documentation in a form reasonably satisfactory to Buyer and the H3 CVR Registrar, duly executed by the registered Holder or Holders thereof or by the duly appointed legal representative thereof or by a duly authorized attorney, such signature to be guaranteed by a participant in a recognized Signature Guarantee Medallion Program. A request for a transfer of a H3 CVR shall be accompanied by such documentation establishing that the transfer is a Permitted Transfer as may be reasonably requested by Buyer and/or the H3 CVR Registrar (including opinions of counsel), if appropriate. Upon receipt of such written request and materials, the H3 CVR Registrar shall, subject to its reasonable determination that the transfer instrument is in proper form and the transfer otherwise complies with the other terms and conditions herein, register the transfer of the H3 CVRs in the H3 CVR Register. All duly transferred H3 CVRs registered in the H3 CVR Register shall be the valid obligations of Buyer, evidencing the same right and shall entitle the transferee to the same benefits and rights under this Agreement, as those previously held by the transferor. No transfer of a H3 CVR shall be valid until registered in the H3 CVR Register, and any transfer not duly registered in the H3 CVR Register will be void ab initio. Any transfer or assignment of the H3 CVRs shall be without charge (other than the cost of any transfer tax which shall be the responsibility of the transferor) to the Holder.

Table of Contents

(d) A Holder may make a written request to the H3 CVR Registrar to change such Holder's address of record in the H3 CVR Register. The written request must be duly executed by the Holder. Upon receipt of such written notice, the H3 CVR Registrar shall promptly record the change of address in the H3 CVR Register.

Section 2.4. Payment Procedures.

(a) Promptly following the occurrence of an H3 CVR Payment Event, but in no event later than five Business Days after the occurrence of an H3 CVR Payment Event, Buyer shall deliver to the Rights Agent a certificate (the *Achievement Certificate*), certifying that the Holders are entitled to receive an H3 CVR Payment Amount. No transaction described in Section 6.1(a) hereof shall give the Holders the right to receive an H3 CVR Payment Amount.

(b) If any H3 CVR Payment Event has not occurred on or before the Outside Date, then, within five Business Days after the Outside Date, Buyer shall deliver to the Rights Agent a certificate (the *Non-Achievement Certificate*), stating that the H3 CVR Payment Event did not occur.

(c) Except as otherwise requested by any Holder, the Rights Agent shall promptly (and in no event later than five Business Days after receipt thereof) send each Holder a copy of any Achievement Certificate or Non-Achievement Certificate at its registered address.

(d) Upon demand by any Holder or Holders of at least 20% in the aggregate of the outstanding H3 CVRs within 45 calendar days after distribution by the Rights Agent of a Non-Achievement Certificate (the *Objection Period*), the Rights Agent shall deliver a written notice to Buyer prepared by such Holder or Holders specifying that such Holder or Holders object to the determination of Buyer that the H3 CVR Payment Event did not occur (a *Notice of Objection*) and stating the reason upon which such Holder or Holders have determined that the H3 CVR Payment Event has occurred on or before the Outside Date. Any dispute arising from a Notice of Objection shall be resolved in accordance with the procedure set forth in Section 7.12, which decision shall be binding on the parties hereto and every Holder (including the Holders not participating therein).

(e) If a Notice of Objection has not been delivered to Buyer within the Objection Period, then the Holders shall have no right to receive the H3 CVR Payment Amount, and Buyer and the Rights Agent shall have no further obligations with respect to the H3 CVR Payment Amount.

(f) If Buyer delivers an Achievement Certificate to the Rights Agent or if the H3 CVR Payment Amount is determined to be payable pursuant to Section 2.4(d) above, Buyer shall establish a H3 CVR Payment Date that is within 15 calendar days after the date of the Achievement Certificate or the date of final determination pursuant to Section 2.4(d) above, as applicable. At least five Business Days before such H3 CVR Payment Date, Buyer shall cause the H3 CVR Payment Amount to be delivered to the Rights Agent, who will in turn, on the H3 CVR Payment Date, distribute the H3 CVR Payment Amount to the Holders (each Holder being entitled to receive its *pro rata* share of the H3 CVR Payment Amount based on the number of H3 CVRs held (as of the date of the Achievement Certificate or the date of final determination pursuant to Section 2.4(d) above, as applicable) by such Holder as reflected on the H3 CVR Register) (i) by check mailed to the address of each such respective Holder as reflected in the H3 CVR Register as of the close of business on the last Business Day before such H3 CVR Payment Date, or, (ii) with respect to any Holder that is due payment pursuant to this Agreement in excess of \$1,000,000 who has provided the Rights Agent with wire transfer instructions, by wire transfer of immediately available funds to such account.

(g) Buyer shall be entitled to deduct and withhold, or cause to be deducted or withheld, from each H3 CVR Payment Amount otherwise payable pursuant to this Agreement, such amounts as Buyer or the applicable subsidiary of Buyer is required to deduct and withhold with respect to the making of such payment under the Internal Revenue Code, or any provision of state, local or foreign tax law. To the extent that amounts are so withheld or paid over to or deposited with the relevant governmental entity, such withheld amounts shall be treated for all purposes of this Agreement as having been paid to the Holder in respect of which such deduction and withholding was made.

Table of Contents

(h) Subject to prior execution and delivery by the Rights Agent of a reasonable and customary confidentiality/nonuse agreement, Buyer shall promptly furnish to the Rights Agent all information and documentation in connection with this Agreement and the H3 CVRs that the Rights Agent or any Holder or Holders of at least 20% in the aggregate of the outstanding H3 CVRs may reasonably request in connection with the determination of whether the H3 CVR Payment Event has occurred. Subject to prior execution and delivery by the applicable Holders of a reasonable and customary confidentiality/nonuse agreement, the Rights Agent shall forward any information and documentation it receives to the Holders who request such information.

Section 2.5. No Voting, Dividends or Interest; No Equity or Ownership Interest in Buyer.

(a) The H3 CVRs shall not have any voting or dividend rights, and interest shall not accrue on any amounts payable on the H3 CVRs to any Holder.

(b) The H3 CVRs shall not represent any equity or ownership interest in Buyer or in any constituent company to the Merger.

Section 2.6. Sole Discretion and Decision Making Authority; No Fiduciary Duty.

(a) Notwithstanding anything contained herein to the contrary, Buyer shall have sole discretion and decision making authority, which shall be exercised in good faith, over any continued operation of, development of or investment in the H3 Antagonist Program and over when (if ever) and whether to pursue, or enter into, a licensing agreement and/or sale agreement and/or similar transfer agreement and/or agreement for the grant of an option to enter into any such transaction with respect to a drug candidate or technology or Intellectual Property from the H3 Antagonist Program, and upon what terms and conditions.

ARTICLE III

THE RIGHTS AGENT

Section 3.1. Certain Duties and Responsibilities.

(a) The Rights Agent shall not have any liability for any actions taken or not taken in connection with this Agreement, except to the extent of its willful misconduct, bad faith or gross negligence. No provision of this Agreement shall require the Rights Agent to expend or risk its own funds or otherwise incur any financial liability in the performance of any of its duties hereunder or in the exercise of any of its rights or powers.

(b) Any Holder or Holders of at least 20% in the aggregate of the outstanding H3 CVRs may direct the Rights Agent to act on behalf of the Holders in enforcing any of its or their rights hereunder, including, without limitation, the delivery of any Notice of Objection and negotiation or arbitration pursuant to Section 7.12. The Rights Agent shall be under no obligation to institute any action, suit or legal proceeding or to take any other action likely to involve material expense unless such Holder or Holders shall furnish the Rights Agent with reasonable security and indemnity for any costs and expenses which may be incurred. All rights of action under this Agreement may be enforced by the Rights Agent, and any action, suit or proceeding instituted by the Rights Agent shall be brought in its name as Rights Agent, and any recovery of judgment shall be for the ratable benefit of all the Holders, as their respective rights or interests may appear.

Section 3.2. Certain Rights of Rights Agent.

The Rights Agent undertakes to perform such duties and only such duties as are specifically set forth in this Agreement, and no implied covenants or obligations shall be read into this Agreement against the Rights Agent. In addition:

(a) the Rights Agent may rely and shall be protected in acting or refraining from acting upon any resolution, certificate, statement, instrument, opinion, report, notice, request, direction, consent, order or other paper or document believed by it to be genuine and to have been signed or presented by the proper party or parties;

Table of Contents

- (b) whenever the Rights Agent shall deem it desirable that a matter be proved or established before taking, suffering or omitting any action hereunder, the Rights Agent may, in the absence of willful misconduct, bad faith or gross negligence on its part, rely upon an Officer's Certificate;
- (c) the Rights Agent may engage and consult with counsel of its selection and the written advice of such counsel or any opinion of counsel shall be full and complete authorization and protection in respect of any action taken, suffered or omitted by it hereunder in good faith and in reliance thereon;
- (d) in the event of arbitration, the Rights Agent may engage and consult with tax experts, valuation firms and other experts and third parties that it, in its sole and absolute discretion, deems appropriate or necessary to enable it to discharge its duties hereunder;
- (e) the permissive rights of the Rights Agent to do things enumerated in this Agreement shall not be construed as a duty;
- (f) the Rights Agent shall not be required to give any note or surety in respect of the execution of such powers or otherwise in respect of the premises;
- (g) Buyer agrees to indemnify the Rights Agent for, and hold the Rights Agent harmless against, any loss, liability, claim, demands, suits or expense (in each case pertaining to the Rights Agent's own account only) arising out of or in connection with the Rights Agent's duties under this Agreement, including the costs and expenses of defending the Rights Agent against any claims, charges, demands, suits or loss, unless such loss shall have been determined by a court of competent jurisdiction to be a result of the Rights Agent's willful misconduct, bad faith or gross negligence; and
- (h) Buyer agrees (i) to pay the fees and expenses of the Rights Agent in connection with this Agreement, as set forth on Schedule 1 hereto, and (ii) to reimburse the Rights Agent for all taxes and governmental charges, reasonable expenses and other charges of any kind and nature incurred by the Rights Agent in the execution of this Agreement (other than taxes measured by the Rights Agent's net income). The Rights Agent shall also be entitled to reimbursement from Buyer for all reasonable and necessary out-of-pocket expenses (including reasonable fees and expenses of the Rights Agent's counsel and agent) paid or incurred by it in connection with the administration by the Rights Agent of its duties hereunder. An invoice for the Rights Agent Fee will be rendered a reasonable time before, and paid on, the effective date of the applicable transaction. An invoice for any out-of-pocket expenses and per item fees realized will be rendered and payable within 30 calendar days after receipt by Buyer. Buyer agrees to pay to Rights Agent any amounts, including fees and expenses, payable in favor of the Rights Agent in connection with any dispute, resolution or arbitration arising under or in connection with the Agreement; provided, however, that in the event of a resolution in favor of Buyer, any amounts, including fees and expenses, payable by Buyer in favor of the Rights Agent or payable in favor of Buyer related to such dispute, resolution or arbitration shall be offset against the H3 CVR Payment Amount, if any, or any payment to be made thereafter under any of the other CVR Agreements.

Section 3.3. Resignation and Removal; Appointment of Successor.

- (a) The Rights Agent may resign at any time by giving written notice thereof to Buyer specifying a date when such resignation shall take effect, which notice shall be sent at least 30 days before the date so specified.
- (b) If the Rights Agent shall resign, be removed or become incapable of acting, Buyer, by way of a Board Resolution, shall promptly appoint a qualified successor Rights Agent who may (but need not) be a Holder but shall not be an officer of Buyer. The successor Rights Agent so appointed shall, forthwith upon its acceptance of such appointment in accordance with this Section 3.3(b), become the successor Rights Agent.
- (c) Buyer shall give notice of each resignation and each removal of a Rights Agent and each appointment of a successor Rights Agent by mailing written notice of such event by first-class mail, postage prepaid, to the

Table of Contents

Holders as their names and addresses appear in the H3 CVR Register. Each notice shall include the name and address of the successor Rights Agent. If Buyer fails to send such notice within ten days after acceptance of appointment by a successor Rights Agent, the successor Rights Agent shall cause such notice to be mailed at the expense of Buyer.

Section 3.4. Acceptance of Appointment by Successor.

Every successor Rights Agent appointed hereunder shall execute, acknowledge and deliver to Buyer and to the retiring Rights Agent an instrument accepting such appointment and a counterpart of this Agreement, and thereupon such successor Rights Agent, without any further act, deed or conveyance, shall become vested with all the rights, powers, trusts and duties of the retiring Rights Agent; provided, that upon the request of Buyer or the successor Rights Agent, such retiring Rights Agent shall execute and deliver an instrument transferring to such successor Rights Agent all the rights, powers and trusts of the retiring Rights Agent and shall cooperate in the transfer of all relevant data, including the H3 CVR Register, to the successor Rights Agent.

ARTICLE IV

COVENANTS

Section 4.1. List of Holders.

Buyer shall furnish or cause to be furnished to the Rights Agent in such form as Buyer receives from its transfer agent (or other agent performing similar services for Buyer), the names, addresses and shareholdings of the Holders, within five Business Days after the effective time of the Merger.

Section 4.2. Payment of H3 CVR Payment Amount.

Buyer shall duly and promptly pay the H3 CVR Payment Amount, if any, in immediately available funds, to the Rights Agent to be distributed to the Holders in the manner provided for in Section 2.4 and in accordance with the terms of this Agreement.

Section 4.3. Assignments.

Buyer shall not, in whole or in part, assign any of its obligations under this Agreement other than in accordance with the terms of Section 6.1 hereof.

ARTICLE V

AMENDMENTS

Section 5.1. Amendments Without Consent of Holders.

(a) Without the consent of any Holders or the Rights Agent, Buyer, when authorized by a Board Resolution, at any time and from time to time, may enter into one or more amendments hereto, for any of the following purposes:

(i) to evidence the succession of another Person to Buyer and the assumption by any such successor of the covenants of Buyer herein in a transaction contemplated by Section 6.1 hereof; or

(ii) to evidence the termination of the H3 CVR Registrar and the succession of another Person as a successor H3 CVR Registrar and the assumption by any successor of the obligations of the H3 CVR Registrar herein.

Table of Contents

(b) Without the consent of any Holders, Buyer, when authorized by a Board Resolution, and the Rights Agent, in the Rights Agent's sole and absolute discretion, at any time and from time to time, may enter into one or more amendments hereto, for any of the following purposes:

(i) to evidence the succession of another Person as a successor Rights Agent and the assumption by any successor of the covenants and obligations of the Rights Agent herein;

(ii) to add to the covenants of Buyer such further covenants, restrictions, conditions or provisions as the Board of Directors and the Rights Agent shall consider to be for the protection of the Holders; provided, that in each case, such provisions shall not adversely affect the interests of the Holders;

(iii) to cure any ambiguity, to correct or supplement any provision herein that may be defective or inconsistent with any other provision herein, or to make any other provisions with respect to matters or questions arising under this Agreement; provided, that in each case, such provisions shall not adversely affect the interests of the Holders; or

(iv) to add, eliminate or change any provision of this Agreement unless such addition, elimination or change is adverse to the interests of the Holders.

(c) Promptly after the execution by Buyer and the Rights Agent of any amendment pursuant to the provisions of this Section 5.1, Buyer shall mail a notice thereof by first-class mail to each of the Holders at their addresses as they shall appear on the H3 CVR Register, setting forth in general terms the substance of such amendment.

Section 5.2. Amendments With Consent of Holders.

(a) Subject to Section 5.1 (which amendments pursuant to Section 5.1 may be made without the consent of the Holders), with the consent of the Holders of not less than a majority of the outstanding H3 CVRs, whether evidenced in writing or taken at a meeting of the Holders, Buyer, when authorized by a Board Resolution, and the Rights Agent may enter into one or more amendments hereto for the purpose of adding, eliminating or changing any provisions of this Agreement, even if such addition, elimination or change is in any way adverse to the interests of the Holders.

(b) Promptly after the execution by Buyer and the Rights Agent of any amendment pursuant to the provisions of this Section 5.2, Buyer shall mail a notice thereof by first-class mail to the Holders at their addresses as they shall appear on the H3 CVR Register, setting forth in general terms the substance of such amendment.

Section 5.3. Execution of Amendments.

In executing any amendment permitted by this Article V, the Rights Agent shall be entitled to receive, and shall be fully protected in relying upon, an opinion of counsel stating that the execution of such amendment is authorized or permitted by this Agreement. The Rights Agent may, but is not obligated to, enter into any such amendment that affects the Rights Agent's own rights, privileges, covenants or duties under this Agreement or otherwise.

