

TRANSGENOMIC INC
Form S-3
January 25, 2016

As filed with the Securities and Exchange Commission on January 25, 2016

Registration No. 333-

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, DC 20549

FORM S-3

REGISTRATION STATEMENT UNDER

THE SECURITIES ACT OF 1933

TRANSGENOMIC, INC.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of incorporation or organization)

91-1789357

(I.R.S. Employer Identification No.)

12325 Emmet Street

Omaha, Nebraska 68164

(402) 452-5400

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

Paul Kinnon

President and Chief Executive Officer

Transgenomic, Inc.

12325 Emmet Street

Omaha, Nebraska 68164

(402) 452-5400

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

Copies to:

Jeffrey T. Hartlin, Esq.

Paul Hastings LLP

1117 S. California Avenue

Palo Alto, CA 94304

(650) 320-1804

Approximate date of commencement of proposed sale to the public:

From time to time after of this registration statement becomes effective

If the only securities being registered on this form are being offered pursuant to dividend or interest reinvestment plans, please check the following box.

If any of the securities being registered on this form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, 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, please 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(c) 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 registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box.

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

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)

CALCULATION OF REGISTRATION FEE

| Title of Each Class of Securities to be Registered | Amount to be Registered ⁽¹⁾ | Proposed Maximum Offering Price Per Share ⁽⁴⁾ | Proposed Maximum Aggregate Offering Price | Amount of Registration Fee |
|------------------------------------------------------------------------------------------------------------------------|----------------------------------------|----------------------------------------------------------|-------------------------------------------|----------------------------|
| Common Stock, par value \$0.01 per share, issuable upon conversion of shares of Series A-1 Convertible Preferred Stock | 2,365,243 | (2) \$ 0.73 | \$ 1,726,627.39 | \$ 173.87 |
| Common Stock, par value \$0.01 per share, issuable upon exercise of Warrants | 4,756,160 | (3) \$ 0.73 | \$ 3,471,996.80 | \$ 349.63 |
| Total: | 7,121,403 | | \$ 5,198,624.19 | \$ 523.50 |

Pursuant to Rule 416(a) under the Securities Act of 1933, as amended, this Registration Statement shall also cover (1) any additional shares of the Registrant’s Common Stock that become issuable by reason of any stock dividend, stock split, recapitalization or other similar transaction effected without receipt of consideration.

All 2,365,243 shares of Common Stock issuable upon conversion of the shares of Series A-1 Convertible Preferred (2) Stock are to be offered by the selling stockholders named herein, which such shares of Series A-1 Convertible Preferred Stock were acquired by the selling stockholders in a private placement.

All 4,756,160 shares of Common Stock issuable upon exercise or exchange of the Warrants are to be offered by the (3) selling stockholders named herein, which such Warrants were acquired by the selling stockholders in a private placement.

Estimated solely for the purpose of calculating the amount of the registration fee pursuant to Rule 457(c) under the (4) Securities Act of 1933, as amended. The offering price per share and aggregate offering price are based upon the average of the high and low prices for the Registrant’s Common Stock as reported on the NASDAQ Capital Market on January 21, 2016, a date within five business days prior to the filing of this Registration Statement.

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933, as amended, or until the Registration Statement shall become effective on such date as the Securities and Exchange Commission acting pursuant to said Section 8(a) may determine.

The information in this prospectus is not complete and may be changed. These securities may not be sold until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any state where the offer or sale is not permitted.

Subject to Completion, dated January 25, 2016

PROSPECTUS

Transgenomic, Inc.

7,121,403 Shares of Common Stock

This prospectus relates to the resale by the investors listed in the section of this prospectus entitled “Selling Stockholders”, or the Selling Stockholders, of up to 7,121,403 shares of our common stock, par value \$0.01 per share, or the Common Stock. The 7,121,403 shares of Common Stock consist of: (i) up to 2,365,243 shares of Common Stock, or the Conversion Shares, issuable upon conversion of outstanding shares of our Series A-1 Convertible Preferred Stock, par value \$0.01 per share, or the Series A-1 Preferred, (ii) up to 2,873,765 shares of Common Stock issuable upon exercise or exchange of outstanding warrants to purchase shares of Common Stock, or the Placement Warrants, and (iii) up to 1,882,395 shares of Common Stock issuable upon exercise or exchange of an outstanding amended warrant to purchase shares of Common Stock, or the Amended Warrant. The Amended Warrant was an amendment and restatement of that certain Series A Warrant to purchase up to an aggregate of 1,161,972 shares of Common Stock previously issued by us to one of the Selling Stockholders on July 7, 2015. The Amended Warrant amended and restated the original Series A Warrant to provide that the Amended Warrant is subject to the same terms and conditions as the Placement Warrants. The Placement Warrants and the Amended Warrant are collectively referred to herein as the Warrants. The Warrants are immediately exercisable, have a term of five years and have an exercise price of \$1.21 per share of Common Stock. Each of the Warrants is subject to a blocker provision, or the Warrant Blocker, which restricts the exercise of the Warrant if, as a result of such exercise, the Warrant holder, together with its affiliates and any other person whose beneficial ownership of Common Stock would be aggregated with the Warrant holder’s for purposes of Section 13(d) of the Securities Exchange Act of 1934, as amended, would beneficially own in excess of 9.99% of our then issued and outstanding shares of Common Stock (including the shares of Common Stock issuable upon such exercise), as such percentage ownership is determined in accordance with the terms of the Warrants.

Each Placement Warrant contains an exchange feature, or the Exchange Right, whereby the Placement Warrant holder may exchange all or any portion of the Placement Warrant for a number of shares of Common Stock equal to the

quotient obtained by dividing the “Exchange Amount” by the closing bid price of our Common Stock on the second trading day prior to the date the Placement Warrant is exchanged, or the Exchange Price. Under the Placement Warrants, the “Exchange Amount” is based upon a Black Scholes option pricing model, and the aggregate Exchange Amount under all of the Placement Warrants is \$1,436,882, subject to adjustment to the extent that the risk-free U.S. Treasury rate fluctuates between the date of issuance of the Placement Warrants and the date the Placement Warrants are exchanged. Additionally, each Placement Warrant provides that, to the extent the closing bid price of the Common Stock on the second trading day prior to the date the Placement Warrant is exchanged is less than \$0.50, the Exchange Price will be deemed to be equal to \$0.50. Each Placement Warrant further provides that the number of shares that may be issued upon exercise of the Exchange Right is limited to the number of shares that may be purchased pursuant to the terms of the Placement Warrant, unless we have previously obtained stockholder approval or approval from The Nasdaq Stock Market LLC to issue any additional shares of Common Stock pursuant to the Exchange Right, or the Placement Warrants Required Approvals. Pursuant to the terms of the Placement Warrants, if the Placement Warrants Required Approvals are obtained, the aggregate maximum number of shares of Common Stock issuable pursuant to the Exchange Right in the Placement Warrants is 2,873,765, subject to adjustment to the extent that the risk-free U.S. Treasury rate fluctuates between the date of issuance of the Placement Warrants and the date the Placement Warrants are exchanged.

The Amended Warrant provides that no shares of Common Stock may be issued upon exercise or exchange of the Amended Warrant unless we have previously obtained stockholder approval or approval from The Nasdaq Stock Market LLC to issue any shares of Common Stock upon exercise or exchange of the Amended Warrant, or the Amended Warrant Required Approvals. In addition, the Amended Warrant also contains an Exchange Right whereby the Exchange Amount for the Amended Warrant is based on a Black Scholes option pricing model and is \$941,197, subject to adjustment to the extent that the risk-free U.S. treasury rate fluctuates between the date of issuance of the Amended Warrant and the date the Amended Warrant is exchanged. The Amended Warrant provides that, to the extent the closing bid price of our Common Stock on the second trading day prior to the date the Amended Warrant is exchanged is less than \$0.50, the Exchange Price for the Amended Warrant will be deemed to be equal to \$0.50. If the Amended Warrant Required Approvals are obtained, the maximum number of shares of Common Stock issuable pursuant to the Exchange Right in the Amended Warrant is 1,882,395, subject to adjustment to the extent that the risk-free U.S. treasury rate fluctuates between the date of issuance of the Amended Warrant and the date the Amended Warrant is exchanged.

We issued the shares of Series A-1 Preferred and the Warrants in connection with a private placement offering in January 2016. We are registering the resale of the Conversion Shares and the shares of Common Stock underlying the Warrants, or the Warrant Shares, as required by the Registration Rights Agreement we entered into with the Selling Stockholders on January 8, 2016. The Conversion Shares and the Warrant Shares are sometimes referred to in this prospectus, together, as the Securities.

Our registration of the Securities covered by this prospectus does not mean that the Selling Stockholders will offer or sell any of the Securities. The Selling Stockholders may sell the Securities covered by this prospectus in a number of different ways and at varying prices. For additional information on the possible methods of sale that may be used by the Selling Stockholders, you should refer to the section of this prospectus entitled “Plan of Distribution” beginning on page 8 of this prospectus. We will not receive any of the proceeds from the Securities sold by the Selling Stockholders, other than any proceeds from the cash exercise of Warrants to purchase shares of Common Stock.

No underwriter or other person has been engaged to facilitate the sale of the Securities in this offering. The Selling Stockholders may be deemed underwriters of the Securities that they are offering. We will bear all costs, expenses and fees in connection with the registration of the Securities. The Selling Stockholders will bear all commissions and discounts, if any, attributable to their respective sales of the Securities.

You should read this prospectus, any applicable prospectus supplement and any related free writing prospectus carefully before you invest.

Investing in our Common Stock involves a high degree of risk. You should review carefully the risks and uncertainties described under the heading “Risk Factors” contained in this prospectus, any applicable prospectus supplement and in any applicable free writing prospectuses, and under similar headings in the documents that are incorporated by reference into this prospectus.

Our Common Stock is currently listed on the NASDAQ Capital Market under the symbol “TBIO”. On January 22, 2016, the last reported sales price for our Common Stock was \$0.72 per share.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus is _____, 2016.

