

CANCER GENETICS, INC
Form 424B5
May 23, 2016

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**Filed Pursuant to Rule 424(b)(5)
Registration No. 333-196374**

**PROSPECTUS SUPPLEMENT
(To the Prospectus Dated June 5, 2014)**

2,467,820 Shares of Common Stock CANCER GENETICS, INC.

We are offering 2,467,820 shares of our common stock, \$0.0001 par value per share, to institutional investors pursuant to this prospectus supplement and the accompanying prospectus and a securities purchase agreement with such investors. In a concurrent private placement, we are selling to such investors warrants to purchase one-half of the number of shares of our common stock purchased by such investor in this offering (the "Warrants"). The Warrants and the shares of our common stock issuable upon the exercise of the Warrants are not being registered under the Securities Act of 1933, as amended, (the "Securities Act"), are not being offered pursuant to this prospectus supplement and the accompanying prospectus and are being offered pursuant to the exemption provided in Section 4(a)(2) under the Securities Act and Rule 506(b) promulgated thereunder.

Our common stock is listed on The Nasdaq Capital Market under the symbol "CGIX". The Warrants being issued in the concurrent private placement are not listed on any securities exchange and we do not expect to list the Warrants. On May 19, 2016, the last reported sale price per share of our common stock was \$2.14 per share. As of May 19, 2016, the aggregate market value of our outstanding common stock held by non-affiliates (the public float) was approximately \$36.5 million, which was calculated based on 11,295,700 shares of outstanding common stock held by non-affiliates and on a price per share of \$3.23, the closing price of our common stock on March 22, 2016. In no event will we sell our common stock in a public primary offering with a value exceeding more than one-third of our public float in any 12-month period so long as our public float remains below \$75.0 million. During the 12 calendar month period that ends on, and includes, the date of this prospectus supplement, we have not offered and sold any other securities pursuant to General Instruction I.B.6 of Form S-3.

Investing in our securities involves a high degree of risk. See "Risk Factors" beginning on page S-6 of this prospectus supplement.

We retained H.C. Wainwright & Co., LLC as our exclusive placement agent to use its reasonable best efforts to solicit offers to purchase the securities in this offering. The placement agent has no obligation to buy any of the securities from us or to arrange for the purchase or sale of any specific number or dollar amount of the securities. We expect that delivery of the securities being offered pursuant to this prospectus supplement and the accompanying prospectus will be made on or about May 25, 2016.

Our Chairman of the Board, John Pappajohn, will purchase 317,820 shares of our common stock in this offering at \$2.2025 per share, which is above the public offering price, and will purchase warrants to purchase 158,910 shares of our common stock in the concurrent private placement, for an aggregate purchase price of \$700,000.

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

Common Stock	Per Share	Maximum Offering
Public offering price(1)	\$2.00	\$5,000,000
Placement agents fees(2)	\$0.14	\$350,000
Proceeds to us, before expenses(3)	\$1.86	\$4,650,000

(1) The public offering price for the securities purchased by our Chairman of the Board, John Pappajohn, will be \$2.2025 per share.

(2) We have also agreed to (i) grant warrants to purchase shares of common stock to the placement agent as described under "Plan of Distribution" on page S-12 of this prospectus supplement and (ii) pay the placement agent a reimbursement for out of pocket expenses in connection with marketing the transaction in the amount of up to \$10,000 and a reimbursement for legal fees and expenses of the placement agent in the amount of \$50,000. For additional information about the compensation paid to the placement agent, see "Plan of Distribution."

(3) The amount of the offering proceeds to us presented in this table does not give effect to any exercise of the Warrants being issued in this offering.

Rodman & Renshaw
a unit of H.C. Wainwright & Co.

The date of this prospectus supplement is May 23, 2016.

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ABOUT THIS PROSPECTUS SUPPLEMENT

In this prospectus supplement, "Cancer Genetics," "we," "us," "our" or "ours" refer to Cancer Genetics, Inc. and its consolidated subsidiaries.

This prospectus supplement and the accompanying prospectus relate to the offering of shares of our common stock and warrants to purchase shares of our common stock. Before buying any of the shares of common stock and warrants to purchase shares of our common stock offered hereby, we urge you to carefully read this prospectus supplement and the accompanying prospectus, together with the information incorporated herein by reference as described under the headings "Where You Can Find More Information" and "Incorporation of Documents by Reference." These documents contain important information that you should consider when making your investment decision. This prospectus supplement contains information about the common stock and warrants offered hereby and may add, update or change information in the accompanying prospectus.

You should rely only on the information that we have provided or incorporated by reference in this prospectus supplement and the accompanying prospectus. Neither we nor the underwriters (or any of our or their respective affiliates) have authorized any other person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it.

We and the underwriters are not making offers to sell or solicitations to buy our securities in any jurisdiction in which an offer or solicitation is not authorized or in which the person making that offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make an offer or solicitation. You should assume that the information in this prospectus supplement and the accompanying prospectus or any related free writing prospectus is accurate only as of the date on the front of the document and that any information that 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 supplement, the accompanying prospectus or any related free writing prospectus, or any sale of a security.

This document is in two parts. The first part is this prospectus supplement, which adds to and updates information contained in the accompanying prospectus. The second part, the prospectus, provides more general information, some of which may not apply to this offering. Generally, when we refer to this prospectus, we are referring to both parts of this document combined. To the extent there is a conflict between the information contained in this prospectus supplement and the information contained in the accompanying prospectus, you should rely on the information in this prospectus supplement.

This prospectus supplement and the accompanying prospectus contain summaries of certain provisions contained in some of the documents described herein, but reference is made to the actual documents for complete information. All of the summaries are qualified in their entirety by the actual documents. Copies of some of the documents referred to herein have been or will be filed as exhibits to the registration statement of which this prospectus is a part or as exhibits to documents incorporated by reference herein, and you may obtain copies of those documents as described below under the headings "Where You Can Find More Information" and "Incorporation of Documents by Reference."

Trademarks and Trade Names

This prospectus supplement contains references to our trademarks and to trademarks belonging to other entities. Solely for convenience, trademarks and trade names referred to in this prospectus supplement, including logos, artwork and other visual displays, may appear without the ® or TM symbols, but such references are not intended to indicate, in any way, that their respective owners will not assert, to the fullest extent under applicable law, their rights thereto. We do not intend our use or

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display of other companies' trade names or trademarks to imply a relationship with, or endorsement or sponsorship of us by, any other companies.

FORWARD-LOOKING STATEMENTS

This prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein contain forward-looking statements made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements represent our management's judgment regarding future events. In many cases, you can identify forward-looking statements by terminology such as "may," "will," "should," "plan," "expect," "anticipate," "estimate," "predict," "intend," "potential" or "continue" or the negative of these terms or other words of similar import, although some forward-looking statements are expressed differently. All statements other than statements of historical fact included in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein regarding our financial position, business strategy and plans or objectives for future operations are forward-looking statements. We cannot guarantee the accuracy of forward-looking statements, and you should be aware that results and events could differ materially and adversely from those described in the forward-looking statements due to a number of factors, including:

There are a number of important factors that could cause the actual results to differ materially from those expressed in any forward-looking statement made by us. These factors include, but are not limited to:

our ability to achieve profitability by increasing sales of our laboratory tests and services and to continually develop and commercialize novel and innovative diagnostic tests and services for cancer patients;

our ability to raise additional capital to meet our liquidity needs;

our ability to clinically validate our pipeline of genomic microarray tests currently in development;

our ability to execute on our marketing and sales strategy for our genomic tests and gain acceptance of our tests in the market;

our ability to keep pace with rapidly advancing market and scientific developments;

our ability to satisfy U.S. (including FDA) and international regulatory requirements with respect to our tests and services, many of which are new and still evolving;

our ability to obtain reimbursement from governmental and other third-party payors for our tests and services;

competition from clinical laboratory services companies, diagnostic tests currently available or new tests that may emerge;

our ability to maintain our clinical collaborations and enter into new collaboration agreements with highly regarded organizations in the cancer field so that, among other things, we have access to thought leaders in the field and to a robust number of samples to validate our genomic tests;

our ability to maintain our present customer base and obtain new customers;

potential product liability or intellectual property infringement claims;

our dependency on third-party manufacturers to supply or manufacture our products;

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our ability to attract and retain a sufficient number of scientists, clinicians, sales personnel and other key personnel with extensive experience in oncology, who are in short supply;

our ability to obtain or maintain patents or other appropriate protection for the intellectual property in our proprietary tests and services;

our dependency on the intellectual property licensed to us or possessed by third parties;

our ability to expand internationally and launch our tests in emerging markets, such as India and Brazil; and

our ability to adequately support future growth.