Section 5.4. Effect of Amendments.

Upon the execution of any amendment under this Article V, this Agreement shall be modified in accordance therewith, such amendment shall form a part of this Agreement for all purposes and every Holder shall be bound thereby.

Table of Contents

ARTICLE VI

CONSOLIDATION, MERGER, SALE OR CONVEYANCE

Section 6.1. Buyer May Consolidate, Etc.

(a) Buyer shall not consolidate with or merge into any other Person or convey, transfer or lease its properties and assets substantially as an entirety to any Person, unless:

(i) the Person formed by such consolidation or into which Buyer is merged or the Person that acquires by conveyance or transfer, or that leases, the properties and assets of Buyer substantially as an entirety (the *Surviving Person*) shall expressly assume payment (if and to the extent required hereunder) of amounts on all the H3 CVRs and the performance of every duty and covenant of this Agreement on the part of Buyer to be performed or observed; and

(ii) Buyer has delivered to the Rights Agent an Officer's Certificate, stating that such consolidation, merger, conveyance, transfer or lease complies with this Article VI and that all conditions precedent herein provided for relating to such transaction have been complied with.

(b) In the event Buyer conveys, transfers or leases its properties and assets substantially as an entirety in accordance with the terms and conditions of this Section 6.1, Buyer and the Surviving Person shall be jointly and severally liable for the payment of the H3 CVR Payment Amount and the performance of every duty and covenant of this Agreement on the part of the Buyer to be performed or observed.

Section 6.2. Successor Substituted.

Upon any consolidation of or merger by Buyer with or into any other Person, or any conveyance, transfer or lease of the properties and assets substantially as an entirety to any Person in accordance with Section 6.1, the Surviving Person shall succeed to, and be substituted for, and may exercise every right and power of, Buyer under this Agreement with the same effect as if the Surviving Person had been named as Buyer herein, and thereafter the predecessor Person shall be relieved of all obligations and covenants under this Agreement and the H3 CVRs.

ARTICLE VII

OTHER PROVISIONS OF GENERAL APPLICATION

Section 7.1. Notices to Rights Agent and Buyer.

Any request, demand, authorization, direction, notice, consent, waiver or other document provided or permitted by this Agreement shall be sufficient for every purpose hereunder if in writing and sent by facsimile transmission, delivered personally, or by certified or registered mail (return receipt requested and first-class postage prepaid) or sent by a nationally recognized overnight courier (with proof of service), addressed as follows, and shall be deemed to have been given upon receipt:

(a) if to the Rights Agent, addressed to it at [], facsimile at [], or at any other address previously furnished in writing to the Holders and Buyer by the Rights Agent in accordance with this Section 7.1; or

(b) if to Buyer, addressed to it at 10275 Science Center Drive, San Diego, California 92121, facsimile at (858) 550-7272, or at any other address previously furnished in writing to the Rights Agent and the Holders by Buyer in accordance with this Section 7.1.

Section 7.2. Notice to Holders.

Where this Agreement provides for notice to Holders, such notice shall be sufficiently given (unless otherwise herein expressly provided) if in writing and mailed, first-class postage prepaid, to each Holder affected

C-10

Table of Contents

by such event, at his, her or its address as it appears in the H3 CVR Register, not later than the latest date, and not earlier than the earliest date, prescribed for the giving of such notice. In any case where notice to Holders is given by mail, neither the failure to mail such notice, nor any defect in any notice so mailed, to any particular Holder shall affect the sufficiency of such notice with respect to other Holders.

Section 7.3. Effect of Headings.

The Article and Section headings herein are for convenience only and shall not affect the construction hereof.

Section 7.4. Successors and Assigns.

All covenants and agreements in this Agreement by Buyer shall bind its successors and assigns, whether so expressed or not.

Section 7.5. Benefits of Agreement.

Nothing in this Agreement, express or implied, shall give to any Person (other than the parties hereto, the Holders and their permitted successors and assigns hereunder) any benefit or any legal or equitable right, remedy or claim under this Agreement or under any covenant or provision herein contained, all such covenants and provisions being for the sole benefit of the parties hereto, the Holders and their permitted successors and assigns. The Holders shall have no rights or remedies hereunder except as expressly set forth herein.

Section 7.6. Governing Law.

This Agreement and the H3 CVRs shall be governed by and construed in accordance with the laws of the State of Delaware without regards to its rules of conflicts of laws.

Section 7.7. Legal Holidays.

In the event that a H3 CVR Payment Date shall not be a Business Day, then, notwithstanding any provision of this Agreement to the contrary, any payment required to be made in respect of the H3 CVRs on such date need not be made on such date, but may be made on the next succeeding Business Day with the same force and effect as if made on the H3 CVR Payment Date.

Section 7.8. Severability Clause.

In case any one or more of the provisions contained in this Agreement shall for any reason be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provisions of this Agreement, but this Agreement shall be construed as if such invalid or illegal or unenforceable provision had never been contained herein. Upon such determination that any term or other provision is invalid, illegal or unenforceable, the court or other tribunal making such determination is authorized and instructed to modify this Agreement so as to effect the original intent of the parties as closely as possible so that the transactions and agreements contemplated herein are consummated as originally contemplated to the fullest extent possible.

Section 7.9. Counterparts.

This Agreement may be signed in any number of counterparts (which may be effectively delivered by facsimile or other electronic means), each of which shall be deemed to constitute but one and the same instrument.

Table of Contents

Section 7.10. Termination.

This Agreement shall terminate and be of no further force or effect, and the parties hereto shall have no liability hereunder, upon the earliest to occur of (a) the payment of the H3 CVR Payment Amount, (b) in the event that a Notice of Objection is not delivered within the Objection Period, the expiration of the Objection Period or (c) in the event of the delivery of a Notice of Objection, either (i) the final determination in accordance with this Agreement that a H3 CVR Payment Event has not been achieved or (ii) the fulfillment of any payment or other obligation required pursuant to a final determination made in accordance with this Agreement.

Section 7.11. Entire Agreement.

This Agreement and the Merger Agreement represent the entire understanding of the parties hereto with reference to the H3 CVRs and this Agreement supersedes any and all other oral or written agreements made with respect to the H3 CVRs, except for the Merger Agreement. If and to the extent that any provision of this Agreement is inconsistent or conflicts with the Merger Agreement, this Agreement shall govern and be controlling.

Section 7.12. Negotiation; Arbitration.

(a) Before any arbitration pursuant to Section 7.12(b), Buyer, the Rights Agent and, if available, any Holder or Holders of at least 20% in the aggregate of the outstanding H3 CVRs shall negotiate in good faith for a period of 30 days to resolve any controversy or claim arising out of or relating to this Agreement or the breach thereof.

(b) After expiration of the 30-day period contemplated by Section 7.12(a), such controversy or claim, including any claims for breach of this Agreement, shall be settled by arbitration administered by the American Arbitration Association under its Commercial Arbitration Rules, and judgment on the award rendered by the arbitrators may be entered in any court having jurisdiction thereof. Buyer, the Rights Agent and/or any Holder or Holders of at least 20% in the aggregate of the outstanding H3 CVRs may initiate an arbitration for any matter relating to this Agreement. However, in the event of a dispute arising from the delivery of a Notice of Objection, the sole matter to be settled by arbitration shall be whether a H3 CVR Payment Event has occurred on or before the Outside Date. The number of arbitrators shall be three. Within 15 days after the commencement of arbitration, each party shall select one person to act as arbitrator, and the two selected shall select a third arbitrator within 15 days of their appointment. If the arbitrators selected by the parties are unable or fail to agree upon the third arbitrator, the third arbitrator shall be selected by the American Arbitration Association. The place of the arbitration shall be San Diego, California. The arbitrators shall be lawyers or retired judges with experience in the life sciences industry and with mergers and acquisitions. Except as may be required by law, neither a party nor an arbitrator may disclose the existence, content or results of any arbitration hereunder without the prior written consent of both parties (provided that the Rights Agent may disclose to the Holders any such information without the consent of Buyer). Any award payable in favor of the Holders or the Rights Agent as a result of arbitration shall be distributed to the Holders on a pro rata basis, based on the number of H3 CVRs held by each Holder. Buyer shall pay all fees and expenses of the arbitration forum, including the costs and expenses billed by the arbitrators in connection with the performance of their duties described herein; provided, however, that if the arbitrator rules in favor of Buyer, the Arbitrator's fees and expenses shall be offset against the H3 CVR Payment Amount, if any, or any payment to be made thereafter under any of the other CVR Agreements. Each party shall be responsible for its own attorney fees, expenses and costs of investigation.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

Table of Contents

IN WITNESS WHEREOF, each of the parties has caused this Agreement to be executed on its behalf by its duly authorized officers as of the day and year first above written.

LIGAND PHARMACEUTICALS INCORPORATED

By:
Name:
Title:

NEUROGEN CORPORATION

By:
Name:
Title:

[RIGHTS AGENT]

By:
Name:
Title:

C-13

Table of Contents

Annex D

Form of Merck CVR Agreement

CONTINGENT VALUE RIGHTS AGREEMENT

THIS CONTINGENT VALUE RIGHTS AGREEMENT, dated as of [], 2009 (this *Agreement* , is entered into by and among Ligand Pharmaceuticals Incorporated, a Delaware corporation (*Buyer*), Neurogen Corporation, a Delaware corporation (*Target*), and [], a [], as Rights Agent (the *Rights Agent*) and as initial Merck CVR Registrar (as defined herein).

Preamble

Buyer, Neon Signal, LLC, a Delaware limited liability company and wholly-owned subsidiary of Buyer (*Sub*), and Target have entered into an Agreement and Plan of Merger dated as of August 23, 2009 (the *Merger Agreement*), pursuant to which Sub will merge with and into Target (the *Merger*), with Target surviving the Merger as a subsidiary of Buyer.

Pursuant to the Merger Agreement, Buyer agreed to create and issue to Target 's stockholders of record immediately before the effective time of the Merger, contingent value rights as hereinafter described.

The parties have done all things necessary to make the contingent value rights, when issued pursuant to the Merger Agreement and hereunder, the valid obligations of Buyer and to make this Agreement a valid and binding agreement of Buyer, in accordance with its terms.

NOW, THEREFORE, for and in consideration of the premises and the consummation of the transactions referred to above, it is mutually covenanted and agreed, for the equal and proportionate benefit of all Holders (as hereinafter defined), as follows:

ARTICLE I

DEFINITIONS

Section 1.1. Definitions.

(a) For all purposes of this Agreement, except as otherwise expressly provided or unless the context otherwise requires:

(i) the terms defined in this Article have the meanings assigned to them in this Article, and include the plural as well as the singular;

(ii) all accounting terms used herein and not expressly defined herein shall have the meanings assigned to such terms in accordance with United States generally accepted accounting principles, as in effect on the date hereof;

(iii) the words herein, hereof and hereunder and other words of similar import refer to this Agreement as a whole and not to any particular Article, Section or other subdivision;

(iv) unless the context otherwise requires, words describing the singular number shall include the plural and vice versa, words denoting any gender shall include all genders and words denoting natural Persons shall include corporations, partnerships and other Persons and vice versa; and

(v) all references to including shall be deemed to mean including without limitation.

Table of Contents

(b) Capitalized terms used but not otherwise defined herein shall have the meanings ascribed thereto in the Merger Agreement. The following terms shall have the meanings ascribed to them as follows:

Achievement Certificate has the meaning set forth in Section 2.4(a).

Board of Directors means the board of directors of Buyer.

Board Resolution means a copy of a resolution certified by the secretary or an assistant secretary of Buyer to have been duly adopted by the Board of Directors and to be in full force and effect on the date of such certification, and delivered to the Rights Agent.

Business Day means any day other than a Saturday, Sunday or a day on which banking institutions in New York, New York are authorized or obligated by law or executive order to remain closed.

Holder means a Person in whose name a Merck CVR is registered in the Merck CVR Register.

Merck means Merck Sharp & Dohme Limited or any of its successors or Affiliates (as such term is defined in the Merck VR1 Agreement).

Merck CVR Payment Amount means either the Phase III VR1 Trial Initiation Payment or the VR1 Program Sales Payment. For purposes of clarity, the Holders shall only be entitled to either the Phase III VR1 Trial Initiation Payment or the VR1 Program Sales Payment (or neither of them), but in no circumstances both.

Merck CVR Payment Event means the first to occur of the Phase III VR1 Trial Initiation Payment Event or the VR1 Program Sales Event.

Merck CVR Payment Date means the date (if any and if ever) that the Merck CVR Payment Amount is payable by Buyer to the Holders, which date shall be established pursuant to Section 2.4.

Merck CVR Register has the meaning set forth in Section 2.3(b).

Merck CVR Registrar has the meaning set forth in Section 2.3(b).

Merck CVRs means the Merck Contingent Value Rights issued by Buyer pursuant to the Merger Agreement and this Agreement.

Merck VR1 Agreement means the Research Collaboration and License Agreement, effective as of November 24, 2003 between Merck and the Company.

Non-Achievement Certificate has the meaning set forth in Section 2.4(b).

Notice of Objection has the meaning set forth in Section 2.4(d).

Objection Period has the meaning set forth in Section 2.4(d).

Officers Certificate means a certificate signed by the chief executive officer, president, chief financial officer, any vice president, the controller, the treasurer or the secretary, in each case, of Buyer, in his or her capacity as such an officer, and delivered to the Rights Agent.

Outside Date means the later of (i) the last day of the term of the Merck VR1 Agreement, and (ii) the last date on which Buyer receives any consideration from Merck pursuant to a sale, conveyance, relinquishment or other transfer of the VR1 Program Rights; provided, that if pursuant to the preceding subsections the Outside Date has not already occurred by Phase III VR1 Trial Initiation (as defined in the Merger Agreement), then the Outside Date shall mean immediately after Phase III VR1 Trial Initiation (as defined in the Merger Agreement).

Table of Contents

Permitted Transfer means: (i) the transfer of any or all of the Merck CVRs (upon the death of the Holder) by will or intestacy; (ii) transfer by instrument to an inter vivos or testamentary trust in which the Merck CVRs are to be passed to beneficiaries upon the death of the trustee; (iii) transfers made pursuant to a court order of a court of competent jurisdiction (such as in connection with divorce, bankruptcy or liquidation); (iv) if the Holder is a partnership or limited liability company, a pro-rata distribution by the transferring partnership or limited liability company to its partners or members, as applicable; (v) a transfer made by operation of law (including a consolidation or merger) or in connection with the dissolution, liquidation or termination of any corporation, limited liability company, partnership or other entity; (vi) a transfer from a participant's account in a tax-qualified employee benefit plan to the participant or to such participant's account in a different tax-qualified employee benefit plan or to a tax-qualified individual retirement account for the benefit of such participant; or (vii) a transfer from a participant in a tax-qualified employee benefit plan, who received the Merck CVRs from such participant's account in such tax-qualified employee benefit plan, to such participant's account in a different tax-qualified employee benefit plan or to a tax-qualified individual retirement account for the benefit of such participant.

Person means any natural person, corporation, partnership, limited liability company, trust, estate, other firm or entity, or governmental body.

Phase III VR1 Trial Initiation Payment means an aggregate amount equal to \$3,000,000 in cash.

Phase III VR1 Trial Initiation Payment Event means the receipt of the milestone payment from Merck for the Phase III VR1 Trial Initiation (as defined in the Merger Agreement).

Rights Agent means the Rights Agent named in the first paragraph of this Agreement, until a successor Rights Agent shall have become such pursuant to the applicable provisions of this Agreement, and thereafter **Rights Agent** shall mean such successor Rights Agent.

Rights Agent Fee means the agreed-upon fee of the Rights Agent to act in such capacity pursuant to the terms of this Agreement.

Surviving Person has the meaning set forth in Section 6.1(a)(i).

VR1 Program Rights means the rights of the Company (and of Buyer as successor to the Company) under the Merck VR1 Agreement, including the Company's Intellectual Property underlying the Merck VR1 Agreement.

VR1 Program Sales Payment Amount means an amount equal to 50% of the aggregate cash proceeds received by Buyer, or any of its subsidiaries or Affiliates, after the effective time of the Merger and prior to the Outside Date, from Merck in connection with the sale, conveyance, relinquishment or other transfer of the VR1 Program Rights, less any costs and expenses reasonably incurred by the Buyer, or any of its subsidiaries or Affiliates, in connection with the sale, conveyance, relinquishment or other transfer of the VR1 Program Rights (including attorneys fees and brokers commissions).