TABLE OF CONTENTS

| | Page |
|--------------------------------------------------------------------------------------------|-------------|
| <u>Summary</u> | 1 |
| <u>Risk Factors</u> | 1 |
| <u>Disclosure Regarding Forward-Looking Statements</u> | 2 |
| <u>Use of Proceeds</u> | 3 |
| <u>Selling Stockholders</u> | 4 |
| <u>Plan of Distribution</u> | 8 |
| <u>Description of Capital Stock</u> | 10 |
| <u>Legal Matters</u> | 14 |
| <u>Experts</u> | 14 |
| <u>Where You Can Find More Information</u> | 14 |
| <u>Disclosure of Commission Position on Indemnification for Securities Act Liabilities</u> | 14 |
| <u>Important Information Incorporated by Reference</u> | 15 |

ABOUT THIS PROSPECTUS

You should rely only on the information we have provided or incorporated by reference into this prospectus, any applicable prospectus supplement and any related free writing prospectus. We have not authorized anyone to provide you with information different from that contained in this prospectus, any applicable prospectus supplement or any related free writing prospectus. No dealer, salesperson or other person is authorized to give any information or to represent anything not contained in this prospectus, any applicable prospectus supplement or any related free writing prospectus. You must not rely on any unauthorized information or representation. This prospectus is an offer to sell only the shares of Common Stock offered hereby, but only under circumstances and in jurisdictions where it is lawful to do so. You should assume that the information in this prospectus, any applicable prospectus supplement or any related free writing prospectus is accurate only as of the date on the front of the document and that any information we have incorporated by reference is accurate only as of the date of the document incorporated by reference, regardless of the time of delivery of this prospectus or any sale of a security.

The Selling Stockholders are offering the Securities only in jurisdictions where such issuances are permitted. The distribution of this prospectus and the issuance of the Securities in certain jurisdictions may be restricted by law. Persons outside the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the issuance of the Securities and the distribution of this prospectus outside the United States. This prospectus does not constitute, and may not be used in connection with, an offer to sell, or a solicitation of an offer to buy, the Securities offered by this prospectus by any person in any jurisdiction in which it is unlawful for such person to make such an offer or solicitation.

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission, under which the Selling Stockholders may offer from time to time up to an aggregate of 7,121,403 shares of our Common Stock in one or more offerings. If required, each time a Selling Stockholder offers Common Stock, in addition to this prospectus, we will provide you with a prospectus supplement that will contain specific information about the terms of that offering. We may also authorize one or more free writing prospectuses to be provided to you that may contain material information relating to that offering. We may also use a prospectus supplement and any related free writing prospectus to add, update or change any of the information contained in this prospectus or in documents we have incorporated by reference. This prospectus, together with any applicable prospectus supplements, any related free writing prospectuses and the documents incorporated by reference into this prospectus, includes all material information relating to this offering. To the extent that any statement that we make in a prospectus supplement is inconsistent with statements made in this prospectus, the statements made in this prospectus will be deemed modified or superseded by those made in a prospectus supplement. Please carefully read both this prospectus and any prospectus supplement together with the additional information described below under “Important Information Incorporated by Reference”.

SUMMARY

This summary highlights selected information contained elsewhere in this prospectus or incorporated by reference in this prospectus, and does not contain all of the information that you need to consider in making your investment decision. You should carefully read the entire prospectus, any applicable prospectus supplement and any related free writing prospectus, including the risks of investing in our Common Stock discussed under the heading “Risk Factors” contained in this prospectus, any applicable prospectus supplement and any related free writing prospectus, and under similar headings in the other documents that are incorporated by reference into this prospectus. You should also carefully read the information incorporated by reference into this prospectus, including our financial statements, and the exhibits to the registration statement of which this prospectus forms a part. Unless otherwise mentioned or unless the context requires otherwise, all references in this prospectus to “Transgenomic”, “the Company”, “we”, “us”, “our” or similar references mean Transgenomic, Inc. together with its consolidated subsidiary.

Transgenomic, Inc.

We are a global biotechnology company advancing personalized medicine in cardiology, oncology and inherited diseases through advanced diagnostic technologies, such as our revolutionary multiplexed ICE COLD-PCR™, or MX-ICP, technology and our unique genetic tests provided through our Laboratory Services business. We also provide specialized clinical and research services to biopharmaceutical companies developing targeted therapies. Our diagnostic technologies are designed to improve medical diagnoses and patient outcomes. Our strategy seeks to optimize, through channel partnerships, the commercial potential of our assets aimed at large genetic testing markets. This allows us to focus resources on our areas of strength, including developing and marketing tests for rare genetic disorders and other genetic-mediated conditions in the U.S., where we are a market leader, and developing biomarkers, genetic tests and companion diagnostics using proprietary technology that is unsurpassed for the identification and detection of low-level genetic mutations and is a prerequisite for improved diagnosis and treatment of cancer and other diseases.

MX-ICP is a simple, proprietary technology that amplifies the ability to detect genetic mutations by 100 - 400 fold. This technology has been validated internally on all currently available sequencing platforms, including Sanger, Next Gen Sequencing and Digital PCR. By enhancing the level of detection of genetic mutations and suppressing the normal, “wild-type” DNA, several benefits are provided. It is generally understood that most current technologies are unable to consistently identify mutations that occur in less than approximately 5% of a sample. However, many mutations found at much lower levels, even down to 0.01%, are known to be clinically relevant and can have significant consequences to a patient: both in terms of how they will respond to a given drug or treatment and how a given tumor is likely to change over time. More importantly, in our view, significantly improving the level of detection while using blood, saliva and even urine as a source for DNA, rather than depending on painful, expensive and potentially dangerous tumor biopsies, is an important advancement in patient care with respect to cancer detection, treatment and monitoring and can result in significant cost savings for the healthcare system by replacing invasive procedures with the simple collection of blood or other bodily fluids. By broadening the types of samples that

can be used for testing and allowing all sequencing platforms to provide improved identification of low level mutations, MX-ICP has the potential to make testing more patient friendly, enable genetic monitoring of disease progression, effectively guide treatment protocols, and reduce the overall cost of diagnosis and monitoring while improving patient outcomes.

Our operations are organized as one business segment, our Laboratory Services segment. Our laboratories specialize in genetic testing for cardiology, neurology and mitochondrial disorders, and for oncology. Our Patient Testing laboratories located in New Haven, Connecticut and Omaha, Nebraska are certified under the Clinical Laboratory Improvement Amendment as high complexity laboratories and our Omaha facility is accredited by the College of American Pathologists. Our Biomarker Identification laboratory located in Omaha provides pharmacogenomics research services supporting Phase II and Phase III clinical trials conducted by pharmaceutical and biotechnology companies. Our laboratories employ a variety of genomic testing service technologies, including our new, high performance MX-ICP technology. ICE COLD-PCR is a proprietary ultra-high sensitivity platform technology with breakthrough potential to enable wide adoption of personalized, precision medicine in cancer and other diseases. It can be run in any laboratory that contains standard PCR systems. MX-ICP enables detection of multiple known and unknown mutations from virtually any sample type, including tissue biopsies, blood, urine, saliva, cell-free DNA and circulating tumor cells at levels greater than 1,000-fold higher than standard DNA sequencing techniques. It is easy to implement and use within existing workflows.

For a complete description of our business, financial condition, results of operations and other important information, we refer you to our filings with the Securities and Exchange Commission, or the SEC, that are incorporated by reference in this prospectus, including our Annual Report on Form 10-K for the year ended December 31, 2014. For instructions on how to find copies of these documents, see “Where You Can Find More Information”.

We were incorporated in Delaware on March 6, 1997. Our principal office is located at 12325 Emmet Street, Omaha, Nebraska 68164 and our telephone number is 402-452-5400. Our website address is www.transgenomic.com. Information on our website, or that can be accessed through our website, is not incorporated by reference into this prospectus and does not constitute part of this prospectus.

RISK FACTORS

Investing in shares of our Common Stock involves a high degree of risk. Before making an investment decision, you should carefully consider the risks described under “Risk Factors” in any applicable prospectus supplement and in our most recent Annual Report on Form 10-K, or any updates in our Quarterly Reports on Form 10-Q, together with all of the other information appearing in or incorporated by reference into this prospectus and any applicable prospectus supplement, before deciding whether to purchase any of the Common Stock being offered. Our business, financial condition or results of operations could be materially adversely affected by any of these risks. The trading price of shares of our Common Stock could decline due to any of these risks, and you may lose all or part of your investment.

DISCLOSURE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference into this prospectus may contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act, about the Company and its subsidiaries. These forward-looking statements are intended to be covered by the safe harbor for forward-looking statements provided by the Private Securities Litigation Reform Act of 1995. Forward-looking statements are not statements of historical fact, and can be identified by the use of forward-looking terminology such as “believes”, “expects”, “may”, “will”, “could”, “should”, “projects”, “plans”, “goal”, “targets”, “potential”, “estimates”, “pro forma”, “seek”, “anticipates” or the negative thereof or comparable terminology. Forward-looking statements include discussions of strategy, financial projections, guidance and estimates (including their underlying assumptions), statements regarding plans, objectives, expectations or consequences of various transactions, and statements about the future performance, operations, products and services of the Company and its subsidiaries. We caution our stockholders and other readers not to place undue reliance on such statements.

You should read this prospectus and the documents incorporated by reference completely and with the understanding that our actual future results may be materially different from what we currently expect. Our business and operations are and will be subject to a variety of risks, uncertainties and other factors. Consequently, actual results and experience may materially differ from those contained in any forward-looking statements. Such risks, uncertainties and other factors that could cause actual results and experience to differ from those projected include, but are not limited to, the risk factors set forth in Part I - Item 1A, “Risk Factors”, in our Annual Report on Form 10-K for the year ended December 31, 2014, as filed with the SEC on April 15, 2015, and elsewhere in the documents incorporated by reference into this prospectus.

You should assume that the information appearing in this prospectus, any accompanying prospectus supplement, any related free writing prospectus and any document incorporated herein by reference is accurate as of its date only. Because the risk factors referred to above could cause actual results or outcomes to differ materially from those expressed in any forward-looking statements made by us or on our behalf, you should not place undue reliance on any forward-looking statements. Further, any forward-looking statement speaks only as of the date on which it is made. New factors emerge from time to time, and it is not possible for us to predict which factors will arise. In addition, we cannot assess the impact of each factor on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements. All written or oral forward-looking statements attributable to us or any person acting on our behalf made after the date of this prospectus are expressly qualified in their entirety by the risk factors and cautionary statements contained in and incorporated by reference into this prospectus. Unless legally required, we do not undertake any obligation to release publicly any revisions to such forward-looking statements to reflect events or circumstances after the date of this prospectus or to reflect the occurrence of unanticipated events.