You should also consider carefully the statements set forth in the sections titled "Risk Factors" or elsewhere in this prospectus supplement, in the accompanying prospectus and in the documents incorporated or deemed incorporated herein or therein by reference, which address various factors that could cause results or events to differ from those described in the forward-looking statements. All subsequent written and oral forward-looking statements attributable to us or to persons acting on our behalf are expressly qualified in their entirety by the applicable cautionary statements. We have no plans to update these forward-looking statements.

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PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights certain information about us, this offering and information appearing elsewhere in this prospectus supplement, in the accompanying prospectus and in the documents we incorporate by reference. This summary is not complete and does not contain all of the information that you should consider before investing in our securities. To fully understand this offering and its consequences to you, you should read this entire prospectus supplement and the accompanying prospectus carefully, including the information referred to under the heading "Risk Factors" in this prospectus supplement beginning on page S-6, the financial statements and other information incorporated by reference in this prospectus supplement and the accompanying prospectus when making an investment decision. This is only a summary and may not contain all the information that is important to you. You should carefully read both this prospectus and any accompanying prospectus supplement and any other offering materials, together with the additional information described under the heading "Where You Can Find More Information."

Company Overview

We are an emerging leader in the field of personalized medicine, enabling precision medicine in the field of oncology through our diagnostic products and services and molecular markers. We develop, commercialize and provide molecular- and biomarker-based tests and services that enable physicians to personalize the clinical management of each individual patient by providing genomic information to better diagnose, monitor and inform cancer treatment and that enable biopharmaceutical companies engaged in oncology trials to better select candidate populations and reduce adverse drug reactions by providing information regarding genomic factors influencing subject responses to therapeutics. We have a comprehensive, disease-focused oncology testing portfolio. Our tests and techniques target a wide range of cancers, covering eight of the top ten cancers in prevalence in the United States, with additional unique capabilities offered by our Tissue of Origin® test for identifying difficult to diagnose tumor types or poorly differentiated metastatic disease.

Our vision is to become the oncology diagnostics partner for biopharmaceutical companies and clinicians by participating in the entire care continuum from bench to bedside. We believe the diagnostics industry is undergoing a rapid evolution in its approach to oncology testing, embracing precision medicine and individualized testing as a means to drive higher standards of patient treatment and disease management. Similarly, biopharmaceutical companies are increasingly engaging companies such as ours to provide information on clinical trial participants' molecular profiles in order to identify biomarker and genomic variations that may be responsible for differing responses to pharmaceuticals, and particularly to oncology drugs, thereby increasing the efficiency of trials while lowering related costs. We believe tailored therapeutics can revolutionize oncology medicine through molecular- and biomarker-based testing services, enabling physicians and researchers to target the factors that make each patient and disease unique. We have created a unique position in the industry by providing targeted somatic analysis of tumor sample cells alongside germline analysis of an individual's non-cancerous cells' molecular profile as we attempt to reach the next milestone in personalized medicine. Individuals are born with germline mutations, and somatic mutations arise in tissues over the course of a lifetime.

Cancer is genetically-driven and constitutes a heterogeneous class of diseases characterized by uncontrollable cell growth. Many cancers are becoming increasingly understood at a molecular level and it is possible to attribute specific cancers to identifiable genetic changes in unhealthy cells. Cancer cells contain modified genetic material compared to normal human cells. Common genetic abnormalities correlated to cancer include gains or losses of genetic material on specific chromosomal regions (loci) or changes in specific genes (mutations) that ultimately result in detrimental cellular changes followed by cancerous or pre-cancerous conditions. Understanding the differences in these molecular changes helps clinicians to identify and stratify different forms of cancer in order to optimize patient treatment and patient management. Therefore, understanding and analysis of cancer at the

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molecular level is not only useful for diagnostic purposes, but we also believe it can play an important role in prognosis and disease management. We believe technology that can apply predictive information has the potential to dramatically improve treatment outcomes for patients living with cancer. Our molecular- and biomarker-based tests for cancer aim to remove subjectivity from the diagnostic phase, and add prognostic information, thus enabling personalized treatments based on cancer analysis at its most basic level.

Our business is based on demand for molecular- and biomarker-based diagnostic services from three main sectors, including cancer centers and hospitals, biotechnology and biopharmaceutical companies, and the research community. Clinicians and oncologists in cancer centers and hospitals seek testing since these methods often produce higher value and more accurate cancer diagnostic information than traditional analytical methods. Our proprietary and disease-focused tests aim to provide actionable information that can guide patient management decisions, potentially resulting in decreased costs for care providers and patients while streamlining therapy selection. Our services are also sought by biotechnology and biopharmaceutical companies engaged in designing and running clinical trials to determine the value and efficacy of oncology treatments and therapeutics. We believe trial participants' likelihood of experiencing either favorable or adverse responses to the trial treatment may be influenced or dependent on genomic factors. Our testing services may increase trial efficiency, subject safety and trial success rates. Our services are also sought by researchers and research groups seeking to identify biomarkers and develop methods for diagnostic technologies and tests for disease. We aggressively pursue the strategy of trying to demonstrate increased value and efficacy with payors who are trying to contain costs and academic collaborators seeking to develop new insights and cures.

Our market strategy is organized to align with the three aforementioned industry segments. We utilize relatively the same technologies across each of these businesses to deliver results-oriented information which we believe is or will become important to cancer treatment and patient management. Our tests address the limitations of traditional cancer diagnostic approaches, including reliance on human inspection of specimens and interpretation of clinical measurements, and inter-institutional variability. Our suite of clinical and biopharma services aim to remove subjectivity from diagnoses and additionally provide information that may influence treatment selection that cannot be obtained from anatomic pathology and staining techniques alone. We believe the level of personalized treatment required to optimize a patient's treatment regimen and to maximize clinical trial success rates may be significantly improved through the use of molecular- and biomarker-based cancer characterization.

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The following table lists our market strategy by customer category:

Customer Category	Types of Customers	Nature of Services
Clinical Services	Hospitals	Clinical services provide information on diagnosis, prognosis and predicting treatment outcomes (theragnosis) of cancers to guide patient management.
	Cancer Centers	
	Clinics	
Biopharma Services	Biopharma and Biotech companies performing clinical trials	Biopharma services provide companies with customized solutions for patient stratification and treatment selection through an extensive suite of molecular- and biomarker-based testing services, customized assay development and trial design consultation.
Discovery Services	Biopharma and Biotech companies	Discovery services provide the tools and testing methods for companies and researchers seeking to identify new molecular-based biomarkers for disease.
	Researchers and Academic Institutions	

In 2015, we generated approximately 64% of our revenue from Biopharma Services, approximately 31% from Clinical Services and approximately 5% from Discovery Services. In 2014, we generated approximately 55% from Biopharma Services, approximately 43% of our revenue from Clinical Services and approximately 2% from Discovery Services, a new line of service launched in 2014.

We utilize relatively the same proprietary and nonproprietary molecular diagnostic tests and technologies across all of our service offerings to deliver results-oriented information important to cancer treatment and patient management. Our portfolio primarily includes comparative genomic hybridization (CGH) microarrays, gene expression tests, next generation sequencing (NGS) panels, and DNA fluorescent *in situ* hybridization (FISH) probes. We provide our testing services from our CLIA-certified and CAP-accredited laboratories in Rutherford, NJ, Los Angeles, CA, and Raleigh, NC, as well as our laboratories in Hyderabad, India and Shanghai, China.

Recent Developments

Prior to entering into the Securities Purchase Agreement described herein, the Company provided notice of its termination of the Controlled Equity OfferingSM Sales Agreement, dated as of July 15, 2015 (the "Sales Agreement"), by and between the Company and Cantor Fitzgerald & Co. As previously reported, pursuant to the terms of the Agreement, the Company could offer and sell shares of its common stock, \$0.0001 par value per share (the "Shares"), having an aggregate offering price of up to \$20 million from time to time through Cantor Fitzgerald. During 2015, the Company had sold an aggregate of 2,800 Shares pursuant to the Agreement for aggregate gross proceeds of approximately \$34,000. The Company had previously announced in July 2015 a suspension of sales under the Sales Agreement.

Corporate Information

We were incorporated in the State of Delaware on April 8, 1999. On July 16, 2014 we purchased substantially all of the assets of Gentris Corporation ("Gentris"), a laboratory specializing in pharmacogenomics profiling for therapeutic development, companion diagnostics and clinical trials. On August 18, 2014 we entered into two agreements by which we acquired BioServe Biotechnologies (India) Pvt. Ltd. ("BioServe"), a premier genomics services provider serving both the research and

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clinical markets in India, and as a result of the acquisition, BioServe became a subsidiary of ours. On October 9, 2015, we acquired substantially all the assets and assumed certain liabilities of Response Genetics, Inc. ("Response Genetics") in connection with Response Genetics' filing of a chapter 11 petition for bankruptcy in the Delaware Bankruptcy Court for approximately \$12.9 million, comprised of \$7.5 million in cash, and 788,584 shares of the Company's common stock, with the common stock being valued at \$5.4 million.