VR1 Program Sales Payment Event means the receipt of cash proceeds by Buyer from the consummation of the sale, conveyance, relinquishment or other transfer of the VR1 Program Rights to Merck.

Table of Contents

ARTICLE II

CONTINGENT VALUE RIGHTS

Section 2.1. Issuance of Merck CVRs; Appointment of Rights Agent.

(a) The Merck CVRs shall be issued pursuant to the Merger Agreement at the time and in the manner set forth in the Merger Agreement.

(b) Buyer hereby appoints [] as the Rights Agent to act as rights agent for Buyer in accordance with the instructions hereinafter set forth in this Agreement, and the Rights Agent hereby accepts such appointment.

Section 2.2. Nontransferable.

The Merck CVRs shall not be sold, assigned, transferred, pledged, encumbered or in any other manner transferred or disposed of, in whole or in part, other than through a Permitted Transfer.

Section 2.3. No Certificate; Registration; Registration of Transfer; Change of Address.

(a) The Merck CVRs shall not be evidenced by a certificate or other instrument.

(b) The Rights Agent shall keep a register (the *Merck CVR Register*) for the registration of Merck CVRs. The Rights Agent is hereby initially appointed *Merck CVR Registrar* for the purpose of registering Merck CVRs and transfers of Merck CVRs as herein provided. Upon any change to the identity of the Rights Agent, the successor Rights Agent shall automatically also become the successor Merck CVR Registrar.

(c) Subject to the restriction on transferability set forth in Section 2.2, every request made to transfer a Merck CVR must be in writing and accompanied by a written instrument or instruments of transfer and any other requested documentation in a form reasonably satisfactory to Buyer and the Merck CVR Registrar, duly executed by the registered Holder or Holders thereof or by the duly appointed legal representative thereof or by a duly authorized attorney, such signature to be guaranteed by a participant in a recognized Signature Guarantee Medallion Program. A request for a transfer of a Merck CVR shall be accompanied by such documentation establishing that the transfer is a Permitted Transfer as may be reasonably requested by Buyer and/or the Merck CVR Registrar (including opinions of counsel), if appropriate. Upon receipt of such written request and materials, the Merck CVR Registrar shall, subject to its reasonable determination that the transfer instrument is in proper form and the transfer otherwise complies with the other terms and conditions herein, register the transfer of the Merck CVRs in the Merck CVR Register. All duly transferred Merck CVRs registered in the Merck CVR Register shall be the valid obligations of Buyer, evidencing the same right and shall entitle the transferee to the same benefits and rights under this Agreement, as those previously held by the transferor. No transfer of a Merck CVR shall be valid until registered in the Merck CVR Register, and any transfer not duly registered in the Merck CVR Register will be void ab initio. Any transfer or assignment of the Merck CVRs shall be without charge (other than the cost of any transfer tax which shall be the responsibility of the transferor) to the Holder.

(d) A Holder may make a written request to the Merck CVR Registrar to change such Holder's address of record in the Merck CVR Register. The written request must be duly executed by the Holder. Upon receipt of such written notice, the Merck CVR Registrar shall promptly record the change of address in the Merck CVR Register.

Section 2.4. Payment Procedures.

(a) Promptly following the occurrence of the Merck CVR Payment Event, but in no event later than five Business Days after the occurrence of the Merck CVR Payment Event, Buyer shall deliver to the Rights Agent a certificate (the *Achievement Certificate*), certifying that the Holders are entitled to receive the Merck CVR Payment Amount. No transaction described in Section 6.1(a) hereof shall give the Holders the right to receive the Merck CVR Payment Amount.

Table of Contents

(b) If the Merck CVR Payment Event has not occurred on or before the Outside Date, then, within five Business Days after the Outside Date, Buyer shall deliver to the Rights Agent a certificate (the *Non-Achievement Certificate*), stating that the Merck CVR Payment Event did not occur.

(c) Except as otherwise requested by any Holder, the Rights Agent shall promptly (and in no event later than five Business Days after receipt thereof) send each Holder a copy of any Achievement Certificate or Non-Achievement Certificate at its registered address.

(d) Upon demand by any Holder or Holders of at least 20% in the aggregate of the outstanding Merck CVRs within 45 calendar days after distribution by the Rights Agent of a Non-Achievement Certificate (the *Objection Period*), the Rights Agent shall deliver a written notice to Buyer prepared by such Holder or Holders specifying that such Holder or Holders object to the determination of Buyer that the Merck CVR Payment Event did not occur (a *Notice of Objection*) and stating the reason upon which such Holder or Holders have determined that the Merck CVR Payment Event has occurred on or before the Outside Date. Any dispute arising from a Notice of Objection shall be resolved in accordance with the procedure set forth in Section 7.12, which decision shall be binding on the parties hereto and every Holder (including the Holders not participating therein).

(e) If a Notice of Objection has not been delivered to Buyer within the Objection Period, then the Holders shall have no right to receive the Merck CVR Payment Amount, and Buyer and the Rights Agent shall have no further obligations with respect to the Merck CVR Payment Amount.

(f) If Buyer delivers an Achievement Certificate to the Rights Agent or if the Merck CVR Payment Amount is determined to be payable pursuant to Section 2.4(d) above, Buyer shall establish a Merck CVR Payment Date that is within 15 calendar days after the date of the Achievement Certificate or the date of final determination pursuant to Section 2.4(d) above, as applicable. At least five Business Days before such Merck CVR Payment Date, Buyer shall cause the Merck CVR Payment Amount to be delivered to the Rights Agent, who will in turn, on the Merck CVR Payment Date, distribute the Merck CVR Payment Amount to the Holders (each Holder being entitled to receive its *pro rata* share of the Merck CVR Payment Amount based on the number of Merck CVRs held (as of the date of the Achievement Certificate or the date of final determination pursuant to Section 2.4(d) above, as applicable) by such Holder as reflected on the Merck CVR Register) (i) by check mailed to the address of each such respective Holder as reflected in the Merck CVR Register as of the close of business on the last Business Day before such Merck CVR Payment Date, or, (ii) with respect to any Holder that is due payment pursuant to this Agreement in excess of \$1,000,000 who has provided the Rights Agent with wire transfer instructions, by wire transfer of immediately available funds to such account.

(g) Buyer shall be entitled to deduct and withhold, or cause to be deducted or withheld, from each Merck CVR Payment Amount otherwise payable pursuant to this Agreement, such amounts as Buyer or the applicable subsidiary of Buyer is required to deduct and withhold with respect to the making of such payment under the Internal Revenue Code, or any provision of state, local or foreign tax law. To the extent that amounts are so withheld or paid over to or deposited with the relevant governmental entity, such withheld amounts shall be treated for all purposes of this Agreement as having been paid to the Holder in respect of which such deduction and withholding was made.

(h) Subject to prior execution and delivery by the Rights Agent of a reasonable and customary confidentiality/nonuse agreement, Buyer shall promptly furnish to the Rights Agent all information and documentation in connection with this Agreement and the Merck CVRs that the Rights Agent or any Holder or Holders of at least 20% in the aggregate of the outstanding Merck CVRs may reasonably request in connection with the determination of whether the Merck CVR Payment Event has occurred. Subject to prior execution and delivery by the applicable Holders of a reasonable and customary confidentiality/nonuse agreement, the Rights Agent shall forward any information and documentation it receives to the Holders who request such information.

Table of Contents

Section 2.5. No Voting, Dividends or Interest; No Equity or Ownership Interest in Buyer.

(a) The Merck CVRs shall not have any voting or dividend rights, and interest shall not accrue on any amounts payable on the Merck CVRs to any Holder.

(b) The Merck CVRs shall not represent any equity or ownership interest in Buyer or in any constituent company to the Merger.

Section 2.6. Sole Discretion and Decision Making Authority; No Fiduciary Duty.

Notwithstanding anything contained herein to the contrary, Buyer shall have sole discretion and decision making authority, which shall be exercised in good faith, over (a) any continuation by Buyer of operation of, development of or investment in the VR1 Program and over when (if ever) to initiate the Phase III VR1 Trial and (b) when (if ever) to consummate the sale, conveyance, relinquishment or other transfer of the VR1 Program Rights to Merck, and upon what terms and conditions; *provided, however*, that before the Outside Date (a) Buyer shall not sell, convey or otherwise transfer the VR1 Program Rights to anyone other than Merck and (b) Buyer shall not accept any consideration from Merck for the VR1 Program Rights other than cash to be paid in full within 90 days of the sale, conveyance, relinquishment or other transfer of the VR1 Program Rights.

ARTICLE III

THE RIGHTS AGENT

Section 3.1. Certain Duties and Responsibilities.

(a) The Rights Agent shall not have any liability for any actions taken or not taken in connection with this Agreement, except to the extent of its willful misconduct, bad faith or gross negligence. No provision of this Agreement shall require the Rights Agent to expend or risk its own funds or otherwise incur any financial liability in the performance of any of its duties hereunder or in the exercise of any of its rights or powers.

(b) Any Holder or Holders of at least 20% in the aggregate of the outstanding Merck CVRs may direct the Rights Agent to act on behalf of the Holders in enforcing any of its or their rights hereunder, including, without limitation, the delivery of any Notice of Objection and negotiation or arbitration pursuant to Section 7.12. The Rights Agent shall be under no obligation to institute any action, suit or legal proceeding or to take any other action likely to involve material expense unless such Holder or Holders shall furnish the Rights Agent with reasonable security and indemnity for any costs and expenses which may be incurred. All rights of action under this Agreement may be enforced by the Rights Agent, and any action, suit or proceeding instituted by the Rights Agent shall be brought in its name as Rights Agent, and any recovery of judgment shall be for the ratable benefit of all the Holders, as their respective rights or interests may appear.

Section 3.2. Certain Rights of Rights Agent.

The Rights Agent undertakes to perform such duties and only such duties as are specifically set forth in this Agreement, and no implied covenants or obligations shall be read into this Agreement against the Rights Agent. In addition:

(a) the Rights Agent may rely and shall be protected in acting or refraining from acting upon any resolution, certificate, statement, instrument, opinion, report, notice, request, direction, consent, order or other paper or document believed by it to be genuine and to have been signed or presented by the proper party or parties;

(b) whenever the Rights Agent shall deem it desirable that a matter be proved or established before taking, suffering or omitting any action hereunder, the Rights Agent may, in the absence of willful misconduct, bad faith or gross negligence on its part, rely upon an Officer's Certificate;

Table of Contents

- (c) the Rights Agent may engage and consult with counsel of its selection and the written advice of such counsel or any opinion of counsel shall be full and complete authorization and protection in respect of any action taken, suffered or omitted by it hereunder in good faith and in reliance thereon;
- (d) in the event of arbitration, the Rights Agent may engage and consult with tax experts, valuation firms and other experts and third parties that it, in its sole and absolute discretion, deems appropriate or necessary to enable it to discharge its duties hereunder;
- (e) the permissive rights of the Rights Agent to do things enumerated in this Agreement shall not be construed as a duty;
- (f) the Rights Agent shall not be required to give any note or surety in respect of the execution of such powers or otherwise in respect of the premises;
- (g) Buyer agrees to indemnify the Rights Agent for, and hold the Rights Agent harmless against, any loss, liability, claim, demands, suits or expense (in each case pertaining to the Rights Agent's own account only) arising out of or in connection with the Rights Agent's duties under this Agreement, including the costs and expenses of defending the Rights Agent against any claims, charges, demands, suits or loss, unless such loss shall have been determined by a court of competent jurisdiction to be a result of the Rights Agent's willful misconduct, bad faith or gross negligence; and
- (h) Buyer agrees (i) to pay the fees and expenses of the Rights Agent in connection with this Agreement, as set forth on Schedule 1 hereto, and (ii) to reimburse the Rights Agent for all taxes and governmental charges, reasonable expenses and other charges of any kind and nature incurred by the Rights Agent in the execution of this Agreement (other than taxes measured by the Rights Agent's net income). The Rights Agent shall also be entitled to reimbursement from Buyer for all reasonable and necessary out-of-pocket expenses (including reasonable fees and expenses of the Rights Agent's counsel and agent) paid or incurred by it in connection with the administration by the Rights Agent of its duties hereunder. An invoice for the Rights Agent Fee will be rendered a reasonable time before, and paid on, the effective date of the applicable transaction. An invoice for any out-of-pocket expenses and per item fees realized will be rendered and payable within 30 calendar days after receipt by Buyer. Buyer agrees to pay to Rights Agent any amounts, including fees and expenses, payable in favor of the Rights Agent in connection with any dispute, resolution or arbitration arising under or in connection with the Agreement; provided, however, that in the event of a resolution in favor of Buyer, any amounts, including fees and expenses, payable by Buyer in favor of the Rights Agent or payable in favor of Buyer related to such dispute, resolution or arbitration shall be offset against the Merck CVR Payment Amount, if any, or any payment to be made thereafter under any of the other CVR Agreements.

Section 3.3. Resignation and Removal; Appointment of Successor.

- (a) The Rights Agent may resign at any time by giving written notice thereof to Buyer specifying a date when such resignation shall take effect, which notice shall be sent at least 30 days before the date so specified.
- (b) If the Rights Agent shall resign, be removed or become incapable of acting, Buyer, by way of a Board Resolution, shall promptly appoint a qualified successor Rights Agent who may (but need not) be a Holder but shall not be an officer of Buyer. The successor Rights Agent so appointed shall, forthwith upon its acceptance of such appointment in accordance with this Section 3.3(b), become the successor Rights Agent.
- (c) Buyer shall give notice of each resignation and each removal of a Rights Agent and each appointment of a successor Rights Agent by mailing written notice of such event by first-class mail, postage prepaid, to the Holders as their names and addresses appear in the Merck CVR Register. Each notice shall include the name and address of the successor Rights Agent. If Buyer fails to send such notice within ten days after acceptance of appointment by a successor Rights Agent, the successor Rights Agent shall cause such notice to be mailed at the expense of Buyer.

Table of Contents

Section 3.4. Acceptance of Appointment by Successor.

Every successor Rights Agent appointed hereunder shall execute, acknowledge and deliver to Buyer and to the retiring Rights Agent an instrument accepting such appointment and a counterpart of this Agreement, and thereupon such successor Rights Agent, without any further act, deed or conveyance, shall become vested with all the rights, powers, trusts and duties of the retiring Rights Agent; provided, that upon the request of Buyer or the successor Rights Agent, such retiring Rights Agent shall execute and deliver an instrument transferring to such successor Rights Agent all the rights, powers and trusts of the retiring Rights Agent and shall cooperate in the transfer of all relevant data, including the Merck CVR Register, to the successor Rights Agent.

ARTICLE IV

COVENANTS

Section 4.1. List of Holders.

Buyer shall furnish or cause to be furnished to the Rights Agent in such form as Buyer receives from its transfer agent (or other agent performing similar services for Buyer), the names, addresses and shareholdings of the Holders, within five Business Days after the effective time of the Merger.

Section 4.2. Payment of Merck CVR Payment Amount.

Buyer shall duly and promptly pay the Merck CVR Payment Amount, if any, in immediately available funds, to the Rights Agent to be distributed to the Holders in the manner provided for in Section 2.4 and in accordance with the terms of this Agreement.

Section 4.3. Assignments.

Buyer shall not, in whole or in part, assign any of its obligations under this Agreement other than in accordance with the terms of Section 6.1 hereof.

ARTICLE V

AMENDMENTS

Section 5.1. Amendments Without Consent of Holders.

(a) Without the consent of any Holders or the Rights Agent, Buyer, when authorized by a Board Resolution, at any time and from time to time, may enter into one or more amendments hereto, for any of the following purposes:

(i) to evidence the succession of another Person to Buyer and the assumption by any such successor of the covenants of Buyer herein in a transaction contemplated by Section 6.1 hereof; or

(ii) to evidence the termination of the Merck CVR Registrar and the succession of another Person as a successor Merck CVR Registrar and the assumption by any successor of the obligations of the Merck CVR Registrar herein.

(b) Without the consent of any Holders, Buyer, when authorized by a Board Resolution, and the Rights Agent, in the Rights Agent's sole and absolute discretion, at any time and from time to time, may enter into one or more amendments hereto, for any of the following purposes:

(i) to evidence the succession of another Person as a successor Rights Agent and the assumption by any successor of the covenants and obligations of the Rights Agent herein;

(ii) to add to the covenants of Buyer such further covenants, restrictions, conditions or provisions as the Board of Directors and the Rights Agent shall consider to be for the protection of the Holders; provided, that in each case, such provisions shall not adversely affect the interests of the Holders;

D-8

Table of Contents

(iii) to cure any ambiguity, to correct or supplement any provision herein that may be defective or inconsistent with any other provision herein, or to make any other provisions with respect to matters or questions arising under this Agreement; provided, that in each case, such provisions shall not adversely affect the interests of the Holders; or

(iv) to add, eliminate or change any provision of this Agreement unless such addition, elimination or change is adverse to the interests of the Holders.