USE OF PROCEEDS

We will receive no proceeds from the sale of the Securities by the Selling Stockholders. We may, however, receive cash proceeds equal to the total exercise price of any Warrants to the extent that the Warrants are exercised for cash. The exercise price of the Warrants held by the Selling Stockholders is \$1.21 per share of Common Stock. The exercise price and the number of shares of Common Stock issuable upon exercise of the Warrants may be adjusted in certain circumstances, including stock splits, dividends or distributions, and mergers, consolidations, a sale of all or substantially all of our assets, an exchange offer, a business combination or other similar transactions. However, these Warrants contain a “cashless exercise” feature that allows the holders, under certain circumstances, to exercise the Warrants without making a cash payment to us. Additionally, each of the Placement Warrants and the Amended Warrant contain the Exchange Right, whereby the Warrant holder may exchange all or any portion of the Placement Warrant or the Amended Warrant, as applicable, for a number of shares of Common Stock equal to the quotient obtained by dividing the applicable Exchange Amount by the closing bid price of our Common Stock on the second trading day prior to the date the applicable Warrant is exchanged. There can be no assurance that any of these Warrants will be exercised by the Selling Stockholders at all or that these Warrants will be exercised for cash rather than pursuant to the “cashless exercise” feature or the Exchange Right. To the extent we receive proceeds from the cash exercise of the Warrants, we intend to use such proceeds to provide capital support or for general corporate purposes, which may include, without limitation, supporting asset growth and engaging in acquisitions or other business combinations. We do not have any specific plans for acquisitions or other business combinations at this time. Our management will retain broad discretion in the allocation of the net proceeds from the exercise of the Warrants.

The Selling Stockholders will pay any underwriting discounts and commissions and any similar expenses they incur in disposing of the Securities. We will bear all other costs, fees and expenses incurred in effecting the registration of the Securities covered by this prospectus. These may include, without limitation, all registration and filing fees, printing fees and fees and expenses of our counsel and accountants.

SELLING STOCKHOLDERS

We have prepared this prospectus to allow the Selling Stockholders or their successors, assignees or other permitted transferees to sell or otherwise dispose of, from time to time, up to 7,121,403 shares of our Common Stock. The 7,121,403 shares of Common Stock consist of: (i) up to 2,365,243 shares of Common Stock issuable upon conversion of our outstanding shares of Series A-1 Preferred issued pursuant to the Securities Purchase Agreement, dated January 6, 2016, by and among the Company and affiliates of the Selling Stockholders, or the Securities Purchase Agreement, (ii) up to 2,873,765 shares of Common Stock issuable upon exercise or exchange of the Placement Warrants issued pursuant to the Securities Purchase Agreement, and (iii) up to 1,882,395 shares of Common Stock issuable upon exercise or exchange of the Amended Warrant issued pursuant to the Securities Purchase Agreement. These Securities were issued in reliance on the exemption from securities registration in Section 4(a)(2) under the Securities Act and Rule 506 promulgated thereunder. Each Placement Warrant (i) has an exercise price of \$1.21 per share of Common Stock and became exercisable upon issuance, (ii) became exchangeable pursuant to the Exchange Right upon issuance, subject to receipt of the Placement Warrants Required Approvals to the extent the shares issuable upon exercise of the Exchange Right are greater than the number of shares issuable upon exercise of a Placement Warrant, and (iii) will be exercisable or exchangeable through January 8, 2021. The Amended Warrant (i) has an exercise price of \$1.21 per share of Common Stock and provides that no shares of Common Stock may be issued upon exercise or exchange of the Amended Warrant unless the Amended Warrant Required Approvals have been obtained, and (ii) subject to obtaining the Amended Warrant Required Approvals, will be exercisable or exchangeable through January 8, 2021. The exercisability or exchangeability of all of the Warrants is subject to the Warrant Blocker, which will automatically expire 61 calendar days prior to the expiration date of the applicable Warrant.

The shares of Common Stock to be offered by the Selling Stockholders are “restricted” securities under applicable federal and state securities laws and are being registered under the Securities Act to give the Selling Stockholders the opportunity to sell these shares publicly. The registration of these shares does not require that any of the shares be offered or sold by the Selling Stockholders. Subject to these resale restrictions, the Selling Stockholders may from time to time offer and sell all or a portion of their shares indicated below in privately negotiated transactions or on the NASDAQ Capital Market or any other market on which our Common Stock may subsequently be listed.

The registered shares may be sold directly or through brokers or dealers, or in a distribution by one or more underwriters on a firm commitment or best effort basis. To the extent required, the names of any agent or broker-dealer and applicable commissions or discounts and any other required information with respect to any particular offering will be set forth in a prospectus supplement. See the section of this prospectus entitled “Plan of Distribution”. The Selling Stockholders and any agents or broker-dealers that participate with the Selling Stockholders in the distribution of registered shares may be deemed to be “underwriters” within the meaning of the Securities Act, and any commissions received by them and any profit on the resale of the registered shares may be deemed to be underwriting commissions or discounts under the Securities Act.

No estimate can be given as to the amount or percentage of Common Stock that will be held by the Selling Stockholders after any sales made pursuant to this prospectus because the Selling Stockholders are not required to sell any of the Securities being registered under this prospectus. The following table assumes that the Selling Stockholders will sell all of the Securities listed in this prospectus.

Unless otherwise indicated in the footnotes below, no Selling Stockholder has had any material relationship with us or any of our affiliates within the past three years other than as a security holder.

We have prepared this table based on written representations and information furnished to us by or on behalf of the Selling Stockholders. Since the date on which the Selling Stockholders provided this information, the Selling Stockholders may have sold, transferred or otherwise disposed of all or a portion of the shares of Common Stock in a transaction exempt from the registration requirements of the Securities Act. Unless otherwise indicated in the footnotes below, we believe that: (1) none of the Selling Stockholders are broker-dealers or affiliates of broker-dealers, (2) no Selling Stockholder has direct or indirect agreements or understandings with any person to distribute their Securities, and (3) the Selling Stockholders have sole voting and investment power with respect to all Securities beneficially owned, subject to applicable community property laws. To the extent any Selling Stockholder identified below is, or is affiliated with, a broker-dealer, it could be deemed to be, under SEC Staff interpretations, an “underwriter” within the meaning of the Securities Act. Information about the Selling Stockholders may change over time. Any changed information will be set forth in supplements to this prospectus, if required.

The following table sets forth information with respect to the beneficial ownership of our Common Stock held, as of January 8, 2016, by the Selling Stockholders and the number of Securities being offered hereby and information with respect to shares to be beneficially owned by the Selling Stockholders after completion of this offering. The percentages in the following table reflect the shares beneficially owned by the Selling Stockholders as a percentage of the total number of shares of Common Stock outstanding as of January 8, 2016. As of such date, 20,695,870 shares of Common Stock were outstanding.

| Name | Shares Beneficially Owned Prior to the Offering ⁽¹⁾ | | | Maximum Number of Shares of Common Stock to be Offered Pursuant to this Prospectus | Shares Beneficially Owned After the Offering ⁽²⁾ | | |
|--------------------------------------|----------------------------------------------------------------|------------|--------|------------------------------------------------------------------------------------|-------------------------------------------------------------|------------|---|
| | Number | Percentage | | | Number | Percentage | |
| Crede CG III, Ltd. | 8,758,512 | (3) | 31.3 % | 6,645,836 | 2,112,676 | 7.5 | % |
| Third Security Senior Staff 2008 LLC | 3,481,329 | (4) | 16.5 % | 190,228 | 3,291,101 | 15.6 | % |
| Third Security Staff 2010 LLC | 2,491,601 | (5) | 11.8 % | 95,113 | 2,396,488 | 11.4 | % |
| Third Security Incentive 2010 LLC | 1,740,662 | (6) | 8.3 % | 95,113 | 1,645,549 | 7.9 | % |
| Third Security Staff 2014 LLC | 989,726 | (7) | 4.8 % | 95,113 | 894,613 | 4.3 | % |
| TOTAL | 17,461,830 | — | | 7,121,403 | 10,340,427 | — | |

Beneficial ownership is determined in accordance with Rule 13d-3 under the Exchange Act. In computing the number of shares beneficially owned by a person and the percentage ownership of that person, shares of common stock subject to warrants, options and other convertible securities held by that person that are currently exercisable or exercisable within 60 days (of January 8, 2016) are deemed outstanding. Shares subject to warrants, options and other convertible securities, however, are not deemed outstanding for the purpose of computing the percentage ownership of any other person.

Assumes that the Selling Stockholders dispose of all of the shares of Common Stock covered by this prospectus and do not acquire beneficial ownership of any additional shares. The registration of these shares does not necessarily mean that the Selling Stockholders will sell all or any portion of the shares covered by this prospectus. The number of shares consists of (i) 1,445,512 shares of Common Stock, (ii) 2,150,538 shares of Common Stock issuable upon conversion of 2,150,538 shares of Series A-1 Preferred, which such shares of Common Stock are covered by this prospectus, (iii) 1,612,903 shares of Common Stock issuable upon exercise or exchange of a Placement Warrant that is currently exercisable, except to the extent such exercise is restricted by the Warrant Blocker; however, if the Placement Warrants Required Approvals have been obtained, the Placement Warrant holder may receive an additional 1,000,000 shares of Common Stock upon exercise of the Exchange Right under the Placement Warrant for an aggregate of up to 2,612,903 shares of Common Stock issuable upon exchange of the Placement Warrant, all of which such Warrant Shares are covered by this prospectus, (iv) subject to receipt of the Amended Warrant Required Approvals, 1,161,972 shares of Common Stock issuable upon exercise or exchange of the Amended Warrant that is currently exercisable, except to the extent such exercise is restricted by the Warrant Blocker; however, if the Amended Warrant Required Approvals have been obtained, the Amended Warrant holder may receive an additional 720,423 shares of Common Stock upon exercise of the Exchange Right under the Amended Warrant for an aggregate of up to 1,882,395 shares of Common Stock issuable upon exchange of the Amended Warrant, all of which such Warrant Shares are covered by this prospectus, and (v) 667,164 shares of Common Stock issuable upon exercise of Series B Warrant to purchase shares of Common Stock that is currently exercisable, except to the extent such exercise is restricted by a blocker provision in the Series B Warrant similar to the Warrant Blocker. The Warrant Blocker will automatically expire 61 calendar days prior to the expiration date of the Warrants. The table above includes Warrants that are not currently exercisable because of the Warrant Blocker, the Placement Warrants Required Approvals and the Amended Warrant Required Approvals and which are not deemed to be beneficially owned by Crede CG III, Ltd. The sole stockholder of Crede CG III, Ltd. is Crede Capital Group, LLC. Acuitas Financial Group, LLC holds all of the membership interests of Crede Capital Group,

Edgar Filing: TRANSGENOMIC INC - Form S-3

LLC and Terren Peizer holds all of the membership interests of Acuitas Financial Group, LLC. Voting and dispositive power with respect to the shares held by Crede CG III, Ltd. is exercised by Terren Peizer, the sole and Managing Member of Acuitas Financial Group, LLC and Crede Capital Group, LLC and Managing Director of Crede CG III, Ltd., who acts as investment advisor to these entities. Terren Peizer, Acuitas Financial Group, LLC and Crede Capital Group, LLC disclaim beneficial ownership with respect to the shares held by Crede CG III, Ltd. The business address of Crede Capital Group, LLC is 11601 Wilshire Blvd., Suite 1100, Los Angeles, CA 90025.