Our principal executive offices are located at 201 Route 17 North, 2nd Floor, Rutherford, New Jersey 07070. Our telephone number is (201) 528-9200 and our corporate website address is www.cancergenetics.com. The information on our website is not part of, and is not incorporated by reference into, this prospectus.

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THE OFFERING

Common Stock

Common Stock offered by us 2,467,820 shares of common stock
 Public offering price(1) \$2.00 per share

Common stock to be outstanding immediately after the offering(2) 16,120,094 shares

Use of proceeds We intend to use the net proceeds from this offering to fund working capital and other general corporate purposes. See "Use of Proceeds."

Risk factors Investing in our securities involves a high degree of risk. You should carefully review and consider the "Risk Factors" section of this prospectus supplement for a discussion of factors to consider before deciding to invest in shares of our common stock.

Nasdaq Capital Market Symbol CGIX

Concurrent Offering In a concurrent private placement, we are selling to the purchasers of shares of our common stock in this offering warrants to purchase one-half the number of shares of our common stock purchased by such investors in this offering, or up to 1,233,910 warrants. We will receive gross proceeds from the concurrent private placement transaction solely to the extent such warrants are exercised for cash. The warrants will be exercisable on the six month anniversary of the issuance date at an exercise price of \$2.25 per share and will expire five years from the date on which first exercisable. The warrants and the shares of our common stock issuable upon the exercise of the warrants are not being offered pursuant to this prospectus supplement and the accompanying prospectus and are being offered pursuant to the exemption provided in Section 4(a)(2) under the Securities Act and Rule 506(b) promulgated thereunder. See "Private Placement of Warrants."

(1) The public offering price for securities purchased by our Chairman of the Board, John Pappajohn, will be \$2.2025 per share.

(2) The total shares of common stock outstanding immediately following this offering is based on 13,652,274 shares outstanding as of March 31, 2016. It excludes:

approximately 1,928,000 shares issuable upon exercise of outstanding stock options at a weighted-average exercise price of \$10.56 per share;

approximately 4,432,000 shares issuable upon exercise of outstanding warrants at a weighted-average exercise price of \$6.81 per share;

an aggregate of 997,606 shares available for future grants under our 2011 Equity Incentive Plan, or the 2011 Plan, and the 2008 Stock Option Plan, or 2008 Plan;

1,233,910 shares of common stock issuable upon exercise of warrants to be issued in a private placement, as described below under "Private Placement of Warrants"; and

123,391 shares of common stock issuable upon exercise of warrants to be issued to the placement agent as described in "Plan of Distribution."

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RISK FACTORS

Investing in our securities involves a high degree of risk. Before deciding whether to invest in our securities, you should consider carefully the risks and uncertainties described below. You should also consider the risks, uncertainties and assumptions discussed under the heading "Risk Factors" included in our most recent annual report on Form 10-K which is on file with the SEC and is incorporated herein by reference, and which may be amended, supplemented or superseded from time to time by other reports we file with the SEC in the future. There may be other unknown or unpredictable economic, business, competitive, regulatory or other factors that could have material adverse effects on our future results. If any of these risks actually occurs, our business, business prospects, financial condition or results of operations could be seriously harmed. This could cause the trading price of our common stock to decline, resulting in a loss of all or part of your investment. Please also read carefully the section above titled "Forward-Looking Statements."

Risks Related to this Offering

Management will have broad discretion as to the use of the proceeds from this offering, and we may not use the proceeds effectively.

We currently intend to use the net proceeds from this offering for working capital and other general corporate purposes. We have not allocated specific amounts of the net proceeds from this offering for any specific purposes. Accordingly, our management will have broad discretion in the application of the net proceeds from this offering and could spend the proceeds in ways that do not improve our results of operations or enhance the value of our common stock. You will be relying on the judgment of our management with regard to the use of these net proceeds, and you will not have the opportunity, as part of your investment decision, to assess whether the net proceeds are being used appropriately. It is possible that the net proceeds will be invested in a way that does not yield a favorable, or any, return for us. Our failure to apply these funds effectively could have a material adverse effect on our business and cause the price of our common stock to decline.

The investors in this offering will pay a substantially higher price than the net tangible book value of the shares of our common stock.

If you purchase shares of our common stock in this offering, you will incur an immediate and substantial dilution in net tangible book value. Our net tangible book value was \$1.07 per share as of March 31, 2016. Upon the sale by us of all 2,467,820 shares of common stock offered hereby at a price of \$2.00 per share, and after deducting the placement agent fees and expenses payable by us, our adjusted net tangible book value as of March 31, 2016 would have been approximately \$1.18 per share of common stock.

A substantial number of shares of our common stock may be sold in this offering, which could cause the price of our common stock to decline.

In this offering we will sell 2,467,820 shares of common stock, which represent approximately 15.3% of our outstanding common stock as of March 31, 2016 after giving effect to the sale of the shares of common stock. In addition, the investors in this offering will receive unregistered warrants to purchase one-half of the number of shares such investors purchased in this offering and the placement agent will receive unregistered warrants to purchase up to 5% of the aggregate number of shares of common stock sold in this offering. This sale and any future sales of a substantial number of shares of our common stock in the public market, or the perception that such sales may occur, could adversely affect the price of our common stock on The NASDAQ Capital Market. We cannot predict the effect, if any, that market sales of those shares of common stock or the availability of those shares of common stock for sale will have on the market price of our common stock.

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The investors in this offering may be diluted by exercises of outstanding options and warrants.

As of March 31, 2016, we had outstanding options to purchase an aggregate of approximately 1,928,000 shares of our common stock at a weighted average exercise price of \$10.56 per share and warrants to purchase an aggregate of 4,432,000 shares of our common stock at a weighted average exercise price of \$6.81 per share. In the concurrent private placement, we will be issuing to the purchasers in this offering an additional 1,233,910 warrants with an exercise price of \$2.25 per share and we will be issuing to the Placement Agent an additional 123,391 warrants with an exercise price of \$2.25 per share. The exercise of such outstanding options and warrants will result in dilution of the value of our shares.

The price of our common stock has been and could remain volatile, and the market price of our common stock may decrease.

The market price of our common stock has historically experienced and may continue to experience significant volatility. From January 2014 through May 19, 2016, the market price of our common stock has fluctuated from a high of \$20.00 per share in the first quarter of 2014, to a low of \$1.90 per share in the first quarter of 2016. Market prices for securities of early-stage life sciences companies have historically been particularly volatile. The factors that may cause the market price of our common stock to fluctuate include, but are not limited to:

progress, or lack of progress, in developing and commercializing our proprietary tests;

favorable or unfavorable decisions about our tests or services from government regulators, insurance companies or other third-party payors;

our ability to recruit and retain qualified regulatory and research and development personnel;

changes in investors' and securities analysts' perception of the business risks and conditions of our business;

changes in our relationship with key collaborators;

changes in the market valuation or earnings of our competitors or companies viewed as similar to us;

changes in key personnel;

depth of the trading market in our common stock;

changes in our capital structure, such as future issuances of securities or the incurrence of additional debt;

the granting or exercise of employee stock options or other equity awards;

realization of any of the risks described under this section titled "Risk Factors" or in other sections titled "Risk Factors" incorporated in this prospectus supplement; and

general market and economic conditions.

In addition, the equity markets have experienced significant price and volume fluctuations that have affected the market prices for the securities of newly public companies for a number of reasons, including reasons that may be unrelated to our business or operating performance.

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These broad market fluctuations may result in a material decline in the market price of our common stock and you may not be able to sell your shares at prices you deem acceptable. In the past, following periods of volatility in the equity markets, securities class action lawsuits have been instituted against public companies. Such litigation, if instituted against us, could result in substantial cost and the diversion of management attention.

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Our common stock trades on The NASDAQ Capital Market under the symbol "CGIX." The last reported sale price for our common stock on May 19, 2016 was \$2.14 per share. As of December 31, 2015, we had approximately 105 holders of record of our common stock. The number of record holders was determined from the records of our transfer agent and does not include beneficial owners of common stock whose shares are held in the names of various security brokers, dealers, and registered clearing agencies.

The following table sets forth for the periods indicated the high and low sale prices per share of our common stock as reported on The NASDAQ Capital Market:

	High	Low
Fiscal Year ending December 31, 2016		
First Quarter	\$ 3.38	\$ 1.90
Second Quarter (through May 19, 2016)	\$ 2.93	\$ 2.05
Fiscal Year ended December 31, 2015		
First Quarter	\$ 9.76	\$ 6.55
Second Quarter	\$ 12.22	\$ 7.57
Third Quarter	\$ 12.75	\$ 7.57
Fourth Quarter	\$ 8.51	\$ 2.75
Fiscal Year ended December 31, 2014		
First Quarter	\$ 20.00	\$ 13.50
Second Quarter	\$ 16.55	\$ 8.54
Third Quarter	\$ 11.35	\$ 8.36
Fourth Quarter	\$ 8.95	\$ 4.83

DIVIDEND POLICY

We have never declared dividends on our equity securities, and currently do not plan to declare dividends on shares of our common stock in the foreseeable future. Pursuant to the terms of our credit facility we are currently restricted from paying cash dividends. We expect to retain our future earnings, if any, for use in the operation and expansion of our business. Subject to the foregoing, the payment of cash dividends in the future, if any, will be at the discretion of our board of directors and will depend upon such factors as earnings levels, contractual restrictions, capital requirements, our overall financial condition and any other factors deemed relevant by our board of directors.