(c) Promptly after the execution by Buyer and the Rights Agent of any amendment pursuant to the provisions of this Section 5.1, Buyer shall mail a notice thereof by first-class mail to each of the Holders at their addresses as they shall appear on the Merck CVR Register, setting forth in general terms the substance of such amendment.

Section 5.2. Amendments With Consent of Holders.

(a) Subject to Section 5.1 (which amendments pursuant to Section 5.1 may be made without the consent of the Holders), with the consent of the Holders of not less than a majority of the outstanding Merck CVRs, whether evidenced in writing or taken at a meeting of the Holders, Buyer, when authorized by a Board Resolution, and the Rights Agent may enter into one or more amendments hereto for the purpose of adding, eliminating or changing any provisions of this Agreement, even if such addition, elimination or change is in any way adverse to the interests of the Holders.

(b) Promptly after the execution by Buyer and the Rights Agent of any amendment pursuant to the provisions of this Section 5.2, Buyer shall mail a notice thereof by first-class mail to the Holders at their addresses as they shall appear on the Merck CVR Register, setting forth in general terms the substance of such amendment.

Section 5.3. Execution of Amendments.

In executing any amendment permitted by this Article V, the Rights Agent shall be entitled to receive, and shall be fully protected in relying upon, an opinion of counsel stating that the execution of such amendment is authorized or permitted by this Agreement. The Rights Agent may, but is not obligated to, enter into any such amendment that affects the Rights Agent's own rights, privileges, covenants or duties under this Agreement or otherwise.

Section 5.4. Effect of Amendments.

Upon the execution of any amendment under this Article V, this Agreement shall be modified in accordance therewith, such amendment shall form a part of this Agreement for all purposes and every Holder shall be bound thereby.

ARTICLE VI

CONSOLIDATION, MERGER, SALE OR CONVEYANCE

Section 6.1. Buyer May Consolidate, Etc.

(a) Buyer shall not consolidate with or merge into any other Person or convey, transfer or lease its properties and assets substantially as an entirety to any Person, unless:

(i) the Person formed by such consolidation or into which Buyer is merged or the Person that acquires by conveyance or transfer, or that leases, the properties and assets of Buyer substantially as an entirety (the *Surviving Person*) shall expressly assume payment (if and to the extent required hereunder) of amounts on all the Merck CVRs and the performance of every duty and covenant of this Agreement on the part of Buyer to be performed or observed; and

Table of Contents

(ii) Buyer has delivered to the Rights Agent an Officer's Certificate, stating that such consolidation, merger, conveyance, transfer or lease complies with this Article VI and that all conditions precedent herein provided for relating to such transaction have been complied with.

(b) In the event Buyer conveys, transfers or leases its properties and assets substantially as an entirety in accordance with the terms and conditions of this Section 6.1, Buyer and the Surviving Person shall be jointly and severally liable for the payment of the Merck CVR Payment Amount and the performance of every duty and covenant of this Agreement on the part of the Buyer to be performed or observed.

Section 6.2. Successor Substituted.

Upon any consolidation of or merger by Buyer with or into any other Person, or any conveyance, transfer or lease of the properties and assets substantially as an entirety to any Person in accordance with Section 6.1, the Surviving Person shall succeed to, and be substituted for, and may exercise every right and power of, Buyer under this Agreement with the same effect as if the Surviving Person had been named as Buyer herein, and thereafter the predecessor Person shall be relieved of all obligations and covenants under this Agreement and the Merck CVRs.

ARTICLE VII

OTHER PROVISIONS OF GENERAL APPLICATION

Section 7.1. Notices to Rights Agent and Buyer.

Any request, demand, authorization, direction, notice, consent, waiver or other document provided or permitted by this Agreement shall be sufficient for every purpose hereunder if in writing and sent by facsimile transmission, delivered personally, or by certified or registered mail (return receipt requested and first-class postage prepaid) or sent by a nationally recognized overnight courier (with proof of service), addressed as follows, and shall be deemed to have been given upon receipt:

(a) if to the Rights Agent, addressed to it at [], facsimile at [], or at any other address previously furnished in writing to the Holders and Buyer by the Rights Agent in accordance with this Section 7.1; or

(b) if to Buyer, addressed to it at 10275 Science Center Drive, San Diego, California 92121, facsimile at (858) 550-7272, or at any other address previously furnished in writing to the Rights Agent and the Holders by Buyer in accordance with this Section 7.1.

Section 7.2. Notice to Holders.

Where this Agreement provides for notice to Holders, such notice shall be sufficiently given (unless otherwise herein expressly provided) if in writing and mailed, first-class postage prepaid, to each Holder affected by such event, at his, her or its address as it appears in the Merck CVR Register, not later than the latest date, and not earlier than the earliest date, prescribed for the giving of such notice. In any case where notice to Holders is given by mail, neither the failure to mail such notice, nor any defect in any notice so mailed, to any particular Holder shall affect the sufficiency of such notice with respect to other Holders.

Section 7.3. Effect of Headings.

The Article and Section headings herein are for convenience only and shall not affect the construction hereof.

Section 7.4. Successors and Assigns.

All covenants and agreements in this Agreement by Buyer shall bind its successors and assigns, whether so expressed or not.

Table of Contents

Section 7.5. Benefits of Agreement.

Nothing in this Agreement, express or implied, shall give to any Person (other than the parties hereto, the Holders and their permitted successors and assigns hereunder) any benefit or any legal or equitable right, remedy or claim under this Agreement or under any covenant or provision herein contained, all such covenants and provisions being for the sole benefit of the parties hereto, the Holders and their permitted successors and assigns. The Holders shall have no rights or remedies hereunder except as expressly set forth herein.

Section 7.6. Governing Law.

This Agreement and the Merck CVRs shall be governed by and construed in accordance with the laws of the State of Delaware without regards to its rules of conflicts of laws.

Section 7.7. Legal Holidays.

In the event that a Merck CVR Payment Date shall not be a Business Day, then, notwithstanding any provision of this Agreement to the contrary, any payment required to be made in respect of the Merck CVRs on such date need not be made on such date, but may be made on the next succeeding Business Day with the same force and effect as if made on the Merck CVR Payment Date.

Section 7.8. Severability Clause.

In case any one or more of the provisions contained in this Agreement shall for any reason be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provisions of this Agreement, but this Agreement shall be construed as if such invalid or illegal or unenforceable provision had never been contained herein. Upon such determination that any term or other provision is invalid, illegal or unenforceable, the court or other tribunal making such determination is authorized and instructed to modify this Agreement so as to effect the original intent of the parties as closely as possible so that the transactions and agreements contemplated herein are consummated as originally contemplated to the fullest extent possible.

Section 7.9. Counterparts.

This Agreement may be signed in any number of counterparts (which may be effectively delivered by facsimile or other electronic means), each of which shall be deemed to constitute but one and the same instrument

Section 7.10. Termination.

This Agreement shall terminate and be of no further force or effect, and the parties hereto shall have no liability hereunder, upon the earliest to occur of (a) the payment of the Merck CVR Payment Amount, (b) in the event that a Notice of Objection is not delivered within the Objection Period, the expiration of the Objection Period or (c) in the event of the delivery of a Notice of Objection, either (i) the final determination in accordance with this Agreement that a Merck CVR Payment Event has not been achieved or (ii) the fulfillment of any payment or other obligation required pursuant to a final determination made in accordance with this Agreement.

Section 7.11. Entire Agreement.

This Agreement and the Merger Agreement represent the entire understanding of the parties hereto with reference to the Merck CVRs and this Agreement supersedes any and all other oral or written agreements made with respect to the Merck CVRs, except for the Merger Agreement. If and to the extent that any provision of this Agreement is inconsistent or conflicts with the Merger Agreement, this Agreement shall govern and be controlling.

Table of Contents

Section 7.12. Negotiation; Arbitration.

(a) Before any arbitration pursuant to Section 7.12(b), Buyer, the Rights Agent and, if available, any Holder or Holders of at least 20% in the aggregate of the outstanding Merck CVRs shall negotiate in good faith for a period of 30 days to resolve any controversy or claim arising out of or relating to this Agreement or the breach thereof.

(b) After expiration of the 30-day period contemplated by Section 7.12(a), such controversy or claim, including any claims for breach of this Agreement, shall be settled by arbitration administered by the American Arbitration Association under its Commercial Arbitration Rules, and judgment on the award rendered by the arbitrators may be entered in any court having jurisdiction thereof. Buyer, the Rights Agent and/or any Holder or Holders of at least 20% in the aggregate of the outstanding Merck CVRs may initiate an arbitration for any matter relating to this Agreement. However, in the event of a dispute arising from the delivery of a Notice of Objection, the sole matter to be settled by arbitration shall be whether a Merck CVR Payment Event has occurred on or before the Outside Date. The number of arbitrators shall be three. Within 15 days after the commencement of arbitration, each party shall select one person to act as arbitrator, and the two selected shall select a third arbitrator within 15 days of their appointment. If the arbitrators selected by the parties are unable or fail to agree upon the third arbitrator, the third arbitrator shall be selected by the American Arbitration Association. The place of the arbitration shall be San Diego, California. The arbitrators shall be lawyers or retired judges with experience in the life sciences industry and with mergers and acquisitions. Except as may be required by law, neither a party nor an arbitrator may disclose the existence, content or results of any arbitration hereunder without the prior written consent of both parties (provided that the Rights Agent may disclose to the Holders any such information without the consent of Buyer). Any award payable in favor of the Holders or the Rights Agent as a result of arbitration shall be distributed to the Holders on a pro rata basis, based on the number of Merck CVRs held by each Holder. Buyer shall pay all fees and expenses of the arbitration forum, including the costs and expenses billed by the arbitrators in connection with the performance of their duties described herein; provided, however, that if the arbitrator rules in favor of Buyer, the Arbitrator's fees and expenses shall be offset against the Merck CVR Payment Amount, if any, or any payment to be made thereafter under any of the other CVR Agreements. Each party shall be responsible for its own attorney fees, expenses and costs of investigation.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

Table of Contents

IN WITNESS WHEREOF, each of the parties has caused this Agreement to be executed on its behalf by its duly authorized officers as of the day and year first above written.

LIGAND PHARMACEUTICALS INCORPORATED

By:
Name:
Title:

NEUROGEN CORPORATION

By:
Name:
Title:

[RIGHTS AGENT]

By:
Name:
Title:

D-13

Table of Contents

Annex E

Form of Real Estate CVR Agreement

CONTINGENT VALUE RIGHTS AGREEMENT

THIS CONTINGENT VALUE RIGHTS AGREEMENT, dated as of [], 2009 (this *Agreement* , is entered into by and among Ligand Pharmaceuticals Incorporated, a Delaware corporation (*Buyer*), Neurogen Corporation, a Delaware corporation (*Target*), and [], a [], as Rights Agent (the *Rights Agent*) and as initial Real Estate CVR Registrar (as defined herein).

Preamble

Buyer, Neon Signal, LLC, a Delaware limited liability company and wholly-owned subsidiary of Buyer (*Sub*), and Target have entered into an Agreement and Plan of Merger dated as of August 23, 2009 (the *Merger Agreement*), pursuant to which Sub will merge with and into Target (the *Merger*), with Target (or a successor entity) surviving the Merger as a subsidiary of Buyer.

Pursuant to the Merger Agreement, Buyer agreed to create and issue to Target 's stockholders of record immediately before the effective time of the Merger, contingent value rights as hereinafter described.

The parties have done all things necessary to make the contingent value rights, when issued pursuant to the Merger Agreement and hereunder, the valid obligations of Buyer and to make this Agreement a valid and binding agreement of Buyer, in accordance with its terms.

NOW, THEREFORE, for and in consideration of the premises and the consummation of the transactions referred to above, it is mutually covenanted and agreed, for the equal and proportionate benefit of all Holders (as hereinafter defined), as follows:

ARTICLE I

DEFINITIONS

Section 1.1. Definitions.

(a) For all purposes of this Agreement, except as otherwise expressly provided or unless the context otherwise requires:

(i) the terms defined in this Article have the meanings assigned to them in this Article, and include the plural as well as the singular;

(ii) all accounting terms used herein and not expressly defined herein shall have the meanings assigned to such terms in accordance with United States generally accepted accounting principles, as in effect on the date hereof;

(iii) the words herein, hereof and hereunder and other words of similar import refer to this Agreement as a whole and not to any particular Article, Section or other subdivision;

(iv) unless the context otherwise requires, words describing the singular number shall include the plural and vice versa, words denoting any gender shall include all genders and words denoting natural Persons shall include corporations, partnerships and other Persons and vice versa; and

(v) all references to including shall be deemed to mean including without limitation.

Table of Contents

(b) Capitalized terms used but not otherwise defined herein shall have the meanings ascribed thereto in the Merger Agreement. The following terms shall have the meanings ascribed to them as follows:

Achievement Certificate has the meaning set forth in Section 2.4(a).

Board of Directors means the board of directors of Buyer.

Board Resolution means a copy of a resolution certified by the secretary or an assistant secretary of Buyer to have been duly adopted by the Board of Directors and to be in full force and effect on the date of such certification, and delivered to the Rights Agent.

Business Day means any day other than a Saturday, Sunday or a day on which banking institutions in New York, New York are authorized or obligated by law or executive order to remain closed.

CVR Outside Date means [insert date that is six months from the Effective Date].

Holder means a Person in whose name a Real Estate CVR is registered in the Real Estate CVR Register.

Non-Achievement Certificate has the meaning set forth in Section 2.4(b).

Notice of Objection has the meaning set forth in Section 2.4(d).

Objection Period has the meaning set forth in Section 2.4(d).

Officer's Certificate means a certificate signed by the chief executive officer, president, chief financial officer, any vice president, the controller, the treasurer or the secretary, in each case, of Buyer, in his or her capacity as such an officer, and delivered to the Rights Agent.

Permitted Transfer means: (i) the transfer of any or all of the Real Estate CVRs (upon the death of the Holder) by will or intestacy; (ii) transfer by instrument to an inter vivos or testamentary trust in which the Real Estate CVRs are to be passed to beneficiaries upon the death of the trustee; (iii) transfers made pursuant to a court order of a court of competent jurisdiction (such as in connection with divorce, bankruptcy or liquidation); (iv) if the Holder is a partnership or limited liability company, a distribution by the transferring partnership or limited liability company to its partners or members, as applicable; (v) a transfer made by operation of law (including a consolidation or merger) or in connection with the dissolution, liquidation or termination of any corporation, limited liability company, partnership or other entity; (vi) a transfer from a participant's account in a tax-qualified employee benefit plan to the participant or to such participant's account in a different tax-qualified employee benefit plan or to a tax-qualified individual retirement account for the benefit of such participant; or (vii) a transfer from a participant in a tax-qualified employee benefit plan, who received the Real Estate CVRs from such participant's account in such tax-qualified employee benefit plan, to such participant's account in a different tax-qualified employee benefit plan or to a tax-qualified individual retirement account for the benefit of such participant.

Person means any natural person, corporation, partnership, limited liability company, trust, estate, other firm or entity, or governmental body.

Real Estate CVR Payment Amount means an amount equal to the aggregate cash proceeds received by Buyer, or any of its subsidiaries, after the Effective Time and before the CVR Outside Date, from any purchaser (other than Buyer) of the Real Estate, less (i) any out-of-pocket costs and expenses reasonably incurred by the Buyer (taking into account any lease payments received by Buyer after the Effective Time), or any of its subsidiaries, in connection with the holding or the sale of the Real Estate (including the payment of the principal

Table of Contents

of and interest on any debt secured by the Real Estate at the Effective Time, commissions and amounts paid to the Consulting Committee in accordance with an arrangement entered into pursuant to Section 5.15(b) of the Merger Agreement, and incremental costs and expenses related to management of the risk of environmental liability pertaining to the Real Estate and/or assurance of potential buyers regarding the same, such as preparing an addendum to the environmental assessments which may include sampling, and revisions to Buyer's environmental insurance policy), and (ii) any amounts previously paid to the Holders pursuant to the Real Estate CVRs. For the avoidance of doubt, any amounts deducted from Net Cash Amount as accounts payable relating to the Real Estate shall not be considered costs and expenses incurred by Buyer hereunder.