The number of shares consists of (i) 3,020,267 shares of Common Stock, (ii) 85,882 shares of Common Stock issuable upon conversion of 85,882 shares of Series A-1 Preferred, which such shares of Common Stock are covered by this prospectus, (iii) 64,411 shares of Common Stock issuable upon exercise or exchange of a Placement Warrant that is currently exercisable, except to the extent such exercise is restricted by the Warrant Blocker; however, if the Placement Warrants Required Approvals have been obtained, Third Security Senior Staff 2008 LLC may receive an additional 39,935 shares of Common Stock upon exercise of the Exchange Right under the Placement Warrant for an aggregate of up to 104,346 shares of Common Stock issuable upon exchange of the Placement Warrant, all of which such Warrant Shares are covered by this prospectus, and (iv) 270,834 shares of Common Stock issuable upon exercise of warrants to purchase Common Stock that are not Placement Warrants and are currently exercisable. The Warrant Blocker will automatically expire 61 calendar days prior to the expiration date of the Placement Warrant. The table above includes a Placement Warrant that is not currently exercisable because of the Warrant Blocker and the Placement Warrants Required Approvals and which is not deemed to be beneficially owned by Third Security Senior Staff 2008 LLC. Third Security Senior Staff 2008 LLC is managed by Third Security, LLC (“Third Security”), which is managed by Mr. Randal J. Kirk. Mr. Randal J. Kirk could be deemed to have indirect beneficial ownership of these shares. The business address of Third Security Senior Staff 2008 LLC is 1881 Grove Avenue, Radford, Virginia 24141. We are party to that certain Loan and Security Agreement (Term Loan and Revolving Loan), dated as of March 13, 2013, as amended (the “Loan and Security Agreement”), with affiliates of Third Security. Additionally, Doit L. Koppler II, a director of the Company, is an employee of Third Security and Robert Patzig, a director of the Company, is a former employee of Third Security.

(4) The number of shares consists of (i) 2,125,654 shares of Common Stock, (ii) 42,941 shares of Common Stock issuable upon conversion of 42,941 shares of Series A-1 Preferred, which such shares of Common Stock are covered by this prospectus, (iii) 32,205 shares of Common Stock issuable upon exercise or exchange of a Placement Warrant that is currently exercisable, except to the extent such exercise is restricted by the Warrant Blocker; however, if the Placement Warrants Required Approvals have been obtained, Third Security Staff 2010 LLC may receive an additional 19,967 shares of Common Stock upon exercise of the Exchange Right under the Placement Warrant for an aggregate of up to 52,172 shares of Common Stock issuable upon exchange of the Placement Warrant, all of which such Warrant Shares are covered by this prospectus, and (iv) 270,834 shares of Common Stock issuable upon exercise of warrants to purchase Common Stock that are not Placement Warrants and are currently exercisable. The Warrant Blocker will automatically expire 61 calendar days prior to the expiration date of the Placement Warrant. The table above includes a Placement Warrant that is not currently exercisable because of the Warrant Blocker and the Placement Warrants Required Approvals and which is not deemed to be beneficially owned by Third Security Staff 2010 LLC. Third Security Staff 2010 LLC is managed by Third Security, which is managed by Mr. Randal J. Kirk. Mr. Randal J. Kirk could be deemed to have indirect beneficial ownership of these shares. The business address of Third Security Staff 2010 LLC is 1881 Grove Avenue, Radford, Virginia 24141. We are party to the Loan and Security Agreement with affiliates of Third Security. Additionally, Doit L. Koppler II, a director of the Company, is an employee of Third Security and Robert Patzig, a director of the Company, is a former employee of Third Security.

(5) The number of shares consists of (i) 1,510,135 shares of Common Stock, (ii) 42,941 shares of Common Stock issuable upon conversion of 42,941 shares of Series A-1 Preferred, which such shares of Common Stock are covered by this prospectus, (iii) 32,205 shares of Common Stock issuable upon exercise or exchange of a Placement Warrant that is currently exercisable, except to the extent such exercise is restricted by the Warrant Blocker; however, if the Placement Warrants Required Approvals have been obtained, Third Security Incentive 2010 LLC may receive an additional 19,967 shares of Common Stock upon exercise of the Exchange Right under the Placement Warrant for an aggregate of up to 52,172 shares of Common Stock issuable upon exchange of the Placement Warrant, all of which such Warrant Shares are covered by this prospectus, and (iv) 135,414 shares of Common Stock issuable upon exercise of warrants to purchase Common Stock that are not Placement Warrants

and are currently exercisable. The Warrant Blocker will automatically expire 61 calendar days prior to the expiration date of the Placement Warrant. The table above includes a Placement Warrant that is not currently exercisable because of the Warrant Blocker and the Placement Warrants Required Approvals and which is not deemed to be beneficially owned by Third Security Incentive 2010 LLC. Third Security Incentive 2010 LLC is managed by Third Security, which is managed by Mr. Randal J. Kirk. Mr. Randal J. Kirk could be deemed to have indirect beneficial ownership of these shares. The business address of Third Security Incentive 2010 LLC is 1881 Grove Avenue, Radford, Virginia 24141. We are party to the Loan and Security Agreement with affiliates of Third Security. Additionally, Doit L. Koppler II, a director of the Company, is an employee of Third Security and Robert Patzig, a director of the Company, is a former employee of Third Security.

The number of shares consists of (i) 894,613 shares of Common Stock, (ii) 42,941 shares of Common Stock issuable upon conversion of 42,941 shares of Series A-1 Preferred, which such shares of Common Stock are covered by this prospectus, and (iii) 32,205 shares of Common Stock issuable upon exercise or exchange of a Placement Warrant that is currently exercisable, except to the extent such exercise is restricted by the Warrant Blocker; however, if the Placement Warrants Required Approvals have been obtained, Third Security Staff 2014 LLC may receive an additional 19,967 shares of Common Stock upon exercise of the Exchange Right under the Placement Warrant for an aggregate of up to 52,172 shares of Common Stock issuable upon exchange of the Placement Warrant, all of which such Warrant Shares are covered by this prospectus. The Warrant Blocker will (7) automatically expire 61 calendar days prior to the expiration date of the Placement Warrant. The table above includes a Placement Warrant that is not currently exercisable because of the Warrant Blocker and the Placement Warrants Required Approvals and which is not deemed to be beneficially owned by Third Security Staff 2014 LLC. Third Security Staff 2014 LLC is managed by Third Security, which is managed by Mr. Randal J. Kirk. Mr. Randal J. Kirk could be deemed to have indirect beneficial ownership of these shares. The business address of Third Security Staff 2014 LLC is 1881 Grove Avenue, Radford, Virginia 24141. We are party to the Loan and Security Agreement with affiliates of Third Security. Additionally, Doit L. Koppler II, a director of the Company, is an employee of Third Security and Robert Patzig, a director of the Company, is a former employee of Third Security.

Indemnification

Under the Registration Rights Agreement, we have agreed to indemnify the Selling Stockholders and each underwriter of the Securities against certain losses, claims, damages, liabilities, settlement costs and expenses, including liabilities under the Securities Act.

PLAN OF DISTRIBUTION

We are registering the shares of common stock previously issued to the Selling Stockholders and issuable upon exercise or exchange of the warrants and upon conversion of the Series A-1 Preferred previously issued to the Selling Stockholders to permit the resale of these shares of common stock by the holders of the common stock, warrants and Series A-1 Preferred from time to time after the date of this prospectus. We will not receive any of the proceeds from the sale by the Selling Stockholders of the shares of common stock. We will bear all fees and expenses incident to our obligation to register the shares of common stock.

The Selling Stockholders may sell all or a portion of the shares of common stock beneficially owned by them and offered hereby from time to time directly or through one or more underwriters, broker-dealers or agents. If the shares of common stock are sold through underwriters or broker-dealers, the Selling Stockholders will be responsible for underwriting discounts or commissions or agent's commissions. The shares of common stock may be sold in one or more transactions at fixed prices, at prevailing market prices at the time of the sale, at varying prices determined at the time of sale, or at negotiated prices. The Selling Stockholders will act independently of us in making decisions with respect to the timing, manner and size of each sale. These sales may be effected in transactions, which may involve crosses or block transactions:

· on any national securities exchange or quotation service on which the securities may be listed or quoted at the time of sale;

· in the over-the-counter market;

· in transactions otherwise than on these exchanges or systems or in the over-the-counter market;

· through the writing of options, whether such options are listed on an options exchange or otherwise;

· in ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;

· in block trades in which the broker-dealer will attempt to sell the shares as agent but may position and resell a portion of the block as principal to facilitate the transaction;

· through purchases by a broker-dealer as principal and resale by the broker-dealer for its account;

in an exchange distribution in accordance with the rules of the applicable exchange;

in privately negotiated transactions;

in short sales;

through the distribution of the common stock by any Selling Stockholder to its partners, members or stockholders;

through one or more underwritten offerings on a firm commitment or best efforts basis;

in sales pursuant to Rule 144;

whereby broker-dealers may agree with the Selling Stockholders to sell a specified number of such shares at a stipulated price per share;

in a combination of any such methods of sale; and

in any other method permitted pursuant to applicable law.