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USE OF PROCEEDS

We estimate that the net proceeds to us from this offering, after deducting placement agent fees but before paying offering expenses, will be approximately \$4.65 million assuming all offered shares are sold at \$2.00 public offering price per share. The public offering price for the securities purchased by our Chairman of the Board, John Pappajohn, will be \$2.2025 per share.

We intend to use the net proceeds from this offering primarily for working capital and other general corporate purposes.

We have not determined the amounts we plan to spend on any specific purpose or the timing of these expenditures. As a result, our management will have broad discretion to allocate the net proceeds from this offering. Pending application of the net proceeds as described above, we intend to invest the net proceeds to us from this offering in a variety of capital preservation investments, including short-term, investment-grade and interest-bearing instruments.

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PRIVATE PLACEMENT OF WARRANTS

Concurrently with the closing of the sale of shares of common stock in this offering, we also expect to issue and sell to the investors warrants to purchase an aggregate of 1,233,910 shares of our common stock, at an initial exercise price equal to \$2.25 per share (the "Warrants").

Each Warrant shall be first exercisable on the six month anniversary of the issuance date and have a term of exercise equal to five (5) years from the date on which first exercisable. Subject to limited exceptions, a holder of Warrants will not have the right to exercise any portion of its warrants if the holder, together with its affiliates, would beneficially own in excess of 4.99% of the number of shares of our common stock outstanding immediately after giving effect to such exercise.

Such securities will be issued and sold without registration under the Securities Act, or state securities laws, in reliance on the exemptions provided by Section 4(a)(2) of the Act and/or Regulation D promulgated thereunder and in reliance on similar exemptions under applicable state laws. Accordingly, the investors may exercise those warrants and sell the underlying shares only pursuant to an effective registration statement under the Securities Act covering the resale of those shares, an exemption under Rule 144 under the Securities Act, or another applicable exemption under the Securities Act.

Table of Contents**DILUTION**

The net tangible book value of our common stock on March 31, 2016 was approximately \$14.6 million or approximately \$1.07 per share, based on 13,652,274 shares of our common stock outstanding as of March 31, 2016. We calculate net tangible book value per share by subtracting our total liabilities from our total tangible assets and dividing the difference by the number of outstanding shares of our common stock. Dilution in net tangible book value per share to the new investors represents the difference between the amount per share paid by purchasers of shares of our common stock in this offering and the net tangible book value per share of our common stock immediately afterwards.

The investors participating in this offering will incur immediate and significant dilution. After giving effect to the issuance and sale of shares of our common stock in this offering at a public offering price of \$2.00 per share of our common stock, after deducting the placement agent fees and estimated offering expenses payable by us, our as adjusted net tangible book value as of March 31, 2016 would have been approximately \$19.1 million, or approximately \$1.18 per share of our common stock.

This represents an immediate increase in net tangible book value of \$0.11 per share to existing stockholders and immediate dilution in net tangible book value of \$0.82 per share to the new investors purchasing our common stock in this offering at the public offering price.

The following table illustrates this per share dilution:

Public offering price per share of common stock	\$ 2.00
Net tangible book value per share as of March 31, 2016	\$ 1.07
Increase in net tangible book value per share attributable to this offering	\$ 0.11
Pro forma net tangible book value per share as of March 31, 2016 after giving effect to this offering	\$ 1.18
Dilution per share to the new investors in this offering	\$ 0.82

The table above excludes the following:

approximately 1,928,000 shares issuable upon exercise of outstanding stock options at a weighted-average exercise price of \$10.56 per share;

approximately 4,432,000 shares issuable upon exercise of outstanding warrants at a weighted-average exercise price of \$6.81 per share;

an aggregate of 997,606 shares available for future grants under our 2011 Equity Incentive Plan, or the 2011 Plan, and the 2008 Stock Option Plan, or 2008 Plan;

1,233,910 shares of common stock issuable upon exercise of warrants to be issued in a private placement, as described below under "Private Placement of Warrants"; and

123,391 shares of common stock issuable upon exercise of warrants to be issued to the placement agent as described in "Plan of Distribution."

To the extent that outstanding options or warrants are exercised, the investors purchasing our common stock in this offering will experience further dilution. In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that additional capital is raised through the sale of securities, the issuance of these securities could result in further dilution to our stockholders.

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PLAN OF DISTRIBUTION

Pursuant to an engagement agreement dated May 19, 2016, we have engaged H.C. Wainwright & Co., LLC, or the placement agent, to act as our exclusive placement agent in connection with this offering of our shares of common stock pursuant to this prospectus supplement and accompanying prospectus. Under the terms of the engagement agreement, the placement agent has agreed to be our exclusive placement agent, on a reasonable best efforts basis, in connection with the issuance and sale by us of our shares of common stock in this takedown from our shelf registration statement. The terms of this offering were subject to market conditions and negotiations between us, the placement agent and prospective investors. The engagement agreement does not give rise to any commitment by the placement agent to purchase any of our shares of common stock or the private placement warrants, and the placement agent will have no authority to bind us by virtue of the engagement agreement. Further, the placement agent does not guarantee that it will be able to raise new capital in any prospective offering. The placement agent may engage sub-agents or selected dealers to assist with the offering.

We will enter into securities purchase agreements directly with investors in connection with this offering, and we will only sell to institutional investors (other than our Chairman) who have entered into securities purchase agreements.

We will deliver the shares of common stock being issued to the investors electronically upon receipt of investor funds for the purchase of the shares of our common stock offered pursuant to this prospectus supplement. We expect to deliver the shares of our common stock being offered pursuant to this prospectus supplement on or about May 25, 2016.

We have agreed to pay the placement agent a total cash fee equal to 7% of the gross proceeds of this offering. We will also pay the placement agent a reimbursement for out of pocket expenses in connection with marketing the transaction an amount of up to \$10,000 and a reimbursement for the placement agent's legal fees and expenses in the amount of \$50,000. In addition, we have agreed to issue to the placement agent warrants to purchase up to 5% of the aggregate number of shares of common stock sold in this offering. The placement agent warrants will have substantially the same terms as the private placement warrants being sold concurrently to the investors in this offering. Pursuant to FINRA Rule 5110(g), the placement agent warrants and any shares issued upon exercise of the placement agent warrants shall not be sold, transferred, assigned, pledged, or hypothecated, or be the subject of any hedging, short sale, derivative, put or call transaction that would result in the effective economic disposition of the securities by any person for a period of 180 days immediately following the date of effectiveness or commencement of sales of this offering, except the transfer of any security: (i) by operation of law or by reason of our reorganization; (ii) to any FINRA member firm participating in the offering and the officers or partners thereof, if all securities so transferred remain subject to the lock-up restriction set forth above for the remainder of the time period; (iii) if the aggregate amount of our securities held by the placement agent or related persons do not exceed 1% of the securities being offered; (iv) that is beneficially owned on a pro-rata basis by all equity owners of an investment fund, provided that no participating member manages or otherwise directs investments by the fund and the participating members in the aggregate do not own more than 10% of the equity in the fund; or (v) the exercise or conversion of any security, if all securities remain subject to the lock-up restriction set forth above for the remainder of the time period.

We have also agreed to give the placement agent a twelve-month right of first refusal to act as our lead underwriter or placement agent for any further capital raising transactions undertaken by us and a twelve-month tail fee equal to the cash and warrant compensation in this offering, if any investor whom the Placement Agent contacted with respect to this offering during the term of their engagement, provides us with further capital during such twelve-month period following termination of our engagement (30 days after May 19, 2016).

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We have agreed to indemnify the placement agent and specified other persons against some civil liabilities, including liabilities under the Securities Act, and the Securities Exchange Act of 1934, as amended, or the Exchange Act, and to contribute to payments that the placement agent may be required to make in respect of such liabilities.

The placement agent may be deemed to be an underwriter within the meaning of Section 2(a)(11) of the Securities Act, and any commissions received by it and any profit realized on the resale of the securities sold by it while acting as principal might be deemed to be underwriting discounts or commissions under the Securities Act. As an underwriter, the placement agent would be required to comply with the requirements of the Securities Act and the Exchange Act, including, without limitation, Rule 415(a)(4) under the Securities Act and Rule 10b-5 and Regulation M under the Exchange Act. These rules and regulations may limit the timing of purchases and sales of shares of common stock and warrants by the placement agent acting as principal. Under these rules and regulations, the placement agent:

may not engage in any stabilization activity in connection with our securities; and

may not bid for or purchase any of our securities or attempt to induce any person to purchase any of our securities, other than as permitted under the Exchange Act, until it has completed its participation in the distribution.