Real Estate CVR Payment Date means the date or dates (if any and if ever) that a Real Estate CVR Payment Amount is payable by Buyer to the Holders, which date shall be established pursuant to Section 2.4.

Real Estate CVR Payment Event means the receipt by Buyer of cash proceeds from any purchaser (other than Buyer) of all, or any parcel, of the Real Estate.

Real Estate CVR Register has the meaning set forth in Section 2.3(b).

Real Estate CVR Registrar has the meaning set forth in Section 2.3(b).

Real Estate CVRs means the Real Estate Contingent Value Rights issued by Buyer pursuant to the Merger Agreement and this Agreement.

Real Estate Sale means the sale of all, or any parcel, of the Real Estate to a Person other than Buyer.

Rights Agent means the Rights Agent named in the first paragraph of this Agreement, until a successor Rights Agent shall have become such pursuant to the applicable provisions of this Agreement, and thereafter Rights Agent shall mean such successor Rights Agent.

Rights Agent Fee means the agreed-upon fee of the Rights Agent to act in such capacity pursuant to the terms of this Agreement.

Surviving Person has the meaning set forth in Section 6.1(a)(i).

ARTICLE II

CONTINGENT VALUE RIGHTS

Section 2.1. Issuance of Real Estate CVRs; Appointment of Rights Agent.

(a) The Real Estate CVRs shall be issued pursuant to the Merger Agreement at the time and in the manner set forth in the Merger Agreement.

(b) Buyer hereby appoints [] as the Rights Agent to act as rights agent for Buyer in accordance with the instructions hereinafter set forth in this Agreement, and the Rights Agent hereby accepts such appointment.

Section 2.2. Nontransferable.

The Real Estate CVRs shall not be sold, assigned, transferred, pledged, encumbered or in any other manner transferred or disposed of, in whole or in part, other than through a Permitted Transfer.

Section 2.3. No Certificate; Registration; Registration of Transfer; Change of Address.

(a) The Real Estate CVRs shall not be evidenced by a certificate or other instrument.

Table of Contents

(b) The Rights Agent shall keep a register (the **Real Estate CVR Register**) for the registration of Real Estate CVRs. The Rights Agent is hereby initially appointed **Real Estate CVR Registrar** for the purpose of registering Real Estate CVRs and transfers of Real Estate CVRs as herein provided. Upon any change to the identity of the Rights Agent, the successor Rights Agent shall automatically also become the successor Real Estate CVR Registrar.

(c) Subject to the restriction on transferability set forth in Section 2.2, every request made to transfer a Real Estate CVR must be in writing and accompanied by a written instrument or instruments of transfer and any other requested documentation in a form reasonably satisfactory to Buyer and the Real Estate CVR Registrar, duly executed by the registered Holder or Holders thereof or by the duly appointed legal representative thereof or by a duly authorized attorney, such signature to be guaranteed by a participant in a recognized Signature Guarantee Medallion Program. A request for a transfer of a Real Estate CVR shall be accompanied by such documentation establishing that the transfer is a Permitted Transfer as may be reasonably requested by Buyer and/or the Real Estate CVR Registrar (including opinions of counsel), if appropriate. Upon receipt of such written request and materials, the Real Estate CVR Registrar shall, subject to its reasonable determination that the transfer instrument is in proper form and the transfer otherwise complies with the other terms and conditions herein, register the transfer of the Real Estate CVRs in the Real Estate CVR Register. All duly transferred Real Estate CVRs registered in the Real Estate CVR Register shall be the valid obligations of Buyer, evidencing the same right and shall entitle the transferee to the same benefits and rights under this Agreement, as those previously held by the transferor. No transfer of a Real Estate CVR shall be valid until registered in the Real Estate CVR Register, and any transfer not duly registered in the Real Estate CVR Register will be void ab initio. Any transfer or assignment of the Real Estate CVRs shall be without charge (other than the cost of any transfer tax which shall be the responsibility of the transferor) to the Holder.

(d) A Holder may make a written request to the Real Estate CVR Registrar to change such Holder's address of record in the Real Estate CVR Register. The written request must be duly executed by the Holder. Upon receipt of such written notice, the Real Estate CVR Registrar shall promptly record the change of address in the Real Estate CVR Register.

Section 2.4. Payment Procedures.

(a) Promptly following the occurrence of any Real Estate CVR Payment Event, but in no event later than five Business Days after the occurrence of such Real Estate CVR Payment Event, Buyer shall deliver to the Rights Agent a certificate (the **Achievement Certificate**), certifying that the Holders are entitled to receive such Real Estate CVR Payment Amount. No transaction described in Section 6.1(a) hereof shall give the Holders the right to receive the Real Estate CVR Payment Amount.

(b) If a Real Estate Sale has not occurred on or before the CVR Outside Date, then, within five Business Days after the CVR Outside Date, Buyer shall deliver to the Rights Agent a certificate (the **Non-Achievement Certificate**), stating that a Real Estate Sale has not occurred on or before the CVR Outside Date and no Real Estate CVR Payment Event can occur.

(c) Except as otherwise requested by any Holder, the Rights Agent shall promptly (and in no event later than five Business Days after receipt thereof) send each Holder a copy of any Achievement Certificate or Non-Achievement Certificate at its registered address.

(d) Upon demand by any Holder or Holders of at least 20% in the aggregate of the outstanding Real Estate CVRs within 45 calendar days after distribution by the Rights Agent of a Non-Achievement Certificate (the **Objection Period**), the Rights Agent shall deliver a written notice to Buyer prepared by such Holder or Holders specifying that such Holder or Holders object to the determination of Buyer that a Real Estate Sale did not timely occur (a **Notice of Objection**) and stating the reason upon which such Holder or Holders have determined that

Table of Contents

a Real Estate Sale has occurred on or before the CVR Outside Date. Any dispute arising from a Notice of Objection shall be resolved in accordance with the procedure set forth in Section 7.12, which decision shall be binding on the parties hereto and every Holder (including Holders not participating therein).

(e) If a Notice of Objection has not been delivered to Buyer within the Objection Period, then the Holders shall have no right to receive the Real Estate CVR Payment Amount, and Buyer and the Rights Agent shall have no further obligations with respect to the Real Estate CVR Payment Amount.

(f) If Buyer delivers an Achievement Certificate to the Rights Agent or if the Real Estate CVR Payment Amount is determined to be payable pursuant to Section 2.4(d) above, Buyer shall establish a Real Estate CVR Payment Date that is within 15 calendar days of the date of the Achievement Certificate or the date of final determination pursuant to Section 2.4(d) above, as applicable. At least five Business Days before such Real Estate CVR Payment Date, Buyer shall cause the Real Estate CVR Payment Amount to be delivered to the Rights Agent, who will in turn, on the Real Estate CVR Payment Date, distribute the Real Estate CVR Payment Amount to the Holders (each Holder being entitled to receive its *pro rata* share of the Real Estate CVR Payment Amount based on the number of Real Estate CVRs held (as of the date of the Achievement Certificate or the date of final determination pursuant to Section 2.4(d) above, as applicable) by such Holder as reflected on the Real Estate CVR Register) (i) by check mailed to the address of each such respective Holder as reflected in the Real Estate CVR Register as of the close of business on the last Business Day before such Real Estate CVR Payment Date, or, (ii) with respect to any Holder that is due payment pursuant to this Agreement in excess of \$1,000,000 who has provided the Rights Agent with wire transfer instructions, by wire transfer of immediately available funds to such account.

(g) Buyer shall be entitled to deduct and withhold, or cause to be deducted or withheld, from each Real Estate CVR Payment Amount otherwise payable pursuant to this Agreement, such amounts as Buyer or the applicable subsidiary of Buyer is required to deduct and withhold with respect to the making of such payment under the Internal Revenue Code, or any provision of state, local or foreign tax law. To the extent that amounts are so withheld or paid over to or deposited with the relevant governmental entity, such withheld amounts shall be treated for all purposes of this Agreement as having been paid to the Holder in respect of which such deduction and withholding was made.

(h) Subject to prior execution and delivery by the Rights Agent of a reasonable and customary confidentiality/nonuse agreement, Buyer shall promptly furnish to the Rights Agent all information and documentation in connection with this Agreement and the Real Estate CVRs that the Rights Agent or any Holder or Holders of at least 5% in the aggregate of the outstanding Real Estate CVRs may reasonably request in connection with the determination of whether the Real Estate CVR Payment Event has occurred. Subject to prior execution and delivery by the applicable Holders of a reasonable and customary confidentiality/nonuse agreement, the Rights Agent shall forward any information and documentation it receives to the Holders who request such information.

Section 2.5. No Voting, Dividends or Interest; No Equity or Ownership Interest in Buyer.

(a) The Real Estate CVRs shall not have any voting or dividend rights, and interest shall not accrue on any amounts payable on the Real Estate CVRs to any Holder.

(b) The Real Estate CVRs shall not represent any equity or ownership interest in Buyer or in any constituent company to the Merger.

Section 2.6. Sole Discretion and Decision Making Authority; No Fiduciary Duty.

Notwithstanding anything else in this Agreement to the contrary, Buyer shall attempt to sell the Real Estate for the benefit of the Holders of the Real Estate CVRs, but shall have sole discretion and decision making

Table of Contents

authority, which shall be exercised in good faith and with commercial reasonableness, over when (if ever) to consummate the sale of all, or any parcel of the Real Estate, to any purchaser, and upon what terms and conditions. If Buyer, after engaging in the efforts describe above in this paragraph, is unable to sell the Real Estate, or any parcel thereof, at any price by the CVR Outside Date, then Buyer shall deliver to the Rights Agent a certificate of an executive officer of Buyer to that effect on the CVR Outside Date.

ARTICLE III

THE RIGHTS AGENT

Section 3.1. Certain Duties and Responsibilities.

(a) The Rights Agent shall not have any liability for any actions taken or not taken in connection with this Agreement, except to the extent of its willful misconduct, bad faith or gross negligence. No provision of this Agreement shall require the Rights Agent to expend or risk its own funds or otherwise incur any financial liability in the performance of any of its duties hereunder or in the exercise of any of its rights or powers.

(b) Any Holder or Holders of at least 20% in the aggregate of the outstanding Real Estate CVRs may direct the Rights Agent to act on behalf of the Holders in enforcing any of its or their rights hereunder, including, without limitation, the delivery of any Notice of Objection and negotiation or arbitration pursuant to Section 7.12. The Rights Agent shall be under no obligation to institute any action, suit or legal proceeding or to take any other action likely to involve material expense unless such Holder or Holders shall furnish the Rights Agent with reasonable security and indemnity for any costs and expenses which may be incurred. All rights of action under this Agreement may be enforced by the Rights Agent, and any action, suit or proceeding instituted by the Rights Agent shall be brought in its name as Rights Agent, and any recovery of judgment shall be for the ratable benefit of all the Holders, as their respective rights or interests may appear.

Section 3.2. Certain Rights of Rights Agent.

The Rights Agent undertakes to perform such duties and only such duties as are specifically set forth in this Agreement, and no implied covenants or obligations shall be read into this Agreement against the Rights Agent. In addition:

(a) the Rights Agent may rely and shall be protected in acting or refraining from acting upon any resolution, certificate, statement, instrument, opinion, report, notice, request, direction, consent, order or other paper or document believed by it to be genuine and to have been signed or presented by the proper party or parties;

(b) whenever the Rights Agent shall deem it desirable that a matter be proved or established before taking, suffering or omitting any action hereunder, the Rights Agent may, in the absence of willful misconduct, bad faith or gross negligence on its part, rely upon an Officer's Certificate;

(c) the Rights Agent may engage and consult with counsel of its selection and the written advice of such counsel or any opinion of counsel shall be full and complete authorization and protection in respect of any action taken, suffered or omitted by it hereunder in good faith and in reliance thereon;

(d) in the event of arbitration, the Rights Agent may engage and consult with tax experts, valuation firms and other experts and third parties that it, in its sole and absolute discretion, deems appropriate or necessary to enable it to discharge its duties hereunder;

(e) the permissive rights of the Rights Agent to do things enumerated in this Agreement shall not be construed as a duty;

(f) the Rights Agent shall not be required to give any note or surety in respect of the execution of such powers or otherwise in respect of the premises;

Table of Contents

(g) Buyer agrees to indemnify the Rights Agent for, and hold the Rights Agent harmless against, any loss, liability, claim, demands, suits or expense (in each case pertaining to the Rights Agent's own account only) arising out of or in connection with the Rights Agent's duties under this Agreement, including the costs and expenses of defending the Rights Agent against any claims, charges, demands, suits or loss, unless such loss shall have been determined by a court of competent jurisdiction to be a result of the Rights Agent's willful misconduct, bad faith or gross negligence, provided, however, that the Rights Agent's aggregate liability with respect to, arising from, or arising in connection with this Agreement, or from all services provided or omitted to be provided under this Agreement, whether in contract, in tort, or otherwise, is limited to, and shall not exceed, the amounts paid hereunder by Buyer to the Rights Agent as fees and charges, but not including reimbursable expenses; and

(h) Buyer agrees (i) to pay the fees and expenses of the Rights Agent in connection with this Agreement, as set forth on Schedule 1 hereto, and (ii) to reimburse the Rights Agent for all taxes and governmental charges, reasonable expenses and other charges of any kind and nature incurred by the Rights Agent in the execution of this Agreement (other than taxes measured by the Rights Agent's net income). The Rights Agent shall also be entitled to reimbursement from Buyer for all reasonable and necessary out-of-pocket expenses (including reasonable fees and expenses of the Rights Agent's counsel and agent) paid or incurred by it in connection with the administration by the Rights Agent of its duties hereunder. An invoice for the Rights Agent Fee will be rendered a reasonable time before, and paid on, the effective date of the applicable transaction. An invoice for any out-of-pocket expenses and per item fees realized will be rendered and payable within thirty (30) days after receipt by Buyer. Buyer agrees to pay to Rights Agent any amounts, including fees and expenses, payable in favor of the Rights Agent in connection with any dispute, resolution or arbitration arising under or in connection with the Agreement; provided, however, that in the event of a resolution in favor of Buyer, any amounts, including fees and expenses, payable by Buyer in favor of the Rights Agent or payable in favor of Buyer related to such dispute, resolution or arbitration shall be offset against the Real Estate CVR Payment Amount, if any, or any payment to be made thereafter under any of the other CVR Agreements.

Section 3.3. Resignation and Removal; Appointment of Successor.

(a) The Rights Agent may resign at any time by giving written notice thereof to Buyer specifying a date when such resignation shall take effect, which notice shall be sent at least 30 days before the date so specified.

(b) If the Rights Agent shall resign, be removed or become incapable of acting, Buyer, by way of a Board Resolution, shall promptly appoint a qualified successor Rights Agent who may (but need not) be a Holder but shall not be an officer of Buyer. The successor Rights Agent so appointed shall, forthwith upon its acceptance of such appointment in accordance with this Section 3.3(b), become the successor Rights Agent.

(c) Buyer shall give notice of each resignation and each removal of a Rights Agent and each appointment of a successor Rights Agent by mailing written notice of such event by first-class mail, postage prepaid, to the Holders as their names and addresses appear in the Real Estate CVR Register. Each notice shall include the name and address of the successor Rights Agent. If Buyer fails to send such notice within ten days after acceptance of appointment by a successor Rights Agent, the successor Rights Agent shall cause such notice to be mailed at the expense of Buyer.

Section 3.4. Acceptance of Appointment by Successor.

Every successor Rights Agent appointed hereunder shall execute, acknowledge and deliver to Buyer and to the retiring Rights Agent an instrument accepting such appointment and a counterpart of this Agreement, and thereupon such successor Rights Agent, without any further act, deed or conveyance, shall become vested with all the rights, powers, trusts and duties of the retiring Rights Agent; provided, that upon the request of Buyer or the successor Rights Agent, such retiring Rights Agent shall execute and deliver an instrument transferring to

Table of Contents

such successor Rights Agent all the rights, powers and trusts of the retiring Rights Agent and shall cooperate in the transfer of all relevant data, including the Real Estate CVR Register, to the successor Rights Agent.

ARTICLE IV

COVENANTS

Section 4.1. List of Holders.

Buyer shall furnish or cause to be furnished to the Rights Agent in such form as Buyer receives from its transfer agent (or other agent performing similar services for Buyer), the names, addresses and shareholdings of the Holders, within five Business Days after the effective time of the Merger.