If the Selling Stockholders effect such transactions by selling shares of common stock to or through underwriters, broker-dealers or agents, such underwriters, broker-dealers or agents may receive commissions in the form of discounts, concessions or commissions from the Selling Stockholders or commissions from purchasers of the shares of common stock for whom they may act as agent or to whom they may sell as principal (which discounts, concessions or commissions as to particular underwriters, broker-dealers or agents may be in excess of those customary in the types of transactions involved). In connection with sales of the shares of common stock or otherwise, the Selling Stockholders may enter into hedging transactions with broker-dealers, which may in turn engage in short sales of the shares of common stock in the course of hedging in positions they assume. The Selling Stockholders may also sell shares of common stock short and deliver shares of common stock covered by this prospectus to close out short positions and to return borrowed shares in connection with such short sales. The Selling Stockholders may also loan or pledge shares of common stock to broker-dealers that in turn may sell such shares.

The Selling Stockholders may pledge or grant a security interest in some or all of the shares of common stock, warrants or Series A-1 Preferred owned by them and, if they default in the performance of their secured obligations, the pledgees or secured parties may offer and sell the shares of common stock from time to time pursuant to this prospectus or any amendment to this prospectus under Rule 424(b)(3) or other applicable provision of the Securities Act amending, if necessary, the list of Selling Stockholders to include the pledgee, transferee or other successors in interest as Selling Stockholders under this prospectus. The Selling Stockholders also may transfer and donate the shares of common stock in other circumstances in which case the transferees, donees, pledgees or other successors in interest will be the selling beneficial owners for purposes of this prospectus.

The Selling Stockholders and any broker-dealer participating in the distribution of the shares of common stock may be deemed to be “underwriters” within the meaning of the Securities Act, and any commission paid, or any discounts or concessions allowed to, any such broker-dealer may be deemed to be underwriting commissions or discounts under the Securities Act. At the time a particular offering of the shares of common stock is made, a prospectus supplement, if required, will be distributed which will set forth the aggregate amount of shares of common stock being offered and the terms of the offering, including the name or names of any broker-dealers or agents, any discounts, commissions and other terms constituting compensation from the Selling Stockholders and any discounts, commissions or concessions allowed or reallocated or paid to broker-dealers. The Selling Stockholders may indemnify any broker-dealer that participates in transactions involving the sale of the shares of common stock against certain liabilities, including liabilities arising under the Securities Act.

Under the securities laws of some states, the shares of common stock may be sold in such states only through registered or licensed brokers or dealers. In addition, in some states the shares of common stock may not be sold unless such shares have been registered or qualified for sale in such state or an exemption from registration or qualification is available and is complied with.

There can be no assurance that any Selling Stockholder will sell any or all of the shares of common stock registered pursuant to the registration statement, of which this prospectus forms a part.

The Selling Stockholders and any other person participating in such distribution will be subject to applicable provisions of the Exchange Act and the rules and regulations thereunder, including, without limitation, Regulation M of the Exchange Act, which may limit the timing of purchases and sales of any of the shares of common stock by the Selling Stockholders and any other participating person. Regulation M may also restrict the ability of any person engaged in the distribution of the shares of common stock to engage in market-making activities with respect to the shares of common stock. All of the foregoing may affect the marketability of the shares of common stock and the ability of any person or entity to engage in market-making activities with respect to the shares of common stock.

We will pay all expenses of the registration of the shares of common stock pursuant to the registration rights agreement, estimated to be \$35,524 in total, including, without limitation, SEC filing fees and expenses of compliance with state securities or “Blue Sky” laws; provided, however, that a Selling Stockholder will pay all underwriting discounts and selling commissions, if any. We will indemnify the Selling Stockholders against liabilities, including some liabilities under the Securities Act, in accordance with the registration rights agreement, or the Selling Stockholders will be entitled to contribution. We may be indemnified by the Selling Stockholders against civil liabilities, including liabilities under the Securities Act, that may arise from any written information furnished to us by the Selling Stockholder specifically for use in this prospectus, in accordance with the registration rights agreement, or we may be entitled to contribution.

Once sold under the registration statement, of which this prospectus forms a part, the shares of common stock will be freely tradable in the hands of persons other than our affiliates.

DESCRIPTION OF CAPITAL STOCK

General Matters

Under our Third Amended and Restated Certificate of Incorporation, as amended from time to time, or the Certificate of Incorporation, we are authorized to issue up to 150,000,000 shares of Common Stock, from time to time, as provided in a resolution or resolutions adopted by our Board of Directors.

Common Stock

As of January 8, 2016, 20,695,870 shares of Common Stock were issued and outstanding, held by approximately 77 stockholders of record, not including beneficial holders whose shares are held in names other than their own.

Dividends, Voting Rights and Liquidation

Holders of Common Stock are entitled to one vote for each share held of record on all matters submitted to a vote of the stockholders and do not have cumulative voting rights. Holders of Common Stock are entitled to receive ratably such dividends, if any, as may be declared from time to time by our Board of Directors out of funds legally available for dividend payments. All outstanding shares of Common Stock are fully paid and non-assessable. The holders of Common Stock have no preferences or rights of conversion, exchange, pre-emption or other subscription rights. There are no redemption or sinking fund provisions applicable to the Common Stock. In the event of any liquidation, dissolution or winding-up of our affairs, holders of Common Stock will be entitled to share ratably in our assets that are remaining after payment or provision for payment of all of our debts and obligations. The rights, preferences and privileges of the Common Stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of preferred stock currently outstanding or which we may designate and issue in the future.

Preferred Stock

General Matters

Under the Certificate of Incorporation, we have the authority to issue up to 15,000,000 shares of preferred stock, \$0.01 par value per share, or the Preferred Stock, issuable in specified series and having specified voting, dividend, conversion, liquidation and other rights and preferences as our Board of Directors may determine, subject to limitations set forth in the Certificate of Incorporation. The Preferred Stock may be issued for any lawful corporate purpose without further action by our stockholders. The issuance of any Preferred Stock having conversion rights might have the effect of diluting the interests of our other stockholders. In addition, shares of Preferred Stock could be issued with rights, privileges and preferences which would deter a tender or exchange offer or discourage the acquisition of control of the Company.

Of the number of shares of Preferred Stock authorized by our Certificate of Incorporation, as of January 8, 2016 (i) 3,879,307 shares had been designated Series A Convertible Preferred Stock with such rights, privileges and preferences as set forth in the Certificate of Amendment of Certificate of Designation of Series A Convertible Preferred Stock filed with the Secretary of State of the State of Delaware on March 5, 2014, (ii) 1,443,297 shares had been designated Series B Convertible Preferred Stock with such rights, privileges and preferences as set forth in the Certificate of Designation of Series B Convertible Preferred Stock filed with the Secretary of State of the State of Delaware on March 5, 2014, and (iii) 2,365,243 shares had been designated Series A-1 Preferred with such rights, privileges and preferences as set forth in the Certificate of Designation of Series A-1 Convertible Preferred Stock filed with the Secretary of State of the State of Delaware on January 8, 2016. As of January 8, 2016, no shares of the Series A Convertible Preferred Stock or the Series B Convertible Preferred Stock were outstanding and 2,365,243 shares of Series A-1 Preferred were issued and outstanding.

Dividends, Voting Rights and Liquidation

Certain rights of the holders of the Series A-1 Preferred are senior to the rights of the holders of our Common Stock. The Series A-1 Preferred has a liquidation preference equal to its original price per share, plus any accrued and unpaid dividends thereon.

All outstanding shares of Series A-1 Preferred will be automatically converted into Common Stock, at an initial conversion rate of 1:1, at the election of the holders of a majority of the then-outstanding shares of Series A-1 Preferred, voting as a single class on an as-converted basis. The initial conversion rate for the Series A-1 Preferred is subject to adjustment in the event of certain stock splits, stock dividends, mergers, reorganizations and reclassifications.

Generally, the holders of the Series A-1 Preferred are entitled to vote as a single voting group with the holders of the Common Stock, and the holders of the Series A-1 Preferred are generally entitled to that number of votes as is equal to the product obtained by multiplying: (i) the number of whole shares of Common Stock into which the Series A-1 Preferred may be converted as of the record date of such vote or consent, by (ii) 0.93, rounded down to the nearest whole number. Initially, every 1.075269 shares of Series A-1 Preferred will generally be entitled to one vote.

Anti-Takeover Effects Under Section 203 of the General Corporation Law of the State of Delaware

We are subject to Section 203 of the General Corporation Law of the State of Delaware, or the DGCL, which prohibits a Delaware corporation from engaging in any business combination with any interested stockholder for a period of three years after the date that such stockholder became an interested stockholder, with the following exceptions:

before such date, the board of directors of the corporation approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder;

upon completion of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction began, excluding for purposes of determining the voting stock outstanding (but not the outstanding voting stock owned by the interested stockholder) those shares owned (i) by persons who are directors and also officers and (ii) employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or an exchange offer; or

on or after such date, the business combination is approved by the board of directors and authorized at an annual or a special meeting of the stockholders, and not by written consent, by the affirmative vote of at least 66²/₃% of the outstanding voting stock that is not owned by the interested stockholder.

In general, Section 203 of the DGCL defines “business combination” to include the following:

any merger or consolidation involving the corporation or any direct or indirect majority owned subsidiary of the corporation and the interested stockholder or any other corporation, partnership, unincorporated association, or other entity if the merger or consolidation is caused by the interested stockholder and as a result of such merger or consolidation the transaction is not excepted as described above;

any sale, transfer, pledge, or other disposition (in one transaction or a series) of 10% or more of the assets of the corporation involving the interested stockholder;

subject to certain exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder;

any transaction involving the corporation that has the effect of increasing the proportionate share of the stock or any class or series of the corporation beneficially owned by the interested stockholder; or

the receipt by the interested stockholder of the benefit of any loss, advances, guarantees, pledges, or other financial benefits by or through the corporation.

In general, Section 203 of the DGCL defines an “interested stockholder” as an entity or a person who, together with the person’s affiliates and associates, beneficially owns, or within three years prior to the time of determination of interested stockholder status did own, 15% or more of the outstanding voting stock of the corporation.

A Delaware corporation may “opt out” of these provisions with an express provision in its original certificate of incorporation or an express provision in its certificate of incorporation or bylaws resulting from a stockholders’ amendment approved by at least a majority of the outstanding voting shares. We have not opted out of these provisions. As a result, mergers or other takeover or change in control attempts of us may be discouraged or prevented.

Anti-Takeover Effects Under Certain Provisions of our Certificate of Incorporation and Bylaws

Our Certificate of Incorporation and our Amended and Restated Bylaws, or the Bylaws, include a number of provisions that may have the effect of deterring hostile takeovers or delaying or preventing changes in control of the management of the Company.

First, our Certificate of Incorporation provides that all stockholder actions must be effected at a duly called meeting of holders and not by a consent in writing.