Our common stock is listed on The Nasdaq Capital Market under the symbol "CGIX".

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LEGAL MATTERS

The validity of the issuance of the securities offered hereby will be passed upon for us by Lowenstein Sandler, LLP of Roseland, New Jersey. The placement agent has been represented in connection with this offering by Ellenoff Grossman & Schole LLP.

EXPERTS

The consolidated financial statements as of and for the year ended December 31, 2015, incorporated in this prospectus by reference from the Company's Annual Report on Form 10-K for the year ended December 31, 2015 filed with the SEC on March 10, 2016, have been audited by RSM US LLP (formerly McGladrey LLP), an independent registered public accounting firm, as stated in their report, which is incorporated herein by reference. Such consolidated financial statements have been so incorporated in reliance upon the report of such firm given upon their authority as experts in accounting and auditing..

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the information requirements of the Exchange Act and, in accordance therewith, file annual, quarterly and special reports, proxy statements and other information with the SEC. You may read and copy any document we file at the SEC's Public Reference Room at 100 F Street, Washington, D.C. 20549. You may call the SEC at 1-800-SEC-0330 for further information on the operation of the Public Reference Room. These documents also may be accessed through the SEC's electronic data gathering, analysis and retrieval system, or EDGAR, via electronic means, including the SEC's home page on the Internet (*www.sec.gov*).

This prospectus supplement and the accompanying prospectus are only part of a registration statement on Form S-3 that we have filed with the SEC under the Securities Act and therefore omits certain information contained in the registration statement. We have also filed exhibits and schedules with the registration statement that are excluded from this prospectus supplement and the accompanying prospectus, and you should refer to the applicable exhibit or schedule for a complete description of any statement referring to any contract or other document. You may inspect a copy of the registration statement, including the exhibits and schedules, without charge, at the public reference room or obtain a copy from the SEC upon payment of the fees prescribed by the SEC.

We also maintain a website at *www.cancergenetics.com*, through which you can access our SEC filings. The information contained on our website is not incorporated by reference into, and does not form any part of, this prospectus supplement or the accompanying prospectus. We have included our website address as a factual reference and do not intend it to be an active link to our website.

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INFORMATION INCORPORATED BY REFERENCE

The SEC allows us to incorporate by reference the information and reports we file with it, which means that we can disclose important information to you by referring you to these documents. The information incorporated by reference is an important part of this prospectus supplement, and information that we file later with the SEC will automatically update and supersede the information already incorporated by reference. We are incorporating by reference the documents listed below, which we have already filed with the SEC, and any future filings we make with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, except as to any portion of any future report or document that is not deemed filed under such provisions, until we sell all of the securities:

Our Annual Report on Form 10-K for the year ended December 31, 2015 and Amendment No. 1 to Annual Report on Form 10-K/A for the year ended December 31, 2015, filed with the SEC on March 10, 2016 and April 28, 2016, respectively;

Our Quarterly Report on Form 10-Q for the quarter ended March 31, 2016, filed with the SEC on May 10, 2016;

Our Current Reports on Form 8-K filed with the SEC on March 10, 2016, May 10, 2016 and May 20, 2016 (in each case, except for information contained therein which is furnished rather than filed); and

Description of our common stock contained in the Registration Statement on Form 8-A, declared effective on August 12, 2013 (including any amendment or report filed with the SEC for the purpose of updating such description).

Upon request, we will provide, without charge, to each person, including any beneficial owner, to whom a copy of this prospectus is delivered a copy of the documents incorporated by reference into this prospectus supplement. You may request a copy of these filings, and any exhibits we have specifically incorporated by reference as an exhibit in this prospectus supplement, at no cost by writing or telephoning us at the following address:

Cancer Genetics, Inc.
201 Route 17 North, 2nd Floor
Rutherford, NJ 07070
(201) 528-9200
Attention: Edward J. Sitar, Secretary

This prospectus supplement is part of a registration statement we filed with the SEC. We have incorporated exhibits into this registration statement. You should read the exhibits carefully for provisions that may be important to you.

You should rely only on the information incorporated by reference or provided in this prospectus or any prospectus supplement. We have not authorized anyone to provide you with different information. We are not making an offer of these securities in any state where the offer is not permitted. You should not assume that the information in this prospectus or in the documents incorporated by reference is accurate as of any date other than the date on the front of this prospectus or those documents.

PROSPECTUS

\$100,000,000

CANCER GENETICS, INC.

Common Stock
Preferred Stock
Warrants
Units

We may from time to time offer and sell common stock, preferred stock, warrants and units, having an aggregate offering price of up to \$100,000,000. We may offer and sell these securities separately or together in any combination. We may offer and sell these securities to or through underwriters, directly to investors or through agents. We will specify the terms of the securities, and the names of any underwriters or agents and their respective compensation, in supplements to this prospectus.

Our common stock is listed on the on The NASDAQ Capital Market and traded under the symbol "CGIX." The last reported sales price of our common stock on The NASDAQ Capital Market on May 28, 2014 was \$11.68 per share.

Investing in our securities involves risks. See "Risk Factors" at page 3 of this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the accuracy or adequacy of this prospectus. Any representation to the contrary is a criminal offense.

This prospectus may not be used to consummate sales of securities unless it is accompanied by a prospectus supplement.

The date of this prospectus is June 5, 2014.

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No dealer, salesperson or other person has been authorized to give any information or to make any representations other than those contained or incorporated by reference in this prospectus or any accompanying prospectus supplement in connection with the offer made by this prospectus or any accompanying prospectus supplement and, if given or made, such information or representations must not be relied upon as having been authorized by Cancer Genetics, Inc. or any such person. Neither the delivery of this prospectus or any accompanying prospectus supplement nor any sale made hereunder and thereunder shall under any circumstances create an implication that there has been no change in the affairs of Cancer Genetics, Inc. since the date hereof. This prospectus or any accompanying prospectus supplement does not constitute an offer or solicitation by anyone in any state in which such offer or solicitation is not authorized or in which the person making such offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make such offer or solicitation.

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission, or the SEC, using a "shelf" registration process. Under this shelf process, we may sell any combination of the securities described in this prospectus in one or more offerings up to a total dollar amount of \$100,000,000. We have provided to you in this prospectus a general description of the securities we may offer. Each time we sell securities under this shelf registration process, we will provide a prospectus supplement that will contain specific information about the terms of the offering. We may also add, update or change in the prospectus supplement or any "free writing prospectus" we may authorize to be delivered to you any of the information contained in this prospectus. To the extent there is a conflict between the information contained in this prospectus and the prospectus supplement or any free writing prospectus we may authorize to be delivered to you, you should rely on the information in the prospectus supplement or free writing prospectus, as the case may be, provided that if any statement in one of these documents is inconsistent with a statement in another document having a later date for example, a document incorporated by reference in this prospectus or any prospectus supplement the statement in the document having the later date modifies or supersedes the earlier statement. This prospectus, together with the applicable prospectus supplements and any free writing prospectus we may authorize to be delivered to you, includes all material information relating to this offering.

An investment in our securities involves certain risks that should be carefully considered by prospective investors. See "Risk Factors."

You should read this prospectus and any prospectus supplement as well as additional information described under "Incorporation of Certain Documents by Reference" and "Where You Can Find More Information" on pages 14 and 15, respectively.

ABOUT CANCER GENETICS

Overview

Cancer Genetics, Inc. ("we", "CGI", or the "Company") is an early-stage diagnostics company focused on developing and commercializing proprietary genomic tests and services to improve and personalize the diagnosis, prognosis and response to treatment (theranosis) of cancer. Our proprietary tests target cancers that are difficult to prognose and predict treatment outcomes by using currently available mainstream techniques. These cancers include hematological, urogenital and HPV-associated cancers. We provide our proprietary tests and services, along with a comprehensive range of non-proprietary oncology-focused tests and laboratory services, to oncologists and pathologists at hospitals, cancer centers, and physician offices, as well as biotech and pharmaceutical companies to support their clinical trials. To date, we have generated most of our revenue through sales of our non-proprietary testing services to oncologists, pathologists and community hospitals located mostly in the eastern and mid-western United States, as well as to biopharmaceutical companies and clinical research organizations for their clinical trials. In the fourth quarter of 2013, we have begun to expand our geographic reach into the western and southern United States. Our non-proprietary laboratory testing services include molecular testing, sequencing mutational analysis, flow cytometry testing, histology testing and cytology testing. We are currently offering our tests and laboratory services from our 17,936 square foot state-of-the-art laboratory located in Rutherford, New Jersey, which has been accredited by the College of American Pathologists, which is an approved accreditation method under the Clinical Laboratory Improvement Amendments of 1988 ("CLIA"), to perform high complexity testing. CLIA certification and accreditation are required before any laboratory, including ours, may perform testing on human specimens for the purpose of obtaining information for the diagnosis, prevention, treatment of disease, or impairment of, or assessment of health.