Section 4.2. Payment of Real Estate CVR Payment Amount.

Buyer shall duly and promptly pay each Real Estate CVR Payment Amount, if any, in immediately available funds, to the Rights Agent to be distributed to the Holders in the manner provided for in Section 2.4 and in accordance with the terms of this Agreement.

Section 4.3. Assignments.

Buyer shall not, in whole or in part, assign any of its obligations under this Agreement other than in accordance with the terms of Section 6.1 hereof.

ARTICLE V

AMENDMENTS

Section 5.1. Amendments Without Consent of Holders.

(a) Without the consent of any Holders or the Rights Agent, Buyer, when authorized by a Board Resolution, at any time and from time to time, may enter into one or more amendments hereto, for any of the following purposes:

- (i) to evidence the succession of another Person to Buyer and the assumption by any such successor of the covenants of Buyer herein in a transaction contemplated by Section 6.1 hereof; or
 - (ii) to evidence the termination of the Real Estate CVR Registrar and the succession of another Person as a successor Real Estate CVR Registrar and the assumption by any successor of the obligations of the Real Estate CVR Registrar herein.
- (b) Without the consent of any Holders, Buyer, when authorized by a Board Resolution, and the Rights Agent, in the Rights Agent's sole and absolute discretion, at any time and from time to time, may enter into one or more amendments hereto, for any of the following purposes:
- (i) to evidence the succession of another Person as a successor Rights Agent and the assumption by any successor of the covenants and obligations of the Rights Agent herein;
 - (ii) to add to the covenants of Buyer such further covenants, restrictions, conditions or provisions as the Board of Directors and the Rights Agent shall consider to be for the protection of the Holders; provided, that in each case, such provisions shall not adversely affect the interests of the Holders;

(iii) to cure any ambiguity, to correct or supplement any provision herein that may be defective or inconsistent with any other provision herein, or to make any other provisions with respect to matters or questions arising under this Agreement; provided, that in each case, such provisions shall not adversely affect the interests of the Holders; or

Table of Contents

(iv) to add, eliminate or change any provision of this Agreement unless such addition, elimination or change is adverse to the interests of the Holders.

(c) Promptly after the execution by Buyer and the Rights Agent of any amendment pursuant to the provisions of this Section 5.1, Buyer shall mail a notice thereof by first-class mail to each of the Holders at their addresses as they shall appear on the Real Estate CVR Register, setting forth in general terms the substance of such amendment.

Section 5.2. Amendments With Consent of Holders.

(a) Subject to Section 5.1 (which amendments pursuant to Section 5.1 may be made without the consent of the Holders), with the consent of the Holders of not less than a majority of the outstanding Real Estate CVRs, whether evidenced in writing or taken at a meeting of the Holders, Buyer, when authorized by a Board Resolution, and the Rights Agent may enter into one or more amendments hereto for the purpose of adding, eliminating or changing any provisions of this Agreement, even if such addition, elimination or change is in any way adverse to the interests of the Holders.

(b) Promptly after the execution by Buyer and the Rights Agent of any amendment pursuant to the provisions of this Section 5.2, Buyer shall mail a notice thereof by first-class mail to the Holders at their addresses as they shall appear on the Real Estate CVR Register, setting forth in general terms the substance of such amendment.

Section 5.3. Execution of Amendments.

In executing any amendment permitted by this Article V, the Rights Agent shall be entitled to receive, and shall be fully protected in relying upon, an opinion of counsel stating that the execution of such amendment is authorized or permitted by this Agreement. The Rights Agent may, but is not obligated to, enter into any such amendment that affects the Rights Agent's own rights, privileges, covenants or duties under this Agreement or otherwise.

Section 5.4. Effect of Amendments.

Upon the execution of any amendment under this Article V, this Agreement shall be modified in accordance therewith, such amendment shall form a part of this Agreement for all purposes and every Holder shall be bound thereby.

ARTICLE VI

CONSOLIDATION, MERGER, SALE OR CONVEYANCE

Section 6.1. Buyer May Consolidate, Etc.

(a) Buyer shall not consolidate with or merge into any other Person or convey, transfer or lease its properties and assets substantially as an entirety to any Person, unless:

(i) the Person formed by such consolidation or into which Buyer is merged or the Person that acquires by conveyance or transfer, or that leases, the properties and assets of Buyer substantially as an entirety (the *Surviving Person*) shall expressly assume payment (if and to the extent required hereunder) of amounts on all the Real Estate CVRs and the performance of every duty and covenant of this Agreement on the part of Buyer to be performed or observed; and

(ii) Buyer has delivered to the Rights Agent an Officer's Certificate, stating that such consolidation, merger, conveyance, transfer or lease complies with this Article VI and that all conditions precedent herein provided for relating to such transaction have been complied with.

Table of Contents

(b) In the event Buyer conveys, transfers or leases its properties and assets substantially as an entirety in accordance with the terms and conditions of this Section 6.1, Buyer and the Surviving Person shall be jointly and severally liable for the payment of the Real Estate CVR Payment Amount and the performance of every duty and covenant of this Agreement on the part of the Buyer to be performed or observed.

Section 6.2. Successor Substituted.

Upon any consolidation of or merger by Buyer with or into any other Person, or any conveyance, transfer or lease of the properties and assets substantially as an entirety to any Person in accordance with Section 6.1, the Surviving Person shall succeed to, and be substituted for, and may exercise every right and power of, Buyer under this Agreement with the same effect as if the Surviving Person had been named as Buyer herein, and thereafter the predecessor Person shall be relieved of all obligations and covenants under this Agreement and the Real Estate CVRs.

ARTICLE VII

OTHER PROVISIONS OF GENERAL APPLICATION

Section 7.1. Notices to Rights Agent and Buyer.

Any request, demand, authorization, direction, notice, consent, waiver or other document provided or permitted by this Agreement shall be sufficient for every purpose hereunder if in writing and sent by facsimile transmission, delivered personally, or by certified or registered mail (return receipt requested and first-class postage prepaid) or sent by a nationally recognized overnight courier (with proof of service), addressed as follows, and shall be deemed to have been given upon receipt:

(a) if to the Rights Agent, addressed to it at [], facsimile at [], or at any other address previously furnished in writing to the Holders and Buyer by the Rights Agent in accordance with this Section 7.1; or

(b) if to Buyer, addressed to it at 10275 Science Center Drive, San Diego, California 92121, facsimile at (858) 550-7272, or at any other address previously furnished in writing to the Rights Agent and the Holders by Buyer in accordance with this Section 7.1.

Section 7.2. Notice to Holders.

Where this Agreement provides for notice to Holders, such notice shall be sufficiently given (unless otherwise herein expressly provided) if in writing and mailed, first-class postage prepaid, to each Holder affected by such event, at his, her or its address as it appears in the Real Estate CVR Register, not later than the latest date, and not earlier than the earliest date, prescribed for the giving of such notice. In any case where notice to Holders is given by mail, neither the failure to mail such notice, nor any defect in any notice so mailed, to any particular Holder shall affect the sufficiency of such notice with respect to other Holders.

Section 7.3. Effect of Headings.

The Article and Section headings herein are for convenience only and shall not affect the construction hereof.

Section 7.4. Successors and Assigns.

All covenants and agreements in this Agreement by Buyer shall bind its successors and assigns, whether so expressed or not.

Table of Contents

Section 7.5. Benefits of Agreement.

Nothing in this Agreement, express or implied, shall give to any Person (other than the parties hereto, the Holders and their permitted successors and assigns hereunder) any benefit or any legal or equitable right, remedy or claim under this Agreement or under any covenant or provision herein contained, all such covenants and provisions being for the sole benefit of the parties hereto, the Holders and their permitted successors and assigns. The Holders shall have no rights or remedies hereunder except as expressly set forth herein.

Section 7.6. Governing Law.

This Agreement and the Real Estate CVRs shall be governed by and construed in accordance with the laws of the State of Delaware without regards to its rules of conflicts of laws.

Section 7.7. Legal Holidays.

In the event that a Real Estate CVR Payment Date shall not be a Business Day, then, notwithstanding any provision of this Agreement to the contrary, any payment required to be made in respect of the Real Estate CVRs on such date need not be made on such date, but may be made on the next succeeding Business Day with the same force and effect as if made on the Real Estate CVR Payment Date.

Section 7.8. Severability Clause.

In case any one or more of the provisions contained in this Agreement shall for any reason be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provisions of this Agreement, but this Agreement shall be construed as if such invalid or illegal or unenforceable provision had never been contained herein. Upon such determination that any term or other provision is invalid, illegal or unenforceable, the court or other tribunal making such determination is authorized and instructed to modify this Agreement so as to effect the original intent of the parties as closely as possible so that the transactions and agreements contemplated herein are consummated as originally contemplated to the fullest extent possible.

Section 7.9. Counterparts.

This Agreement may be signed in any number of counterparts (which may be effectively delivered by facsimile or other electronic means), each of which shall be deemed to constitute but one and the same instrument.

Section 7.10. Termination.

This Agreement shall terminate and be of no further force or effect, and the parties hereto shall have no liability hereunder, upon the earliest to occur of (a) the payment of the last possible Real Estate CVR Payment Amount, (b) in the event that a Notice of Objection is not delivered within the Objection Period, the expiration of the Objection Period or (c) in the event of the delivery of a Notice of Objection, either (i) the final determination in accordance with this Agreement that a Real Estate Sale was not closed on or before the CVR Outside Date or (ii) the fulfillment of the last possible payment or other obligation required pursuant to a final determination made in accordance with this Agreement.

Section 7.11. Entire Agreement.

This Agreement and the Merger Agreement represent the entire understanding of the parties hereto with reference to the Real Estate CVRs and this Agreement supersedes any and all other oral or written agreements made with respect to the Real Estate CVRs, except for the Merger Agreement. If and to the extent that any provision of this Agreement is inconsistent or conflicts with the Merger Agreement, this Agreement shall govern and be controlling.

Table of Contents

Section 7.12. Negotiation; Arbitration.

(a) Before any arbitration pursuant to Section 7.12(b), Buyer, the Rights Agent and, if available, any Holder or Holders of at least 20% in the aggregate of the outstanding Real Estate CVRs shall negotiate in good faith for a period of 30 days to resolve any controversy or claim arising out of or relating to this Agreement or the breach thereof.

(b) After expiration of the 30-day period contemplated by Section 7.12(a), such controversy or claim, including any claims for breach of this Agreement, shall be settled by arbitration administered by the American Arbitration Association under its Commercial Arbitration Rules, and judgment on the award rendered by the arbitrators may be entered in any court having jurisdiction thereof. Buyer, the Rights Agent and/or any Holder or Holders of at least 20% in the aggregate of the outstanding Real Estate CVRs may initiate an arbitration for any matter relating to this Agreement. However, in the event of a dispute arising from the delivery of a Notice of Objection, the sole matter to be settled by arbitration shall be whether a Real Estate Sale has been closed on or before the CVR Outside Date. The number of arbitrators shall be three. Within 15 days after the commencement of arbitration, each party shall select one person to act as arbitrator, and the two selected shall select a third arbitrator within 15 days of their appointment. If the arbitrators selected by the parties are unable or fail to agree upon the third arbitrator, the third arbitrator shall be selected by the American Arbitration Association. The place of the arbitration shall be San Diego, California. The arbitrators shall be lawyers or retired judges with experience in the life sciences industry and with mergers and acquisitions. Except as may be required by law, neither a party nor an arbitrator may disclose the existence, content or results of any arbitration hereunder without the prior written consent of both parties (provided that the Rights Agent may disclose to the Holders any such information without the consent of Buyer). Any award payable in favor of the Holders or the Rights Agent as a result of arbitration shall be distributed to the Holders on a pro rata basis, based on the number of Real Estate CVRs held by each Holder. Buyer shall pay all fees and expenses of the arbitration forum, including the costs and expenses billed by the arbitrators in connection with the performance of their duties described herein; provided, however, that if the arbitrator rules in favor of Buyer, the Arbitrator's fees and expenses shall be offset against the current or any future Real Estate CVR Payment Amount, if any, or any payment to be made thereafter under any of the other CVR Agreements. Each party shall be responsible for its own attorney fees, expenses and costs of investigation.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

Table of Contents

IN WITNESS WHEREOF, each of the parties has caused this Agreement to be executed on its behalf by its duly authorized officers as of the day and year first above written.

LIGAND PHARMACEUTICALS INCORPORATED

By:
Name:
Title:

NEUROGEN CORPORATION

By:
Name:
Title:

[RIGHTS AGENT]

By:
Name:
Title:

E-13

Table of Contents

ANNEX F

Section 262 of the General Corporation Law of the State of Delaware

§ 262. Appraisal rights.

(a) Any stockholder of a corporation of this State who holds shares of stock on the date of the making of a demand pursuant to subsection (d) of this section with respect to such shares, who continuously holds such shares through the effective date of the merger or consolidation, who has otherwise complied with subsection (d) of this section and who has neither voted in favor of the merger or consolidation nor consented thereto in writing pursuant to § 228 of this title shall be entitled to an appraisal by the Court of Chancery of the fair value of the stockholder's shares of stock under the circumstances described in subsections (b) and (c) of this section. As used in this section, the word "stockholder" means a holder of record of stock in a stock corporation and also a member of record of a nonstock corporation; the words "stock" and "share" mean and include what is ordinarily meant by those words and also membership or membership interest of a member of a nonstock corporation; and the words "depository receipt" mean a receipt or other instrument issued by a depository representing an interest in one or more shares, or fractions thereof, solely of stock of a corporation, which stock is deposited with the depository.

(b) Appraisal rights shall be available for the shares of any class or series of stock of a constituent corporation in a merger or consolidation to be effected pursuant to § 251 (other than a merger effected pursuant to § 251(g) of this title), § 252, § 254, § 257, § 258, § 263 or § 264 of this title:

(1) Provided, however, that no appraisal rights under this section shall be available for the shares of any class or series of stock, which stock, or depository receipts in respect thereof, at the record date fixed to determine the stockholders entitled to receive notice of the meeting of stockholders to act upon the agreement of merger or consolidation, were either (i) listed on a national securities exchange or (ii) held of record by more than 2,000 holders; and further provided that no appraisal rights shall be available for any shares of stock of the constituent corporation surviving a merger if the merger did not require for its approval the vote of the stockholders of the surviving corporation as provided in § 251(f) of this title.

(2) Notwithstanding paragraph (1) of this subsection, appraisal rights under this section shall be available for the shares of any class or series of stock of a constituent corporation if the holders thereof are required by the terms of an agreement of merger or consolidation pursuant to §§ 251, 252, 254, 257, 258, 263 and 264 of this title to accept for such stock anything except:

- a. Shares of stock of the corporation surviving or resulting from such merger or consolidation, or depository receipts in respect thereof;
- b. Shares of stock of any other corporation, or depository receipts in respect thereof, which shares of stock (or depository receipts in respect thereof) or depository receipts at the effective date of the merger or consolidation will be either listed on a national securities exchange or held of record by more than 2,000 holders;
- c. Cash in lieu of fractional shares or fractional depository receipts described in the foregoing subparagraphs a. and b. of this paragraph; or
- d. Any combination of the shares of stock, depository receipts and cash in lieu of fractional shares or fractional depository receipts described in the foregoing subparagraphs a., b. and c. of this paragraph.

(3) In the event all of the stock of a subsidiary Delaware corporation party to a merger effected under § 253 of this title is not owned by the parent corporation immediately prior to the merger, appraisal rights shall be available for the shares of the subsidiary Delaware corporation.

(c) Any corporation may provide in its certificate of incorporation that appraisal rights under this section shall be available for the shares of any class or series of its stock as a result of an amendment to its certificate of

Table of Contents

incorporation, any merger or consolidation in which the corporation is a constituent corporation or the sale of all or substantially all of the assets of the corporation. If the certificate of incorporation contains such a provision, the procedures of this section, including those set forth in subsections (d) and (e) of this section, shall apply as nearly as is practicable.