Second, our Bylaws provide that special meetings of the holders may be called only by the chairman of the Board of Directors, the Chief Executive Officer or our Board of Directors pursuant to a resolution adopted by a majority of the total number of authorized directors.

Third, our Certificate of Incorporation provides that our Board of Directors can issue up to 15,000,000 shares of Preferred Stock without further action by our stockholders, as described under “—Preferred Stock” above.

Fourth, our Certificate of Incorporation and Bylaws provide for a classified Board of Directors in which approximately one-third of the directors are elected each year. Consequently, any potential acquirer would need to successfully complete two proxy contests in order to take control of our Board of Directors. As a result of the provisions of the Certificate of Incorporation and Delaware law, stockholders will not be able to cumulate votes for directors.

Fifth, our Certificate of Incorporation prohibits a business combination with an interested stockholder without the approval of the holders of 75% of all voting shares and the vote of a majority of the voting shares held by disinterested stockholders, unless it has been approved by a majority of the disinterested directors.

Finally, our Bylaws establish procedures, including advance notice procedures, with regard to the nomination of candidates for election as directors and stockholder proposals. These provisions of our Certificate of Incorporation and Bylaws could discourage potential acquisition proposals and could delay or prevent a change in control of the management of our company.

Warrants

In addition to the shares subject to the Warrants that we are registering hereunder, as of January 8, 2016, warrants to purchase 5,918,004 shares of Common Stock with a weighted-average exercise price of \$2.70 per share were outstanding, some of which are subject to a provision that is similar to the Warrant Blocker, and all of the shares subject to the warrants are currently exercisable, except for a warrant to purchase 107,527 shares of common stock, which will become exercisable on July 8, 2016. Each Placement Warrant (i) has an exercise price of \$1.21 per share of Common Stock and became exercisable upon issuance, (ii) became exchangeable pursuant to the Exchange Right upon issuance, subject to receipt of the Placement Warrants Required Approvals to the extent the shares issuable upon exercise of the Exchange Right are greater than the number of shares issuable upon exercise of a Placement Warrant, and (iii) will be exercisable or exchangeable through January 8, 2021. The Amended Warrant (A) has an exercise price of \$1.21 per share of Common Stock and provides that no shares of Common Stock may be issued upon exercise or exchange of the Amended Warrant unless the Amended Warrant Required Approvals have been obtained, and (B) subject to obtaining the Amended Warrant Required Approvals, will be exercisable or exchangeable through January 8, 2021. The exercisability or exchangeability of all of the Warrants is subject to the Warrant Blocker, which will automatically expire 61 calendar days prior to January 8, 2021, the expiration date of the Warrants. Each of the Placement Warrants and the Amended Warrant includes both cash and “cashless exercise” features. For any Exchange Right under the Placement Warrants exercised more than 90 days following the issuance of the Placement Warrants, if we have not obtained the Placement Warrants Required Approvals, we will be required to pay the Placement Warrant

holder an amount in cash for the shares of Common Stock that we cannot issue under the Placement Warrant pursuant to such exercise without the Placement Warrants Required Approvals based on the applicable Exchange Amount. Each Placement Warrant further provides that, to the extent the closing bid price of our Common Stock on the second trading day prior to the date the Placement Warrant is exchanged is less than \$0.50, the Exchange Price for the Placement Warrant will be deemed to be equal to \$0.50, and, in addition to issuing shares of Common Stock based on this Exchange Price, we will be required to pay to the Placement Warrant holder an amount in cash equal to the product obtained by multiplying (i) \$0.50 minus the closing bid price of our Common Stock on the second trading day prior to the date the Placement Warrant is exchanged, by (ii) the aggregate number of shares of Common Stock issued to the Placement Warrant holder by us in such exchange at an Exchange Price equal to \$0.50.

Pursuant to the terms of the Amended Warrant, in the event the Amended Warrant holder exercises the Exchange Right under the Amended Warrant more than 90 days following the issuance of the Amended Warrant, if we have not obtained the Amended Warrant Required Approvals, we will be required to pay to the Amended Warrant holder an amount in cash for the shares of Common Stock that we cannot issue under the Amended Warrant pursuant to such exercise without the Amended Warrant Required Approvals based on the applicable Exchange Amount. The Amended Warrant also provides that, to the extent the closing bid price of our Common Stock on the second trading day prior to the date the Amended Warrant is exchanged is less than \$0.50, the Exchange Price for the Amended Warrant will be deemed to be equal to \$0.50, and, in addition to issuing shares of Common Stock based on this Exchange Price (assuming receipt of the Amended Warrant Required Approvals), we will be required to pay to the Amended Warrant holder an amount in cash equal to the product obtained by multiplying (i) \$0.50 minus the closing bid price of our Common Stock on the second trading day prior to the date the Amended Warrant is exchanged, by (ii) the aggregate number of shares of Common Stock issued to the Amended Warrant holder by us in such exchange at an Exchange Price equal to \$0.50.

We are registering all of the underlying shares of Common Stock issuable upon exercise or exchange of the Warrants pursuant to the registration statement of which this prospectus forms a part. All of our other outstanding warrants are currently exercisable, and all outstanding warrants contain provisions for the adjustment of the exercise price in the event of stock dividends, stock splits, reorganizations, reclassifications or mergers. In addition, certain of the warrants contain a “cashless exercise” feature that allows the holders thereof to exercise the warrants without a cash payment to us under certain circumstances.

Unsecured Convertible Promissory Notes

Pursuant to the terms of an Unsecured Convertible Promissory Note Purchase Agreement, or the Note Purchase Agreement, dated December 31, 2014, by and among us and certain accredited investors, we issued and sold, in a private placement, unsecured convertible promissory notes, or the Notes, in the aggregate principal amount of \$1,675,000. In accordance with the terms of the Notes, the outstanding principal and unpaid interest accrued under each Note is convertible into shares of Common Stock as follows: (i) commencing upon the date of issuance of the Note (but no earlier than January 1, 2015), the investor holding such Note became entitled to convert, on a one-time basis, up to 50% of the outstanding principal and unpaid interest accrued under the Note, into shares of Common Stock at a conversion price equal to the lesser of (a) the average closing price of our Common Stock on the principal securities exchange or securities market on which our Common Stock is then traded, or the Market, for the 20 consecutive trading days immediately preceding the date of conversion, and (b) \$2.20 (subject to adjustment for stock splits, stock dividends, other distributions, recapitalizations and the like); and (ii) commencing February 15, 2015, the investor holding such Note became entitled to convert, on a one-time basis, any or all of the remaining outstanding principal and unpaid interest accrued under the Note, into shares of Common Stock at a conversion price equal to 85% of the average closing price of our Common Stock on the Market for the 15 consecutive trading days immediately preceding the date of conversion. As of the date of this prospectus, Notes in an aggregate principal amount of \$1,150,000 have been converted into 783,809 shares of Common Stock, and Notes in an aggregate principal amount of \$525,000 remain outstanding. Craig-Hallum acted as the sole placement agent for the convertible notes offering. In connection with the convertible notes offering, we issued to Craig-Hallum a convertible promissory note on the same terms and conditions as the Notes, in an aggregate principal amount of \$46,250, which is outstanding as of the date of this prospectus.

Pursuant to the terms of the Note Purchase Agreement, we are obligated to use our best efforts to file with the SEC by January 31, 2016 a registration statement to register for resale all of the shares of Common Stock issued on or prior to November 30, 2015 pursuant to the conversion of any portion of the Notes, or the Initial Registration Statement, and to use our commercially reasonable efforts to have the Initial Registration Statement declared effective by the SEC by March 31, 2016. In addition, we are obligated to use our best efforts to file with the SEC by January 31, 2017 an additional registration statement to register for resale all of the shares of Common Stock issued pursuant to the conversion of any portion of the Notes that have not previously been registered for resale, or the Additional Registration Statement, and to use our commercially reasonable efforts to have the Additional Registration Statement declared effective by the SEC by March 31, 2017. Under the Note Purchase Agreement, we may be required to effect one or more other registrations to register for resale the shares of Common Stock issued or issuable under the Notes in connection with certain “piggy-back” registration rights granted to the investors in the private placement.

We sold the Notes to “accredited investors”, as that term is defined in the Securities Act and in reliance on the exemption from registration afforded by Section 4(a)(2) of the Securities Act and Rule 506 of Regulation D promulgated under the Securities Act and corresponding provisions of state securities or “blue sky” laws. Accordingly, the Notes and the shares of Common Stock issued or issuable under the Notes have not been registered under the Securities Act and such securities may not be offered or sold in the United States absent registration or an exemption from registration under the Securities Act and any applicable state securities laws.

Listing

Our common stock is listed on the NASDAQ Capital Market under the symbol “TBIO”.

Transfer Agent and Registrar

The transfer agent and registrar for our Common Stock is Wells Fargo Shareowner Services. Its address is 1110 Centre Pointe Curve, Suite 101, Mendota Heights, MN 55120 and its telephone number is 1-855-217-6361.

LEGAL MATTERS

Unless otherwise indicated in the applicable prospectus supplement, the validity of the Common Stock offered by this prospectus, and any supplement thereto, will be passed upon for us by Paul Hastings LLP, Palo Alto, California.

EXPERTS

The consolidated balance sheets of Transgenomic, Inc. and Subsidiary as of December 31, 2014 and 2013, and the related consolidated statements of operations, comprehensive loss, stockholders' equity and cash flows for each of the two years in the period ended December 31, 2014 appearing in Transgenomic, Inc.'s Annual Report (Form 10-K) for the year ended December 31, 2014, have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their report thereon (which contains an explanatory paragraph that raises substantial doubt about the Company's ability to continue as a going concern as described in Note 1 to the consolidated financial statements), included therein, and incorporated herein by reference. Such financial statements are incorporated herein in reliance upon such report given on the authority of such firm as experts in accounting and auditing.

The audited consolidated financial statements of Transgenomic, Inc. and subsidiary for the year ended December 31, 2012 included in Transgenomic, Inc.'s Annual Report on Form 10-K for the year ended December 31, 2014 have been audited by RSM US LLP, independent registered public accounting firm, as set forth in their report dated March 14, 2013, which is incorporated by reference herein. Such financial statements are incorporated herein in reliance upon the report of RSM US LLP pertaining to such financial statements given on the authority of such firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We are a reporting company and file annual, quarterly and current reports, proxy statements and other information with the SEC. We have filed with the SEC a registration statement on Form S-3 under the Securities Act with respect to the Common Stock being offered under this prospectus. This prospectus does not contain all of the information set forth in the registration statement and the exhibits to the registration statement. For further information with respect to us and the shares of Common Stock being offered under this prospectus, we refer you to the registration statement and the exhibits and schedules filed as a part of the registration statement. You may read and copy the registration statement, as well as our reports, proxy statements and other information, 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 more information about the operation of the Public Reference Room. The SEC maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC, including

Transgenomic, Inc. The SEC's Internet site can be found at <http://www.sec.gov>.