Our proprietary tests are based principally on our expertise in specific cancer types, test development methodologies and proprietary algorithms correlating genetic events with disease specific information. During the first quarter of 2011, we commercially launched MatBA@-CLL, our first proprietary microarray test for chronic lymphocytic leukemia ("CLL"). In January 2012, we received

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CLIA approval for MatBA®-SLL, our proprietary microarray for risk stratification in small lymphocytic lymphoma ("SLL"), and we are currently offering MatBA®-SLL in our laboratory. In 2013, we received CLIA approval for MatBA®-DLBCL and MatBA®-MCL, our proprietary microarrays for diagnosis, prognosis and patient monitoring in diffuse large-B-cell lymphoma ("DLBCL") and mantle cell lymphoma ("MCL") respectively, for UroGenRA -Kidney, our proprietary microarray for patient management and treatment decision-making in kidney cancer, as well as for FHACT , our proprietary FISH-based HPV-associated cancer test for screening of women with HPV-positive abnormal cervical lesions. In addition, we are developing a series of other proprietary genomic tests in our core oncology markets.

We have established collaborative relationships with key thought leaders in oncology, which enable us to develop and validate the effectiveness and utility of our tests in a clinical setting and which provide us access to clinically robust patient data. For example, we formed the joint venture "OncoSpire Genomics LLC" in 2013 with Mayo Foundation for Medical Education and Research ("Mayo") which will focus on developing oncology diagnostic services and tests utilizing next-generation sequencing. We are a 50% owner of the joint venture, contributing capital, commercial experience and other guidance, while Mayo will contribute laboratory resources, research expertise and other operational resources.

The non-proprietary testing services we offer are focused in part on specific oncology categories where we are developing our proprietary arrays and probe panels. We believe that there is significant synergy in developing and marketing a complete set of tests and services that are disease-focused and delivering those tests and services in a comprehensive manner to help with treatment decisions. The insight that we develop in delivering the non-proprietary services are often leveraged in the development of our proprietary programs and now increasingly in the validation of our proprietary programs (such as MatBA®) for clinical use.

We currently offer our proprietary tests as laboratory-developed tests ("LDTs") in conjunction with our comprehensive panel of laboratory services in our CLIA-accredited laboratory. Our current laboratory services include:

Proprietary Oncology Testing Services. These services are based on our proprietary microarray tests and are currently available only in our clinical laboratory. After completing the testing, we provide our customers with a comprehensive analysis of all tests performed for a specific patient, designed to help the physician make an informed and definitive diagnosis and guide the treatment of the patient. We are now in the process of migrating and validating microarray tests to a Next Gen Sequencing-based platform.

Esoteric Oncology Testing Services. We offer a comprehensive suite of esoteric oncology testing services for hematological, urogenital and HPV-associated cancers, including conventional and molecular cytogenetic techniques such as Next Gen Sequencing, G-banding and FISH, mutation and sequencing analysis, flow-cytometry and immunohistochemistry ("IHC").

Clinical Trial Services. We also utilize our clinical laboratory to provide clinical trial services to biopharmaceutical and biotech companies and clinical research organizations to improve the efficiency and economic viability of clinical trials. Our clinical trials services leverage our knowledge of clinical oncology and molecular diagnostics and our laboratory's fully integrated capabilities. We launched our Select One™ program, integrating genomic information into the drug discovery process in order to provide customized solutions for patient stratification and treatment. By utilizing biomarkers, we intend to optimize the clinical trial patient selection. This may result in an improved success rate of the clinical trial and may eventually help biopharmaceutical companies to select patients that are most likely to benefit from a therapy based on their genetic profile.

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We believe that we can be successful by offering cancer professionals a fully-integrated menu of oncology-focused proprietary tests and customized laboratory services. Based on our discussions with leading researchers in the oncology field and our interactions with our collaborators, as well as information we learn through performing the non-proprietary genetic diagnostic testing services, which are focused on the specific oncology categories where we are developing our proprietary tests we provide to our customers, we believe that our proprietary tests provide superior diagnostic and prognostic values than currently available tests and services. In particular, our proprietary tests deliver a level of genomic information not provided by other currently available tests. We believe our ability to rapidly translate research insights about the genetics and molecular mechanisms of cancer into the clinical setting will improve patient treatment and management and that this approach can become a key component in the standard of care for personalized cancer treatment.

Cancer Genetics Corporate Information

Our principal executive offices are located at 201 Route 17 North, 2nd Floor, Rutherford, New Jersey 07070, and our telephone number is (201) 528-9200. Our common stock is currently traded on The NASDAQ Capital Market under the symbol "CGIX." We maintain a corporate website at www.cancer-genetics.com. The contents of our website are not incorporated by reference into this prospectus and should not be considered to be a part of this prospectus or relied upon in connection herewith.

Cancer Genetics, Inc. was incorporated under the laws of the State of Delaware in April 1999. Unless otherwise stated, all references to "us," "our," "Cancer Genetics," "we," the "Company" and similar designations refer to Cancer Genetics, Inc.

This prospectus and the information incorporated by reference include trademarks, service marks and trade names owned by us or other companies. All trademarks, service marks and trade names included or incorporated by reference into this prospectus are the property of their respective owners.

RISK FACTORS

Investing in our securities involves significant risks. Before making an investment decision, you should carefully consider the risks and other information we include or incorporate by reference in this prospectus and any prospectus supplement. In particular, you should consider the risk factors under the heading "Risk Factors" included in our most recent Annual Report on Form 10-K, as may be revised or supplemented by our subsequent Quarterly Reports on Form 10-Q or Current Reports on Form 8-K, each of which are on file with the SEC and are incorporated herein by reference, and which may be amended, supplemented or superseded from time to time by other reports we file with the SEC in the future. The risks and uncertainties we have described are not the only ones facing our company. Additional risks and uncertainties not currently known to us or that we currently deem immaterial may also affect our business operations. Additional risk factors may be included in a prospectus supplement relating to a particular offering of securities. Our business, financial condition or results of operations could be materially adversely affected by any of these risks. The trading price of our securities could decline due to any of these risks, and you may lose all or part of your investment. This prospectus is qualified in its entirety by these risk factors.

SPECIAL NOTE REGARDING FORWARD-LOOKING INFORMATION

This prospectus, any prospectus supplement and the documents we incorporate by reference in this prospectus contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act"), and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). All statements, other than statements of historical facts, that we include in this prospectus, any prospectus supplement, and in the documents we incorporate by reference in this prospectus, may be deemed forward-looking statements for purposes of the Securities Act and the Exchange Act. We use the words "anticipate," "believe," "estimate," "expect," "intend," "may," "plan," "project," "will," "would" and similar expressions to identify forward-looking statements, although not all forward-looking statements contain these identifying words. We cannot guarantee that we actually will achieve the plans, intentions or expectations disclosed in our forward-looking statements and, accordingly, you should not place undue reliance on our forward-looking statements. There are a number of important factors that could cause actual results or events to differ materially from the forward-looking statements that we make, including the factors included in the documents we incorporate by reference in this prospectus. You should read these factors and the other cautionary statements made in the documents we incorporate by reference as being applicable to all related forward-looking statements wherever they appear in this prospectus, any prospectus supplement, and any document incorporated by reference. We caution you that we do not undertake any obligation to update forward-looking statements made by us.

USE OF PROCEEDS

Unless otherwise provided in the applicable prospectus supplement, we intend to use the net proceeds from the sale of the securities under this prospectus for working capital, including expanding our sales and marketing activities, research and development of our proprietary genomic-based diagnostic tests, potential regulatory submissions, potential collaborations, strategic transactions and other general corporate purposes. We will set forth in the prospectus supplement our intended use for the net proceeds received from the sale of any securities. Pending the use of the net proceeds, we may use the net proceeds to invest in investment-grade, interest-bearing securities.

DESCRIPTIONS OF THE SECURITIES WE MAY OFFER

The descriptions of the securities contained in this prospectus, together with the applicable prospectus supplements, summarize all the material terms and provisions of the various types of securities that we may offer. We will describe in the applicable prospectus supplement relating to any securities the particular terms of the securities offered by that prospectus supplement. If we indicate in the applicable prospectus supplement, the terms of the securities may differ from the terms we have summarized below. We will also include in the prospectus supplement information, where applicable, about material United States federal income tax considerations relating to the securities, and the securities exchange, if any, on which the securities will be listed.

We may sell from time to time, in one or more offerings:

common stock;

preferred stock;

warrants to purchase any of the securities listed above; and

units consisting of any combination of the securities listed above.

In this prospectus, we refer to the common stock, preferred stock, warrants and units collectively as "securities." The total dollar amount of all securities that we may sell will not exceed \$100,000,000.