(d) Appraisal rights shall be perfected as follows:

(1) If a proposed merger or consolidation for which appraisal rights are provided under this section is to be submitted for approval at a meeting of stockholders, the corporation, not less than 20 days prior to the meeting, shall notify each of its stockholders who was such on the record date for notice of such meeting with respect to shares for which appraisal rights are available pursuant to subsection (b) or (c) hereof that appraisal rights are available for any or all of the shares of the constituent corporations, and shall include in such notice a copy of this section. Each stockholder electing to demand the appraisal of such stockholder's shares shall deliver to the corporation, before the taking of the vote on the merger or consolidation, a written demand for appraisal of such stockholder's shares. Such demand will be sufficient if it reasonably informs the corporation of the identity of the stockholder and that the stockholder intends thereby to demand the appraisal of such stockholder's shares. A proxy or vote against the merger or consolidation shall not constitute such a demand. A stockholder electing to take such action must do so by a separate written demand as herein provided. Within 10 days after the effective date of such merger or consolidation, the surviving or resulting corporation shall notify each stockholder of each constituent corporation who has complied with this subsection and has not voted in favor of or consented to the merger or consolidation of the date that the merger or consolidation has become effective; or

(2) If the merger or consolidation was approved pursuant to § 228 or § 253 of this title, then either a constituent corporation before the effective date of the merger or consolidation or the surviving or resulting corporation within 10 days thereafter shall notify each of the holders of any class or series of stock of such constituent corporation who are entitled to appraisal rights of the approval of the merger or consolidation and that appraisal rights are available for any or all shares of such class or series of stock of such constituent corporation, and shall include in such notice a copy of this section. Such notice may, and, if given on or after the effective date of the merger or consolidation, shall, also notify such stockholders of the effective date of the merger or consolidation. Any stockholder entitled to appraisal rights may, within 20 days after the date of mailing of such notice, demand in writing from the surviving or resulting corporation the appraisal of such holder's shares. Such demand will be sufficient if it reasonably informs the corporation of the identity of the stockholder and that the stockholder intends thereby to demand the appraisal of such holder's shares. If such notice did not notify stockholders of the effective date of the merger or consolidation, either (i) each such constituent corporation shall send a second notice before the effective date of the merger or consolidation notifying each of the holders of any class or series of stock of such constituent corporation that are entitled to appraisal rights of the effective date of the merger or consolidation or (ii) the surviving or resulting corporation shall send such a second notice to all such holders on or within 10 days after such effective date; provided, however, that if such second notice is sent more than 20 days following the sending of the first notice, such second notice need only be sent to each stockholder who is entitled to appraisal rights and who has demanded appraisal of such holder's shares in accordance with this subsection. An affidavit of the secretary or assistant secretary or of the transfer agent of the corporation that is required to give either notice that such notice has been given shall, in the absence of fraud, be prima facie evidence of the facts stated therein. For purposes of determining the stockholders entitled to receive either notice, each constituent corporation may fix, in advance, a record date that shall be not more than 10 days prior to the date the notice is given, provided, that if the notice is given on or after the effective date of the merger or consolidation, the record date shall be such effective date. If no record date is fixed and the notice is given prior to the effective date, the record date shall be the close of business on the day next preceding the day on which the notice is given.

(e) Within 120 days after the effective date of the merger or consolidation, the surviving or resulting corporation or any stockholder who has complied with subsections (a) and (d) of this section hereof and who is

Table of Contents

otherwise entitled to appraisal rights, may commence an appraisal proceeding by filing a petition in the Court of Chancery demanding a determination of the value of the stock of all such stockholders. Notwithstanding the foregoing, at any time within 60 days after the effective date of the merger or consolidation, any stockholder who has not commenced an appraisal proceeding or joined that proceeding as a named party shall have the right to withdraw such stockholder's demand for appraisal and to accept the terms offered upon the merger or consolidation. Within 120 days after the effective date of the merger or consolidation, any stockholder who has complied with the requirements of subsections (a) and (d) of this section hereof, upon written request, shall be entitled to receive from the corporation surviving the merger or resulting from the consolidation a statement setting forth the aggregate number of shares not voted in favor of the merger or consolidation and with respect to which demands for appraisal have been received and the aggregate number of holders of such shares. Such written statement shall be mailed to the stockholder within 10 days after such stockholder's written request for such a statement is received by the surviving or resulting corporation or within 10 days after expiration of the period for delivery of demands for appraisal under subsection (d) of this section hereof, whichever is later. Notwithstanding subsection (a) of this section, a person who is the beneficial owner of shares of such stock held either in a voting trust or by a nominee on behalf of such person may, in such person's own name, file a petition or request from the corporation the statement described in this subsection.

(f) Upon the filing of any such petition by a stockholder, service of a copy thereof shall be made upon the surviving or resulting corporation, which shall within 20 days after such service file in the office of the Register in Chancery in which the petition was filed a duly verified list containing the names and addresses of all stockholders who have demanded payment for their shares and with whom agreements as to the value of their shares have not been reached by the surviving or resulting corporation. If the petition shall be filed by the surviving or resulting corporation, the petition shall be accompanied by such a duly verified list. The Register in Chancery, if so ordered by the Court, shall give notice of the time and place fixed for the hearing of such petition by registered or certified mail to the surviving or resulting corporation and to the stockholders shown on the list at the addresses therein stated. Such notice shall also be given by 1 or more publications at least 1 week before the day of the hearing, in a newspaper of general circulation published in the City of Wilmington, Delaware or such publication as the Court deems advisable. The forms of the notices by mail and by publication shall be approved by the Court, and the costs thereof shall be borne by the surviving or resulting corporation.

(g) At the hearing on such petition, the Court shall determine the stockholders who have complied with this section and who have become entitled to appraisal rights. The Court may require the stockholders who have demanded an appraisal for their shares and who hold stock represented by certificates to submit their certificates of stock to the Register in Chancery for notation thereon of the pendency of the appraisal proceedings; and if any stockholder fails to comply with such direction, the Court may dismiss the proceedings as to such stockholder.

(h) After the Court determines the stockholders entitled to an appraisal, the appraisal proceeding shall be conducted in accordance with the rules of the Court of Chancery, including any rules specifically governing appraisal proceedings. Through such proceeding the Court shall determine the fair value of the shares exclusive of any element of value arising from the accomplishment or expectation of the merger or consolidation, together with interest, if any, to be paid upon the amount determined to be the fair value. In determining such fair value, the Court shall take into account all relevant factors. Unless the Court in its discretion determines otherwise for good cause shown, interest from the effective date of the merger through the date of payment of the judgment shall be compounded quarterly and shall accrue at 5% over the Federal Reserve discount rate (including any surcharge) as established from time to time during the period between the effective date of the merger and the date of payment of the judgment. Upon application by the surviving or resulting corporation or by any stockholder entitled to participate in the appraisal proceeding, the Court may, in its discretion, proceed to trial upon the appraisal prior to the final determination of the stockholders entitled to an appraisal. Any stockholder whose name appears on the list filed by the surviving or resulting corporation pursuant to subsection (f) of this section and who has submitted such stockholder's certificates of stock to the Register in Chancery, if such is required, may participate fully in all proceedings until it is finally determined that such stockholder is not entitled to appraisal rights under this section.

Table of Contents

- (i) The Court shall direct the payment of the fair value of the shares, together with interest, if any, by the surviving or resulting corporation to the stockholders entitled thereto. Payment shall be so made to each such stockholder, in the case of holders of uncertificated stock forthwith, and the case of holders of shares represented by certificates upon the surrender to the corporation of the certificates representing such stock. The Court's decree may be enforced as other decrees in the Court of Chancery may be enforced, whether such surviving or resulting corporation be a corporation of this State or of any state.
- (j) The costs of the proceeding may be determined by the Court and taxed upon the parties as the Court deems equitable in the circumstances. Upon application of a stockholder, the Court may order all or a portion of the expenses incurred by any stockholder in connection with the appraisal proceeding, including, without limitation, reasonable attorney's fees and the fees and expenses of experts, to be charged pro rata against the value of all the shares entitled to an appraisal.
- (k) From and after the effective date of the merger or consolidation, no stockholder who has demanded appraisal rights as provided in subsection (d) of this section shall be entitled to vote such stock for any purpose or to receive payment of dividends or other distributions on the stock (except dividends or other distributions payable to stockholders of record at a date which is prior to the effective date of the merger or consolidation); provided, however, that if no petition for an appraisal shall be filed within the time provided in subsection (e) of this section, or if such stockholder shall deliver to the surviving or resulting corporation a written withdrawal of such stockholder's demand for an appraisal and an acceptance of the merger or consolidation, either within 60 days after the effective date of the merger or consolidation as provided in subsection (e) of this section or thereafter with the written approval of the corporation, then the right of such stockholder to an appraisal shall cease. Notwithstanding the foregoing, no appraisal proceeding in the Court of Chancery shall be dismissed as to any stockholder without the approval of the Court, and such approval may be conditioned upon such terms as the Court deems just; provided, however that this provision shall not affect the right of any stockholder who has not commenced an appraisal proceeding or joined that proceeding as a named party to withdraw such stockholder's demand for appraisal and to accept the terms offered upon the merger or consolidation within 60 days after the effective date of the merger or consolidation, as set forth in subsection (e) of this section.
- (l) The shares of the surviving or resulting corporation to which the shares of such objecting stockholders would have been converted had they assented to the merger or consolidation shall have the status of authorized and unissued shares of the surviving or resulting corporation.

Table of Contents

Annex G

August 20, 2009

Board of Directors

Neurogen Corporation

35 Northeast Industrial Road

Branford, CT 06405

Members of the Board of Directors:

We understand that Neurogen Corporation (the Company) proposes to enter into an Agreement and Plan of Merger, expected to be dated as of August 21, 2009 (the Merger Agreement), among Ligand (the Parent), a wholly owned subsidiary of the Parent (Merger Sub), and the Company, pursuant to which Merger Sub would be merged with and into the Company (the Merger), and the separate existence of Merger Sub would cease. Pursuant to the Merger Agreement, each issued and outstanding Company Share (other than Dissenting Shares), except as provided in Sections 2.06(a)(i) and (ii) of the Merger Agreement, would be converted, into the right to receive (A) a portion of a validly issued, fully paid and non-assessable share of common stock, par value \$0.0001 per share, of the Parent equal to the Exchange Ratio, including the associated rights of Parent under the Parent Rights Agreement (the Parent Common Stock); provided that the maximum number of shares of Parent Common Stock that the Parent shall be required to issue shall not exceed the Maximum Amount, (B) in the event the Aplindore Program is sold by the Company prior to the Effective Time, an amount in cash and/or a number of shares of stock, as the case may be, equal to the Aplindore Program Consideration divided by the total number of Outstanding Company Shares (the Aplindore Program Payment), (C) in the event the Real Estate is sold by the Company prior to the Effective Time, an amount in cash equal to the Real Estate Consideration divided by the total number of Outstanding Company Shares (the Real Estate Payment), (D) one Aplindore CVR (unless the Aplindore Program is sold by the Company prior to the Effective Time), (E) one H3 CVR, (F) one Merck CVR, and (G) one Real Estate CVR (unless the Real Estate is sold by the Company prior to the Effective Time) (collectively, the Merger Consideration).

You have requested our opinion as to the fairness, from a financial point of view, to the holders of the Shares (other than the Parent, Merger Sub, and their affiliates) of the Merger Consideration to be received by such holders pursuant to the Merger.

In the course of performing our review and analyses for rendering the opinion set forth below, we have:

- (i) reviewed a draft copy of the Merger Agreement dated August 19, 2009 (the Draft Merger Agreement);
- (ii) reviewed annual reports to stockholders and Annual Reports on Form 10-K of each of the Company and the Parent for the year ended December 31, 2008;
- (iii) reviewed the Quarterly Reports on Form 10-Q of each of the Company and the Parent, respectively, for the quarter ended June 30, 2009;
- (iv) reviewed the Current Reports on Form 8-K of each of the Company and the Parent for the period from January 1, 2009 through August 20, 2009;
- (v) reviewed certain financial projections concerning the Company prepared by the Company's management;
- (vi) reviewed certain public research reports concerning the Company prepared by certain research analysts (including the financial projections contained therein) for the years ending December 31, 2007 and 2008 and reviewed and discussed such reports (and financial projections) with management of the Company;
- (vii) reviewed certain financial projections concerning the Parent prepared by the Parent's management;

Table of Contents

- (viii) reviewed certain public research reports concerning the Parent prepared by certain research analysts (including financial projections contained therein) and reviewed and discussed such reports (and financial projections) with management of the Parent;
- (ix) held discussions with members of management of each of the Company and the Parent regarding the businesses, operations, financial condition and prospects of their respective companies;
- (x) reviewed the historical reported prices and trading multiples of shares of Company Common Stock and Parent Common Stock;
- (xi) reviewed publicly available financial data, stock market performance data and trading multiples of certain companies the securities of which are publicly traded, as we deemed appropriate;
- (xii) reviewed the financial terms, to the extent publicly available, of certain recent business combinations that we considered to be comparable to the Merger;
- (xiii) reviewed the pro forma consolidated financial results, financial condition and capitalization of the Parent after giving effect to the Merger;
- (xiv) performed such other financial studies, analyses and investigations as we deemed appropriate; and
- (xv) held discussions with members of Neon management and Neon's Real Estate broker regarding the Real Estate sale process and consideration.

In arriving at the opinion set forth below, we have assumed and relied upon, without independent verification, the accuracy and completeness of all of the financial, legal, regulatory, tax, accounting and other information provided to, discussed with or reviewed by us. Our opinion does not address any legal, regulatory, tax or accounting matters. We have not conducted any independent verification of any financial projections of the Company, the Parent or the combined companies. With respect to the financial projections prepared by management of the Company, we have assumed, without independent verification that they have been reasonably prepared on bases reflecting the best currently available estimates and judgments of the future financial performance of the Company. With respect to the financial projections prepared by management of the Parent, we have assumed, without independent verification that they have been reasonably prepared on bases reflecting the best currently available estimates and judgments of the future financial performance of the Parent. For purposes of our analysis of the Parent and after discussions with the Parent's management, with your consent, we have also used and relied on publicly available projections of certain equity research analysts who report on the Parent. We have assumed, without independent verification, with your consent and based upon discussions with the Parent's management, that such projections represent reasonable estimates and judgments as to the future financial performance of the Parent.

We have made no analysis of, and express no opinion as to, the adequacy of the reserves of the Company or the Parent and have relied upon information supplied to us by the Company and the Parent as to such adequacy. In addition, we have not made any independent evaluations or appraisals of the assets or liabilities (including any contingent derivatives or off-balance-sheet assets or liabilities) of the Company or the Parent or any of their respective subsidiaries, and we have not been furnished with any such evaluations or appraisals.

We have assumed, in all respects material to our analysis, that the representations and warranties of each party contained in the Merger Agreement are true and correct, that each party will perform all of the covenants and agreements required to be performed by it under the Merger Agreement and that all conditions to the consummation of the Merger will be satisfied without waiver thereof. We have assumed that the final form of the Merger Agreement will be substantially similar to the Draft Merger Agreement. We have also assumed that any governmental, regulatory and other consents and approvals contemplated by the Merger Agreement will be obtained and that, in the course of obtaining any of those consents, no restrictions will be imposed or waivers made that would have an adverse effect on the contemplated benefits of the Merger.

Table of Contents

Our opinion set forth below is necessarily based on economic, market, financial and other conditions as they exist, and on the information made available to us, as of the date of this letter. It should be understood that, although subsequent developments may affect the conclusion reached in such opinion, we do not have any obligation to update, revise or reaffirm this opinion, unless otherwise mutually agreed to by the Company and us. Our opinion does not address your underlying business decision to proceed with the Merger, the relative merits of the Merger compared to other alternatives available to the Company, or whether such alternatives exist. We express no opinion as to the prices or ranges of prices at which shares of Company Common Stock or shares of Parent Common Stock will trade at any time following the announcement or consummation of the Merger. We have not been requested to opine as to, and our opinion does not in any manner address, the fairness of the amount or nature of compensation to any of the Company's officers, directors or employees, or any class of such persons, relative to the compensation to the public stockholders of the Company.

It is understood that this letter is for your information in connection with your consideration of the Merger and may not be used for any other purpose without our prior written consent, except that a copy of this opinion may be included in its entirety in any filing the Company is required to make with the U.S. Securities and Exchange Commission in connection with the Merger if such inclusion is required by applicable law. This opinion does not constitute a recommendation to any stockholder as to how such stockholder should vote with respect to the Merger or to take any other action in connection with the Merger or otherwise.

As part of our investment banking services, we are regularly engaged in the valuation of businesses and securities in connection with mergers and acquisitions, and for other purposes. We have acted as the Company's financial advisor in connection with the Merger Agreement and will receive a fee for our services, a significant portion of which is contingent upon consummation of the Merger. In addition, the Company has agreed to reimburse our expenses and indemnify us for certain liabilities that may arise out of our engagement. We will not, however, receive an additional fee for rendering this opinion. In the two years prior to the date hereof, we have provided investment banking and financial advisory services to the Company and have received fees in connection with such services. We may also seek to provide such services to the Company and the Parent in the future and expect to receive fees for the rendering of these services.