DISCLOSURE OF COMMISSION POSITION ON INDEMNIFICATION FOR SECURITIES ACT LIABILITIES

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to our directors, officers, and persons controlling us pursuant to the provisions described in Item 15 of the registration statement of which this prospectus is a part or otherwise, we have been advised that in the opinion of the SEC such indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable. In the event that a claim for indemnification against such liabilities (other than our payment of expenses incurred or paid by our directors, officers, or controlling persons in the successful defense of any action, suit, or proceeding) is asserted by our directors, officers, or controlling persons in connection with the common stock being registered, we will, unless in the opinion of our 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 Securities Act and will be governed by the final adjudication of the issue.

IMPORTANT INFORMATION INCORPORATED BY REFERENCE

The SEC allows us to “incorporate by reference” information into this prospectus, which means that we can disclose important information to you by referring you to another document filed separately with the SEC. The documents incorporated by reference into this prospectus contain important information that you should read about us.

The following documents are incorporated by reference into this prospectus:

- (a) The Registrant’s Annual Report on Form 10-K for the fiscal year ended December 31, 2014, filed with the SEC on April 15, 2015, as amended pursuant to that Amendment No. 1 filed with the SEC on August 14, 2015 and Amendment No. 2 filed with the SEC on August 21, 2015;
- (b) The Registrant’s Definitive Proxy Statement on Schedule 14A filed with the SEC on April 30, 2015;
- (c) The Registrant’s Quarterly Report on Form 10-Q for the quarter ended March 31, 2015, filed with the SEC on May 14, 2015;
- (d) The Registrant’s Quarterly Report on Form 10-Q for the quarter ended June 30, 2015, filed with the SEC on August 14, 2015;
- (e) The Registrant’s Quarterly Report on Form 10-Q for the quarter ended September 30, 2015, filed with the SEC on November 16, 2015;
- (f) The Registrant’s Current Reports on Form 8-K filed with the SEC on (i) January 7, 2015, (ii) January 14, 2015, (iii) January 20, 2015, (iv) February 19, 2015, (v) February 27, 2015, (vi) April 2, 2015, (vii) June 3, 2015, (viii) June 9, 2015, (ix) June 22, 2015, (x) July 1, 2015, (xi) September 9, 2015, (xii) September 17, 2015, (xiii) September 30, 2015, (xiv) December 1, 2015, (xv) January 11, 2016, filed at 7:30 a.m. Eastern Time, (xvi) January 11, 2016, filed at 7:33 a.m. Eastern Time, and (xvii) January 20, 2016;
- (g) The Registrant’s Current Report on Form 8-K/A filed with the SEC on July 7, 2015; and
- (h) The description of the Registrant’s common stock set forth in the Registrant’s Registration Statement on Form 8-A (File No. 001-36439), filed with the SEC on May 5, 2014, including any amendments or reports filed for the purpose of updating such description.

We also incorporate by reference any future filings (other than current reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items unless such Form 8-K expressly provides to the contrary) made with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, including those made after the date of the initial filing of the registration statement of which this prospectus is a part and prior to effectiveness of such registration statement, until we file a post-effective amendment that indicates the termination of the offering of the Common Stock made by this prospectus and will become a part of this prospectus from the respective dates that such documents are filed with the SEC. Any statement contained herein or in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for purposes hereof or of the related prospectus supplement to the extent that a statement contained herein or in any other subsequently filed document which is also incorporated or deemed to be incorporated herein modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

Documents incorporated by reference are available from us, without charge. You may obtain documents incorporated by reference in this prospectus by requesting them in writing or by telephone at the following address:

Transgenomic, Inc.

Attn: Investor Relations

12325 Emmet Street

Omaha, NE 68164

Phone: (402) 452-5400

Fax: (402) 452-5461

E-mail: investorrelations@transgenomic.com

TRANSGENOMIC, INC.

7,121,403 SHARES OF COMMON STOCK

PROSPECTUS

_____, 2016

Neither we nor the Selling Stockholders have authorized any dealer, salesperson or other person to give any information or to make any representations not contained in this prospectus or any prospectus supplement. You must not rely on any unauthorized information. This prospectus is not an offer to sell these securities in any jurisdiction where an offer or sale is not permitted. The information in this prospectus is current as of the date of this prospectus. You should not assume that this prospectus is accurate as of any other date.

PART II**INFORMATION NOT REQUIRED IN PROSPECTUS***Item 14. Other Expenses of Issuance and Distribution*

The following table sets forth all expenses payable by the Registrant in connection with the sale of the common stock being registered. The security holders will not bear any portion of such expenses. All the amounts shown are estimates except for the registration fee.

| | |
|----------------------------------------------------------|----------|
| SEC registration fee | \$524 |
| Legal fees and expenses | 25,000 |
| Accounting fees and expenses | 5,000 |
| Printing, transfer agent fees and miscellaneous expenses | 5,000 |
| Total | \$35,524 |

Item 15. Indemnification of Directors and Officers

Section 145 of the General Corporation Law of the State of Delaware, or the DGCL, authorizes a court to award, or a corporation to grant, indemnity to directors and officers in terms sufficiently broad to permit such indemnification under certain circumstances for liabilities (including reimbursement of expenses incurred) arising under the Securities Act of 1933, as amended.

As permitted by the DGCL, the Registrant's Third Amended and Restated Certificate of Incorporation, as amended from time to time, or the Certificate of Incorporation, eliminates the personal liability of its directors for monetary damages for breach of fiduciary duty as a director, except for liability (i) for any breach of the director's duty of loyalty to the Registrant or its stockholders, (ii) for acts or omissions not in good faith or that involve intentional misconduct or a knowing violation of law, (iii) under Section 174 of the DGCL (regarding unlawful dividends and stock purchases), or (iv) for any transaction from which the director derived an improper personal benefit. If the DGCL is amended to authorize further elimination or limiting of directors' personal liability, then the Certificate of Incorporation provides that the personal liability of directors will be eliminated or limited to the fullest extent provided under the DGCL.

As permitted by the DGCL, the Certificate of Incorporation and the Registrant's Amended and Restated Bylaws provide that (i) the Registrant is required to indemnify its directors and officers to the fullest extent permitted by the DGCL, subject to certain very limited exceptions, (ii) the Registrant may indemnify its other employees and agents as set forth in the DGCL, (iii) the Registrant is required to advance expenses, as incurred, to its directors and executive officers in connection with a legal proceeding to the fullest extent permitted by the DGCL, subject to certain conditions, and (iv) the rights conferred by the Certificate of Incorporation and the Registrant's Amended and Restated Bylaws are not exclusive.

The DGCL authorizes a corporation to indemnify its directors and officers provided that the corporation shall not eliminate or limit the liability of a director as follows:

- (a) for any action brought by or in the right of a corporation where the director or officer is adjudged to be liable to the corporation, except where a court determines the director or officer is entitled to indemnity;
- (b) for acts or omissions not in good faith or which involve conduct that the director or officer believes is not in the best interests of the corporation;
- (c) for knowing violations of the law;
- (d) for any transaction from which the directors derived an improper personal benefit; and
- (e) for payment of dividends or approval of stock repurchases or redemptions leading to liability under Section 174 of the DGCL.

The DGCL requires a corporation to indemnify a director or officer to the extent that the director or officer has been successful, on the merits or otherwise, in the defense of any action, suit or proceeding for which indemnification is lawful.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers or persons controlling the Registrant pursuant to the foregoing provisions, the Registrant has been informed that in the opinion of the SEC such indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

The Registrant maintains a director and officer insurance policy which insures the directors and officers of the Registrant against damages, judgments, settlements and costs incurred by reason of certain wrongful acts committed by such persons in their capacities as directors and officers.

Item 16. Exhibits

| Exhibit Number | Description |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| †2.1 | Asset Purchase Agreement among the Registrant, Scoli Acquisition Sub, Inc. and Axial Biotech, Inc. dated August 27, 2012 (incorporated by reference to Exhibit 2.1 to the Registrant's Quarterly Report on Form 10-Q filed on November 8, 2012). |
| 4.1 | Form of Certificate of the Registrant's Common Stock (incorporated by reference to Exhibit 4 to the Registrant's Registration Statement on Form S-1 (Registration No. 333-32174) filed on March 10, 2000). |
| 4.2 | Form of Warrant issued by the Registrant to the Third Security Entities on February 7, 2012 (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K filed on February 7, 2012). |
| 4.3 | Form of Warrant issued by the Registrant to the Investors on February 7, 2012 (incorporated by reference to Exhibit 10.3 to the Registrant's Current Report on Form 8-K filed on February 7, 2012). |
| 4.4 | Form of Registration Rights Agreement entered into by and among the Registrant, the Third Security Entities and the Investors dated February 2, 2012 (incorporated by reference to Exhibit 10.4 to the Registrant's Current Report on Form 8-K filed on February 7, 2012). |
| 4.5 | Registration Rights Agreement, entered into by and among the Registrant and the Investors, dated January 24, 2013 (incorporated by reference to Exhibit 10.3 to the Registrant's Current Report on Form 8-K/A filed on January 31, 2013). |
| 4.6 | Form of Warrant issued by the Registrant to the Investors on January 30, 2013 (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K/A filed on January 31, 2013). |
| 4.7 | Registration Rights Agreement, dated as of March 5, 2014, by and among the Registrant, Third Security Senior Staff 2008 LLC, Third Security Staff 2014 LLC and Third Security Incentive 2010 LLC (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K filed on March 6, 2014). |
| 4.8 | Securities Purchase Agreement, dated as of October 22, 2014, by and among Transgenomic, Inc. and the Investors (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K filed on October 22, 2014). |

Edgar Filing: TRANSGENOMIC INC - Form S-3

- 4.9 Form of Warrant issued by Transgenomic, Inc. to the Investors and the advisor on October 22, 2014 (incorporated by reference to Exhibit 4.2 to the Registrant's Current Report on Form 8-K filed on October 22, 2014).
- 4.10 Unsecured Convertible Promissory Note Purchase Agreement, dated as of December 31, 2014, by and among Transgenomic, Inc. and the Investors (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed on January 7, 2015).
- 4.11 Form of Unsecured Convertible Promissory Note issued by Transgenomic, Inc. to the Investor pursuant to the Unsecured Convertible Promissory Note Purchase Agreement, dated as of December 31, 2014 (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K filed on January 7, 2015).
- 4.12 Form of Warrant to Purchase Common Stock (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K filed on February 27, 2015).
- 4.13 Registration Rights Agreement, dated June 30, 2015, by and among Transgenomic, Inc. and the Investors (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K/A filed on July 7, 2015).
- 4.14 Form of Series A Warrant to Purchase Common Stock issued by Transgenomic, Inc. to the Investors on July 7, 2015 (incorporated by reference to Exhibit 4.2 to the Registrant's Current Report on Form 8-K/A filed on July 7, 2015).