This prospectus may not be used to consummate a sale of securities unless it is accompanied by a prospectus supplement.

DESCRIPTION OF COMMON STOCK

Our third amended and restated certificate of incorporation authorizes us to issue up to 100,000,000 shares of common stock, par value \$0.0001 per share. As of March 31, 2014, there were 9,282,610 shares of common stock outstanding. All outstanding shares of our common stock are fully paid and non-assessable.

The holders of our common stock are entitled to the following rights:

Voting Rights

Holders of our common stock are entitled to one vote per share in the election of directors and on all other matters on which stockholders are entitled or permitted to vote. Holders of our common stock are not entitled to cumulative voting rights.

Dividend Rights

Subject to the terms of any outstanding series of preferred stock, the holders of our common stock are entitled to dividends in the amounts and at times as may be declared by the board of directors out of funds legally available therefor.

Liquidation Rights

Upon liquidation or dissolution, holders of our common stock are entitled to share ratably in all net assets available for distribution to stockholders after we have paid, or provided for payment of, all of our debts and liabilities, and after payment of any liquidation preferences to holders of our preferred stock.

Other Matters

Holders of our common stock have no redemption, conversion or preemptive rights. There are no sinking fund provisions applicable to our common stock. The rights, preferences and privileges of the holders of our common stock are subject to the rights of the holders of shares of any series of preferred stock that we may issue in the future.

Anti-Takeover Provisions

Our third amended and restated certificate of incorporation and bylaws contain some provisions that could make our acquisition by means of a tender or exchange offer, a proxy contest or otherwise more difficult. These provisions are summarized below.

Potential Effects of Authorized but Unissued Shares of Common Stock and Preferred Stock. We have shares of common stock and preferred stock available for future issuance without stockholder approval. We may utilize these additional shares for a variety of corporate purposes, including future public offerings to raise additional capital, to facilitate corporate acquisitions or payment as a dividend on the capital stock. The existence of unissued and unreserved common stock and preferred stock may enable our board of directors to issue shares to persons friendly to current management or to issue preferred stock with terms that could render more difficult or discourage a third-party attempt to obtain control of us by means of a merger, tender offer, proxy contest or otherwise, thereby protecting the continuity of our management.

Special Meetings. Stockholders cannot call special meetings of our stockholders. Our bylaws provide that special meetings of our stockholders may, unless otherwise prescribed by law, be called by our chairman of the board (if any), our board of directors or our chief executive officer and shall be held at such place, on such date and at such time as shall be fixed by our board of directors or the

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person calling the meeting. Business transacted at any special meeting shall be limited to matters relating to the purpose or purposes stated in the notice of the meeting.

Undesignated Preferred Stock. The ability to authorize undesignated preferred stock makes it possible for our board of directors to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to acquire us. The ability to issue preferred stock may have the effect of deferring hostile takeovers or delaying changes in control or management of our company.

Delaware Anti-Takeover Statute. We are subject to the provisions of Section 203 of the Delaware General Corporation Law regulating corporate takeovers. In general, Section 203 prohibits a publicly held Delaware corporation from engaging in a business combination with an interested stockholder for a period of three years following the date the person became an interested stockholder unless:

prior to the date of the transaction, the board of directors of the corporation approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;

upon completion of the transaction that resulted in the stockholder becoming an interested stockholder, the stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the number of shares outstanding (1) shares owned by persons who are directors and also officers and (2) shares owned by 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 exchange offer; and

on or subsequent to the date of the transaction, the business combination is approved by the board and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least 66 2/3% of the outstanding voting stock which is not owned by the interested stockholder.

Generally, a business combination includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. An interested stockholder is a person who, together with affiliates and associates, owns or, within three years prior to the determination of interested stockholder status, owned 15% or more of a corporation's outstanding voting securities. We expect the existence of this provision to have an anti-takeover effect with respect to transactions our board of directors does not approve in advance. We also anticipate that Section 203 may discourage attempted acquisitions that might result in a premium over the market price for the shares of our common stock held by stockholders.

The provisions of Delaware law, our third amended and restated certificate of incorporation and our bylaws could have the effect of discouraging others from attempting hostile takeovers and, as a consequence, they may also inhibit temporary fluctuations in the market price of our common stock that often result from actual or rumored hostile takeover attempts. These provisions may also have the effect of preventing changes in our management. It is possible that these provisions could make it more difficult to accomplish transactions that stockholders may otherwise deem to be in their best interests.

Transfer Agent

The transfer agent and registrar for our common stock is Continental Stock Transfer & Trust Company. Its address is 17 Battery Place, New York, New York, 10004 and its telephone number is (212) 509-4000.

NASDAQ Listing

Our common stock is traded on The NASDAQ Capital Market under the symbol "CGIX."

DESCRIPTION OF PREFERRED STOCK

Our third amended and restated certificate of incorporation authorizes us to issue up to 9,764,000 shares of preferred stock, par value \$0.0001 per share. At March 31, 2014, there were no shares of preferred stock outstanding.

Terms of the Preferred Stock That We May Offer and Sell to You

We summarize below some of the provisions that will apply to the preferred stock that we may offer to you unless the applicable prospectus supplement provides otherwise. This summary may not contain all information that is important to you. You should read the prospectus supplement, which will contain additional information and which may update or change some of the information below. Prior to the issuance of a new series of preferred stock, we will further amend our third amended and restated certificate of incorporation designating the stock of that series and the terms of that series. We will file a copy of the certificate of designation that contains the terms of each new series of preferred stock with the SEC each time we issue a new series of preferred stock. Each certificate of designation will establish the number of shares included in a designated series and fix the designation, powers, privileges, preferences and rights of the shares of each series as well as any applicable qualifications, limitations or restrictions. You should refer to the applicable certificate of designation as well as our third amended and restated certificate of incorporation before deciding to buy shares of our preferred stock as described in the applicable prospectus supplement.

Our board of directors has the authority, without further action by the stockholders, to issue preferred stock in one or more series and to fix the number of shares, dividend rights, conversion rights, voting rights, redemption rights, liquidation preferences, sinking funds, and any other rights, preferences, privileges and restrictions applicable to each such series of preferred stock.

The issuance of any preferred stock could adversely affect the rights of the holders of common stock and, therefore, reduce the value of the common stock. The ability of our board of directors to issue preferred stock could discourage, delay or prevent a takeover or other corporate action.

The terms of any particular series of preferred stock will be described in the prospectus supplement relating to that particular series of preferred stock, including, where applicable:

the designation, stated value and liquidation preference of such preferred stock;

the number of shares within the series;

the offering price;

the dividend rate or rates (or method of calculation), the date or dates from which dividends shall accrue, and whether such dividends shall be cumulative or noncumulative and, if cumulative, the dates from which dividends shall commence to cumulate;

any redemption or sinking fund provisions;

the amount that shares of such series shall be entitled to receive in the event of our liquidation, dissolution or winding-up;

the terms and conditions, if any, on which shares of such series shall be convertible or exchangeable for shares of our stock of any other class or classes, or other series of the same class;

the voting rights, if any, of shares of such series; the status as to reissuance or sale of shares of such series redeemed, purchased or otherwise reacquired, or surrendered to us on conversion or exchange;

the conditions and restrictions, if any, on the payment of dividends or on the making of other distributions on, or the purchase, redemption or other acquisition by us or any subsidiary, of the common stock or of any other class of our shares ranking junior to the shares of such series as to dividends or upon liquidation;

the conditions and restrictions, if any, on the creation of indebtedness by us or by any subsidiary, or on the issuance of any additional stock ranking on a parity with or prior to the shares of such series as to dividends or upon liquidation; and

any additional dividend, liquidation, redemption, sinking or retirement fund and other rights, preferences, privileges, limitations and restrictions of such preferred stock.

The description of the terms of a particular series of preferred stock in the applicable prospectus supplement will not be complete. You should refer to the applicable amendment to our third amended and restated certificate of incorporation for complete information regarding a series of preferred stock.

The preferred stock will, when issued against payment of the consideration payable therefor, be fully paid and nonassessable. Unless otherwise specified in the applicable prospectus supplement, each series of preferred stock will, upon issuance, rank senior to the common stock and on a parity in all respects with each other outstanding series of preferred stock. The rights of the holders of our preferred stock will be subordinate to that of our general creditors.

DESCRIPTION OF WARRANTS

The following description, together with the additional information we may include in any applicable prospectus supplements, summarizes the material terms and provisions of the warrants that we may offer under this prospectus and the related warrant agreements and warrant certificates. While the terms summarized below will apply generally to any warrants that we may offer, we will describe the particular terms of any series of warrants in more detail in the applicable prospectus supplement. If we indicate in the prospectus supplement, the terms of any warrants offered under that prospectus supplement may differ from the terms described below. Specific warrant agreements will contain additional important terms and provisions and will be incorporated by reference as an exhibit to the registration statement that includes this prospectus.