This opinion was reviewed and approved by a fairness committee of MTS Securities, LLC.

Based upon and subject to the foregoing, it is our opinion as of the date hereof that the Merger Consideration to be received by the holders of Company Shares (other than the Parent, Merger Sub, and their affiliates) pursuant to the Merger Agreement is fair from a financial point of view to such holders.

Very truly yours,

MTS SECURITIES, LLC

/s/ MTS SECURITIES, LLC

Table of Contents

PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

ITEM 20. INDEMNIFICATION OF DIRECTORS AND OFFICERS

As permitted by Section 102 of the Delaware General Corporation Law, Ligand has adopted provisions in its certificate of incorporation and Bylaws that limit or eliminate the personal liability of its directors for a breach of their fiduciary duty of care as a director. The duty of care generally requires that, when acting on behalf of the corporation, directors exercise an informed business judgment based on all material information reasonably available to them. Consequently, a director will not be personally liable to Ligand or its stockholders for monetary damages or breach of fiduciary duty as a director, except for liability for: any breach of the director's duty of loyalty to Ligand or its stockholders; any act or omission not in good faith or that involves intentional misconduct or a knowing violation of law; any act related to unlawful stock repurchases, redemptions or other distributions or payment of dividends; or any transaction from which the director derived an improper personal benefit.

These limitations of liability do not affect the availability of equitable remedies such as injunctive relief or rescission. As permitted by Section 145 of the Delaware General Corporation Law, the certificates of incorporation and Bylaws to be in effect upon the closing of this offering provide that: Ligand may indemnify its directors, officers, employees and agents to the fullest extent permitted by the Delaware General Corporation Law, subject to limited exceptions; Ligand may advance expenses to its directors and officers in connection with a legal proceeding to the fullest extent permitted by the Delaware General Corporation Law, subject to limited exceptions; and the rights provided in the certificates of incorporation and Bylaws are not exclusive.

In addition, Ligand has entered into separate indemnification agreements with its directors and officers which may be broader than the specific indemnification provisions contained in the Delaware General Corporation Law. These indemnification agreements may require Ligand, among other things, to indemnify its officers and directors against liabilities that may arise by reason of their status or service as directors or officers, other than liabilities arising from willful misconduct. These indemnification agreements also may require Ligand to advance any expenses incurred by the directors or officers as a result of any proceeding against them as to which they could be indemnified. In addition, Ligand has purchased a policy of directors and officers liability insurance that insures its directors and officers against the cost of defense, settlement or payment of a judgment in some circumstances. These indemnification provisions and the indemnification agreements may be sufficiently broad to permit indemnification of Ligand's officers and directors for liabilities, including reimbursement of expenses incurred, arising under the Securities Act.

In addition, for a period of six years following the effective time of the merger, Ligand will cause the surviving entity and its subsidiaries to fulfill and honor the obligations of Neurogen and its subsidiaries pursuant to each indemnification agreement in effect on the date of the merger agreement between Neurogen or any of its subsidiaries and each present or former director and officer of Neurogen and any indemnification provision and any exculpation provision in favor of each present or former director and officer of Neurogen that is set forth in the certificate of incorporation or bylaws of Neurogen and the equivalent organizational documents of any Neurogen subsidiary in effect as of the date of the merger agreement. The certificate of incorporation and bylaws of the surviving entity shall contain the provisions with respect to indemnification and exculpation from liability set forth in Neurogen's certificate of incorporation and bylaws on the date of the merger agreement, and, from and after the effective time of the merger, such provisions shall not be amended, repealed or otherwise modified in any manner that could adversely affect the rights thereunder of any individual who is or was an officer or director of Neurogen at any time on or before the effective time of the merger.

Ligand will indemnify and hold harmless the present and former directors and officers of Neurogen against all liabilities arising out of the actions or omissions of such person's service, including the advancement of certain expenses, for a period of six years following the effective time of the merger or for claims for which a written notice asserting such claim for indemnification before the sixth anniversary of the effective time until such time as such claim is fully and finally resolved.

Table of Contents

In addition, for a period of six years following the effective time of the merger, Ligand will cause the surviving entity to maintain in effect the current level and similar scope of directors' and officers' liability insurance coverage, provided that the surviving entity shall not be obligated to expend in any one year an amount in excess of 100% of the annual premium currently payable by Neurogen.

ITEM 21. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a) Exhibits

Exhibit Number	Exhibit Description
2.1	Agreement and Plan of Merger, dated as of August 23, 2009, by and among Ligand Pharmaceuticals Incorporated, Neurogen Corporation and Neon Signal, LLC, as amended by Amendment to Agreement and Plan of Merger dated as of September 18, 2009, and Amendment No. 2 to Agreement and Plan of Merger, dated as of November 2, 2009 (included as <i>Annex A</i> to the proxy statement/prospectus).
2.2	Form of Aplindore Contingent Value Rights Agreement (included as <i>Annex B</i> to the proxy statement/prospectus).
2.3	Form of H3 Contingent Value Rights Agreement (included as <i>Annex C</i> to the proxy statement/prospectus).
2.4	Form of Merck Contingent Value Rights Agreement (included as <i>Annex D</i> to the proxy statement/prospectus).
2.5	Form of Real Estate Contingent Value Rights Agreement (included as <i>Annex E</i> to the proxy statement/prospectus).
3.1	Amended and Restated Certificate of Incorporation of Ligand Pharmaceuticals Incorporated dated May 17, 1995 (incorporated by reference to Exhibit 3.2 of Ligand Pharmaceuticals Incorporated's Registration Statement on Form S-4 (No. 333-58823) filed with the SEC on July 9, 1998), as amended by a Certificate of Amendment of Amended and Restated Certificate of Incorporation dated June 13, 2000 (incorporated by reference to Exhibit 3.5 of Ligand Pharmaceuticals Incorporated's Annual Report on Form 10-K for the year ended December 31, 2000), and as further amended by a Certificate of Amendment of Amended and Restated Certificate of Incorporation dated June 30, 2004 (incorporated by reference to Exhibit 3.6 of Ligand Pharmaceuticals Incorporated's Quarterly Report on Form 10-Q for the quarter ended June 30, 2004).
3.2	Amended Certificate of Designation of Rights, Preferences and Privileges of Series A Participating Preferred Stock of Ligand Pharmaceuticals Incorporated dated March 3, 1999 (incorporated by reference to Exhibit 3.3 of Ligand Pharmaceuticals Incorporated's Quarterly Report on Form 10-Q for the quarter ended March 31, 1999). Amends Certificate of Designation of Rights, Preferences and Privileges of Series A Participating Preferred Stock originally filed in the offices of the Delaware Secretary of State on September 30, 1996.
3.3	Amended and Restated Bylaws of Ligand Pharmaceuticals Incorporated dated November 25, 1992, as amended by a Certificate of Amendment of Bylaws dated December 11, 1997 (incorporated by reference to Exhibit 3.3 of Ligand Pharmaceuticals Incorporated's Registration Statement on Form S-4 (No. 333-58823) filed with the SEC on July 9, 1998), as further amended by an Amendment of the Bylaws dated November 8, 2005 (incorporated by reference to Exhibit 3.1 of Ligand Pharmaceuticals Incorporated's Current Report on Form 8-K filed with the SEC on November 14, 2005), and as further amended by an Amendment of Bylaws dated December 4, 2007 (incorporated by reference to Exhibit 3.1 of Ligand Pharmaceuticals Incorporated's Current Report on Form 8-K filed with the SEC on December 6, 2007).

Table of Contents

Exhibit Number	Exhibit Description
4.1	Specimen stock certificate for shares of Common Stock of Ligand Pharmaceuticals Incorporated (incorporated by reference to Exhibit 4.1 of Ligand Pharmaceuticals Incorporated's Registration Statement on Form S-1 (No. 33-47257) filed with the SEC on April 16, 1992, as amended).
4.2	2006 Preferred Shares Rights Agreement, dated as of October 13, 2006, by and between Ligand Pharmaceuticals Incorporated and Mellon Investor Services LLC (incorporated by reference to Exhibit 4.1 of Ligand Pharmaceuticals Incorporated's Current Report on Form 8-K filed with the SEC on October 17, 2006).
5.1	Opinion of Stradling Yocca Carlson & Rauth regarding the legality of the securities being registered.
23.1	Consent of Grant Thornton LLP, independent registered public accounting firm of Ligand Pharmaceuticals Incorporated.
23.2	Consent of BDO Seidman, LLP, independent registered public accounting firm of Ligand Pharmaceuticals Incorporated.
23.3	Consent of PricewaterhouseCoopers LLP, independent registered public accounting firm of Neurogen Corporation.
23.4	Consent of Stradling Yocca Carlson & Rauth (included in Exhibit 5.1).
24.1*	Powers of Attorney.
99.1	Opinion of MTS Securities, LLC regarding the fairness of the merger (included as <i>Annex G</i> to the proxy statement/prospectus).
99.2	Consent of MTS Securities, LLC.
99.3	Form of Neurogen proxy card.

* Previously filed

ITEM 22. UNDERTAKINGS

The undersigned registrant hereby undertakes:

(1) That, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to section 13(a) or section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(2) That prior to any public reoffering of the securities registered hereunder through use of a prospectus which is a part of this registration statement, by any person or party who is deemed to be an underwriter within the meaning of Rule 145(c), the issuer undertakes that such reoffering prospectus will contain the information called for by the applicable registration form with respect to reofferings by persons who may be deemed underwriters, in addition to the information called for by the other items of the applicable form.

(3) That every prospectus (i) that is filed pursuant to paragraph (2) immediately preceding, or (ii) that purports to meet the requirements of Section 10(a)(3) of the Securities Act of 1933 and is used in connection with an offering of securities subject to Rule 415, will be filed as a part of an amendment to the registration statement and will not be used until such amendment is effective, and that, for purposes of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

Table of Contents

(4) To respond to requests for information that is incorporated by reference into the prospectus pursuant to Item 4, 10(b), 11 or 13 of this Form, within one business day of receipt of such request, and to send the incorporated documents by first class mail or other equally prompt means. This includes information contained in documents filed subsequent to the effective date of the registration statement through the date of responding to the request.

(5) To supply by means of a post-effective amendment all information concerning a transaction, and the company being acquired involved therein, that was not the subject of and included in the registration statement when it became effective.

Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer, or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

Table of Contents**SIGNATURES**

Pursuant to the requirements of the Securities Act, the registrant has duly caused this amendment No. 1 to the registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of San Diego, State of California, on November 5, 2009.

Ligand Pharmaceuticals Incorporated

By: /s/ JOHN L. HIGGINS
 Name: **John L. Higgins**
 Title: *President and Chief Executive Officer*

Pursuant to the requirements of the Securities Act of 1933, this amendment No. 1 to the registration statement has been signed by the following persons in the capacities and on the dates indicated.

Signature	Title	Date
/s/ JOHN L. HIGGINS John L. Higgins	President, Chief Executive Officer and Director (Principal Executive Officer)	November 5, 2009
/s/ JOHN P. SHARP John P. Sharp	Vice President, Finance and Chief Financial Officer (Principal Financial and Accounting Officer)	November 5, 2009
* Jason M. Aryeh	Director	November 5, 2009
* Steven J. Burakoff	Director	November 5, 2009
* Todd C. Davis	Director	November 5, 2009
* David M. Knott	Director	November 5, 2009
* John W. Kozarich	Chairman of the Board of Directors	November 5, 2009
* Stephen L. Sabba	Director	November 5, 2009

*By: /s/ JOHN L. HIGGINS

John L. Higgins, *attorney-in-fact*

II-5

Table of Contents**EXHIBIT INDEX**

(a) Exhibits

Exhibit Number	Exhibit Description
2.1	Agreement and Plan of Merger, dated as of August 23, 2009, by and among Ligand Pharmaceuticals Incorporated, Neurogen Corporation and Neon Signal, LLC, as amended by Amendment to Agreement and Plan of Merger dated as of September 18, 2009, and Amendment No. 2 to Agreement and Plan of Merger, dated as of November 2, 2009 (included as <i>Annex A</i> to the proxy statement/prospectus).
2.2	Form of Aplindore Contingent Value Rights Agreement (included as <i>Annex B</i> to the proxy statement/prospectus).
2.3	Form of H3 Contingent Value Rights Agreement (included as <i>Annex C</i> to the proxy statement/prospectus).
2.4	Form of Merck Contingent Value Rights Agreement (included as <i>Annex D</i> to the proxy statement/prospectus).
2.5	Form of Real Estate Contingent Value Rights Agreement (included as <i>Annex E</i> to the proxy statement/prospectus).
3.1	Amended and Restated Certificate of Incorporation of Ligand Pharmaceuticals Incorporated dated May 17, 1995 (incorporated by reference to Exhibit 3.2 of Ligand Pharmaceuticals Incorporated's Registration Statement on Form S-4 (No. 333-58823) filed with the SEC on July 9, 1998), as amended by a Certificate of Amendment of Amended and Restated Certificate of Incorporation dated June 13, 2000 (incorporated by reference to Exhibit 3.5 of Ligand Pharmaceuticals Incorporated's Annual Report on Form 10-K for the year ended December 31, 2000), and as further amended by a Certificate of Amendment of Amended and Restated Certificate of Incorporation dated June 30, 2004 (incorporated by reference to Exhibit 3.6 of Ligand Pharmaceuticals Incorporated's Quarterly Report on Form 10-Q for the quarter ended June 30, 2004).
3.2	Amended Certificate of Designation of Rights, Preferences and Privileges of Series A Participating Preferred Stock of Ligand Pharmaceuticals Incorporated dated March 3, 1999 (incorporated by reference to Exhibit 3.3 of Ligand Pharmaceuticals Incorporated's Quarterly Report on Form 10-Q for the quarter ended March 31, 1999). Amends Certificate of Designation of Rights, Preferences and Privileges of Series A Participating Preferred Stock originally filed in the offices of the Delaware Secretary of State on September 30, 1996.
3.3	Amended and Restated Bylaws of Ligand Pharmaceuticals Incorporated dated November 25, 1992, as amended by a Certificate of Amendment of Bylaws dated December 11, 1997 (incorporated by reference to Exhibit 3.3 of Ligand Pharmaceuticals Incorporated's Registration Statement on Form S-4 (No. 333-58823) filed with the SEC on July 9, 1998), as further amended by an Amendment of the Bylaws dated November 8, 2005 (incorporated by reference to Exhibit 3.1 of Ligand Pharmaceuticals Incorporated's Current Report on Form 8-K filed with the SEC on November 14, 2005), and as further amended by an Amendment of Bylaws dated December 4, 2007 (incorporated by reference to Exhibit 3.1 of Ligand Pharmaceuticals Incorporated's Current Report on Form 8-K filed with the SEC on December 6, 2007).
4.1	Specimen stock certificate for shares of Common Stock of Ligand Pharmaceuticals Incorporated (incorporated by reference to Exhibit 4.1 of Ligand Pharmaceuticals Incorporated's Registration Statement on Form S-1 (No. 33-47257) filed with the SEC on April 16, 1992, as amended).
4.2	2006 Preferred Shares Rights Agreement, dated as of October 13, 2006, by and between Ligand Pharmaceuticals Incorporated and Mellon Investor Services LLC (incorporated by reference to Exhibit 4.1 of Ligand Pharmaceuticals Incorporated's Current Report on Form 8-K filed with the SEC on October 17, 2006).
5.1	Opinion of Stradling Yocca Carlson & Rauth regarding the legality of the securities being registered.

Table of Contents

Exhibit Number	Exhibit Description
23.1	Consent of Grant Thornton LLP, independent registered public accounting firm of Ligand Pharmaceuticals Incorporated.
23.2	Consent of BDO Seidman, LLP, independent registered public accounting firm of Ligand Pharmaceuticals Incorporated.
23.3	Consent of PricewaterhouseCoopers LLP, independent registered public accounting firm of Neurogen Corporation.
23.4	Consent of Stradling Yocca Carlson & Rauth (included in Exhibit 5.1).
24.1*	Powers of Attorney.
99.1	Opinion of MTS Securities, LLC regarding the fairness of the merger (included as Annex G to the proxy statement/prospectus).
99.2	Consent of MTS Securities, LLC.
99.3	Form of Neurogen proxy card.

* Previously filed