II-2

Form of Series B Warrant to Purchase Common Stock issued by Transgenomic, Inc. to an Investor on July 7, 4.15 2015 (incorporated by reference to Exhibit 4.3 to the Registrant's Current Report on Form 8-K/A filed on July 7, 2015).

Form of Warrant to Purchase Common Stock issued by Transgenomic, Inc. to the Placement Agent on July 7, 4.16 2015 (incorporated by reference to Exhibit 4.4 to the Registrant's Current Report on Form 8-K/A filed on July 7, 2015).

Registration Rights Agreement, by and among Transgenomic, Inc. and the Investors, dated January 8, 2016 4.17 (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K filed on January 11, 2016 (accepted at 7:30 a.m. Eastern Time)).

Form of Warrant, issued by Transgenomic, Inc. to the Investors on January 8, 2016 (incorporated by reference to 4.18 Exhibit 4.2 to the Registrant's Current Report on Form 8-K filed on January 11, 2016 (accepted at 7:30 a.m. Eastern Time)).

Form of Amended Warrant, issued by Transgenomic, Inc. to an affiliate of an Investor on January 8, 2016 4.19 (incorporated by reference to Exhibit 4.3 to the Registrant's Current Report on Form 8-K filed on January 11, 2016 (accepted at 7:30 a.m. Eastern Time)).

Form of Warrant, issued by Transgenomic, Inc. to the Placement Agent on January 8, 2016 (incorporated by 4.20 reference to Exhibit 4.4 to the Registrant's Current Report on Form 8-K filed on January 11, 2016 (accepted at 7:30 a.m. Eastern Time)).

5.1 Opinion of Paul Hastings LLP.

23.1 Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm.

23.2 Consent of RSM US LLP, Independent Registered Public Accounting Firm.

23.3 Consent of Paul Hastings LLP is contained in Exhibit 5.1 to this Registration Statement.

24.1 Power of Attorney is contained on the signature page.

Pursuant to Item 601(b)(2) of Regulation S-K, the schedules to this agreement have been omitted. The Registrant agrees to furnish supplementally a copy of any omitted schedule to the Securities and Exchange Commission upon request.

Item 17. Undertakings

The undersigned Registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by section 10(a)(3) of the Securities Act of 1933;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement.

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

Provided, however, that:

Paragraphs (1)(i), (1)(ii) and (1)(iii) of this section do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the registrant pursuant to section 13 or section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.

(2) That, for the purpose 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.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser:

(i) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and

(ii) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof. *Provided, however,* that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date.

(6) 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 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.

(7) 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 Securities Act of 1933 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 Securities Act of 1933 and will be governed by the final adjudication of such issue.

II-4

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Omaha, State of Nebraska, on January 25, 2016.

TRANSGENOMIC, INC.

By: /s/ Paul Kinnon
 Paul Kinnon
President, Chief Executive Officer and Interim Chief Financial Officer

POWER OF ATTORNEY

Know All Persons By These Presents, that each person whose signature appears below constitutes and appoints Paul Kinnon and Leon Richards, and each or any one of them, his true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution, for him and in his name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this Registration Statement, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or their or his substitutes or substitute, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated.

| Signature | Title | Date |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| /s/ Paul Kinnon Paul Kinnon | President, Chief Executive Officer, Interim Chief Financial Officer and Director <i>(Principal Executive Officer and Principal Financial Officer)</i> | January 25, 2016 |
| /s/ Leon Richards Leon Richards | Chief Accounting Officer <i>(Principal Accounting Officer)</i> | January 25, 2016 |

/s/ Robert M. Patzig Director
Robert M. Patzig

January 25, 2016

/s/ Doit L. Koppler II Director
Doit L. Koppler II

January 25, 2016

/s/ Michael A. Luther Director
Michael A. Luther

January 25, 2016

Director
Mya Thomae

II-5

INDEX TO EXHIBITS

| Exhibit Number | Description |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| †2.1 | Asset Purchase Agreement among the Registrant, Scoli Acquisition Sub, Inc. and Axial Biotech, Inc. dated August 27, 2012 (incorporated by reference to Exhibit 2.1 to the Registrant’s Quarterly Report on Form 10-Q filed on November 8, 2012). |
| 4.1 | Form of Certificate of the Registrant’s Common Stock (incorporated by reference to Exhibit 4 to the Registrant’s Registration Statement on Form S-1 (Registration No. 333-32174) filed on March 10, 2000). |
| 4.2 | Form of Warrant issued by the Registrant to the Third Security Entities on February 7, 2012 (incorporated by reference to Exhibit 10.2 to the Registrant’s Current Report on Form 8-K filed on February 7, 2012). |
| 4.3 | Form of Warrant issued by the Registrant to the Investors on February 7, 2012 (incorporated by reference to Exhibit 10.3 to the Registrant’s Current Report on Form 8-K filed on February 7, 2012). |
| 4.4 | Form of Registration Rights Agreement entered into by and among the Registrant, the Third Security Entities and the Investors dated February 2, 2012 (incorporated by reference to Exhibit 10.4 to the Registrant’s Current Report on Form 8-K filed on February 7, 2012). |
| 4.5 | Registration Rights Agreement, entered into by and among the Registrant and the Investors, dated January 24, 2013 (incorporated by reference to Exhibit 10.3 to the Registrant’s Current Report on Form 8-K/A filed on January 31, 2013). |
| 4.6 | Form of Warrant issued by the Registrant to the Investors on January 30, 2013 (incorporated by reference to Exhibit 10.2 to the Registrant’s Current Report on Form 8-K/A filed on January 31, 2013). |
| 4.7 | Registration Rights Agreement, dated as of March 5, 2014, by and among the Registrant, Third Security Senior Staff 2008 LLC, Third Security Staff 2014 LLC and Third Security Incentive 2010 LLC (incorporated by reference to Exhibit 4.1 to the Registrant’s Current Report on Form 8-K filed on March 6, 2014). |
| 4.8 | Securities Purchase Agreement, dated as of October 22, 2014, by and among Transgenomic, Inc. and the Investors (incorporated by reference to Exhibit 4.1 to the Registrant’s Current Report on Form 8-K filed on October 22, 2014). |
| 4.9 | Form of Warrant issued by Transgenomic, Inc. to the Investors and the advisor on October 22, 2014 (incorporated by reference to Exhibit 4.2 to the Registrant’s Current Report on Form 8-K filed on October 22, 2014). |
| 4.10 | Unsecured Convertible Promissory Note Purchase Agreement, dated as of December 31, 2014, by and among Transgenomic, Inc. and the Investors (incorporated by reference to Exhibit 10.1 to the Registrant’s |

Edgar Filing: TRANSGENOMIC INC - Form S-3

Current Report on Form 8-K filed on January 7, 2015).

- 4.11 Form of Unsecured Convertible Promissory Note issued by Transgenomic, Inc. to the Investor pursuant to the Unsecured Convertible Promissory Note Purchase Agreement, dated as of December 31, 2014 (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K filed on January 7, 2015).
- 4.12 Form of Warrant to Purchase Common Stock (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K filed on February 27, 2015).
- 4.13 Registration Rights Agreement, dated June 30, 2015, by and among Transgenomic, Inc. and the Investors (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K/A filed on July 7, 2015).
- 4.14 Form of Series A Warrant to Purchase Common Stock issued by Transgenomic, Inc. to the Investors on July 7, 2015 (incorporated by reference to Exhibit 4.2 to the Registrant's Current Report on Form 8-K/A filed on July 7, 2015).
- 4.15 Form of Series B Warrant to Purchase Common Stock issued by Transgenomic, Inc. to an Investor on July 7, 2015 (incorporated by reference to Exhibit 4.3 to the Registrant's Current Report on Form 8-K/A filed on July 7, 2015).

II-6

Form of Warrant to Purchase Common Stock issued by Transgenomic, Inc. to the Placement Agent on July 7, 4.16 2015 (incorporated by reference to Exhibit 4.4 to the Registrant's Current Report on Form 8-K/A filed on July 7, 2015).

Registration Rights Agreement, by and among Transgenomic, Inc. and the Investors, dated January 8, 2016 4.17 (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K filed on January 11, 2016 (accepted at 7:30 a.m. Eastern Time)).

Form of Warrant, issued by Transgenomic, Inc. to the Investors on January 8, 2016 (incorporated by reference to 4.18 Exhibit 4.2 to the Registrant's Current Report on Form 8-K filed on January 11, 2016 (accepted at 7:30 a.m. Eastern Time)).

Form of Amended Warrant, issued by Transgenomic, Inc. to an affiliate of an Investor on January 8, 2016 4.19 (incorporated by reference to Exhibit 4.3 to the Registrant's Current Report on Form 8-K filed on January 11, 2016 (accepted at 7:30 a.m. Eastern Time)).

Form of Warrant, issued by Transgenomic, Inc. to the Placement Agent on January 8, 2016 (incorporated by 4.20 reference to Exhibit 4.4 to the Registrant's Current Report on Form 8-K filed on January 11, 2016 (accepted at 7:30 a.m. Eastern Time)).

5.1 Opinion of Paul Hastings LLP.

23.1 Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm.

23.2 Consent of RSM US LLP, Independent Registered Public Accounting Firm.

23.3 Consent of Paul Hastings LLP is contained in Exhibit 5.1 to this Registration Statement.

24.1 Power of Attorney is contained on the signature page.

Pursuant to Item 601(b)(2) of Regulation S-K, the schedules to this agreement have been omitted. The Registrant agrees to furnish supplementally a copy of any omitted schedule to the Securities and Exchange Commission upon request.