General

We may issue warrants for the purchase of common stock or preferred stock in one or more series. We may issue warrants independently or together with common stock or preferred stock, and the warrants may be attached to or separate from these securities.

We will evidence each series of warrants by warrant certificates that we will issue under a separate agreement. We may enter into a warrant agreement with a warrant agent. We will indicate the name and address of the warrant agent in the applicable prospectus supplement relating to a particular series of warrants.

Before exercising their warrants, holders of warrants will not have any of the rights of holders of the securities purchasable upon such exercise, including in the case of warrants to purchase common stock or preferred stock, the right to receive dividends, if any, or, payments upon our liquidation, dissolution or winding up or to exercise voting rights, if any.

Additional Information

We will describe in the applicable prospectus supplement the terms of the series of warrants, including:

the offering price and aggregate number of warrants offered;

the currency for which the warrants may be purchased;

if applicable, the designation and terms of the securities with which the warrants are issued and the number of warrants issued with each such security or each principal amount of such security;

if applicable, the date on and after which the warrants and the related securities will be separately transferable;

in the case of warrants to purchase common stock or preferred stock, the number of shares of common stock or preferred stock, as the case may be, purchasable upon the exercise of one warrant and the price at which these shares may be purchased upon such exercise;

the effect of any merger, consolidation, sale or other disposition of our business on the warrant agreement and the warrants;

the terms of any rights to redeem or call the warrants;

any provisions for changes to or adjustments in the exercise price or number of securities issuable upon exercise of the warrants;

the dates on which the right to exercise the warrants will commence and expire;

the manner in which the warrant agreement and warrants may be modified;

a discussion on any material or special United States federal income tax consequences of holding or exercising the warrants;

the terms of the securities issuable upon exercise of the warrants; and

any other specific terms, preferences, rights or limitations of or restrictions on the warrants.

Exercise of Warrants

Each warrant will entitle the holder to purchase the securities that we specify in the applicable prospectus supplement at the exercise price that we describe in the applicable prospectus supplement. Unless we otherwise specify in the applicable prospectus supplement, holders of the warrants may exercise the warrants at any time up to 5 p.m., Eastern time, on the expiration date that we set forth in the applicable prospectus supplement. After the close of business on the expiration date, unexercised warrants will become void.

Holders of the warrants may exercise the warrants by delivering the warrant certificate representing the warrants to be exercised together with specified information, and paying the required amount to the warrant agent in immediately available funds, as provided in the applicable prospectus supplement. We will set forth on the reverse side of the warrant certificate and in the applicable prospectus supplement the information that the holder of the warrant will be required to deliver to the warrant agent.

Upon receipt of the required payment and the warrant certificate properly completed and duly executed at the corporate trust office of the warrant agent or any other office indicated in the applicable prospectus supplement, we will issue and deliver the securities purchasable upon such exercise. If fewer than all of the warrants represented by the warrant certificate are exercised, then we will issue a new warrant certificate for the remaining amount of warrants. If we so indicate in the applicable prospectus supplement, holders of the warrants may surrender securities as all or part of the exercise price for warrants.

Enforceability of Rights by Holders of Warrants

Each warrant agent will act solely as our agent under the applicable warrant agreement and will not assume any obligation or relationship of agency or trust with any holder of any warrant. A single bank or trust company may act as warrant agent for more than one issue of warrants. A warrant agent will have no duty or responsibility in case of any default by us under the applicable warrant agreement or warrant, including any duty or responsibility to initiate any proceedings at law or otherwise, or to make any demand upon us. Any holder of a warrant may, without the consent of the related warrant agent or the holder of any other warrant, enforce by appropriate legal action its right to exercise, and receive the securities purchasable upon exercise of, its warrants.

DESCRIPTION OF UNITS

We may issue units comprised of one or more of the other securities described in this prospectus in any combination. Each unit will be issued so that the holder of the unit is also the holder of each security included in the unit. Thus, the holder of a unit will have the rights and obligations of a holder of each included security. The unit agreement under which a unit is issued may provide that the securities included in the unit may not be held or transferred separately, at any time or at any time before a specified date. The applicable prospectus supplement may describe:

the designation and terms of the units and of the securities comprising the units, including whether and under what circumstances those securities may be held or transferred separately;

any provisions for the issuance, payment, settlement, transfer or exchange of the units or of the securities comprising the units;

the terms of the unit agreement governing the units;

United States federal income tax considerations relevant to the units; and

whether the units will be issued in fully registered global form.

This summary of certain general terms of units and any summary description of units in the applicable prospectus supplement do not purport to be complete and are qualified in their entirety by reference to all provisions of the applicable unit agreement. The forms of the unit agreements and other documents relating to a particular issue of units will be filed with the SEC each time we issue units, and you should read those documents for provisions that may be important to you.

PLAN OF DISTRIBUTION

We may sell the securities through underwriters or dealers, through agents, or directly to one or more purchasers. The accompanying prospectus supplement will describe the terms of the offering of the securities, including:

the name or names of any underwriters;

the purchase price of the securities being offered and the proceeds we will receive from the sale;

any over-allotment options pursuant to which underwriters may purchase additional securities from us;

any agency fees or underwriting discounts and other items constituting agents' or underwriters' compensation;

any public offering price;

any discounts or concessions allowed or reallocated or paid to dealers; and

any securities exchange or market on which the securities may be listed.

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If underwriters are used in the sale, they will acquire the securities for their own account and may resell the securities from time to time in one or more transactions at a fixed public offering price or at varying prices determined at the time of the sale. The obligations of the underwriters to purchase the securities will be subject to the conditions set forth in the applicable underwriting agreement. We may offer the securities to the public through underwriting syndicates represented by managing underwriters or by underwriters without a syndicate. Subject to certain conditions, the underwriters will be obligated to purchase all the securities offered by the prospectus supplement. We may change from time to time the public offering price and any discounts or concessions allowed or reallocated or paid to dealers. We may use underwriters with whom we have a material relationship. We will describe such relationships in the prospectus supplement naming the underwriter and the nature of any such relationship.

We may engage in "at the market" offerings of our common stock, which are offerings into an existing trading market, at other than a fixed price, on or through the facilities of a national securities exchange or to or through a market maker otherwise than on an exchange.

We may sell securities directly or through agents we designate from time to time. We will name any agent involved in the offering and sale of the securities, and we will describe any commissions we will pay the agent in the prospectus supplement. Unless the prospectus supplement states otherwise, our agent will act on a best efforts basis for the period of its appointment.

We may enter into derivative transactions with third parties, or sell securities not covered by this prospectus to third parties in privately negotiated transactions. If the applicable prospectus supplement indicates, in connection with those derivatives, the third parties may sell securities covered by this prospectus and the applicable prospectus supplement, including short sale transactions. If so, the third party may use securities pledged by us or borrowed from us or others to settle those sales or to close out any related open borrowings of common shares, and may use securities received from us in settlement of those derivatives to close out any related open borrowings of common shares. The third party in such sale transactions will be an underwriter and, if not identified in this prospectus, will be identified in the applicable prospectus supplement or a post-effective amendment to this registration statement.

All securities we offer other than common stock will be new issues of securities with no established trading market. Any underwriters may make a market in these securities, but will not be obligated to do so and may discontinue any market making at any time without notice. We cannot guarantee the liquidity of the trading markets for any securities.

We may provide agents and underwriters with indemnification against civil liabilities related to this offering, including liabilities under the Securities Act, or contribution with respect to payments that the agents or underwriters may make with respect to these liabilities. Agents and underwriters may engage in transactions with, or perform services for, us in the ordinary course of business.

Rules of the Securities and Exchange Commission may limit the ability of any underwriters to bid for or purchase securities before the distribution of the securities is completed. However, underwriters may engage in the following activities in accordance with the rules:

Stabilizing transactions Underwriters may make bids or purchases for the purpose of pegging, fixing or maintaining the price of the shares, so long as stabilizing bids do not exceed a specified maximum.

Over-allotments and syndicate covering transactions Underwriters may sell more shares of our common stock than the number of shares that they have committed to purchase in any underwritten offering. This over-allotment creates a short position for the underwriters. This short position may involve either "covered" short sales or "naked" short sales. Covered short sales are short sales made in an amount not greater than the underwriters' over-allotment option to purchase additional shares in any underwritten offering. The underwriters may close out any

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covered short position either by exercising their over-allotment option or by purchasing shares in the open market. To determine how they will close the covered short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market, as compared to the price at which they may purchase shares through the over-allotment option. Naked short sales are short sales in excess of the over-allotment option. The underwriters must close out any naked position by purchasing shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that, in the open market after pricing, there may be downward pressure on the price of the shares that could adversely affect investors who purchase shares in the offering.

Penalty bids If underwriters purchase shares in the open market in a stabilizing transaction or syndicate covering transaction, they may reclaim a selling concession from other underwriters and selling group members who sold those shares as part of the offering.

Similar to other purchase transactions, an underwriter's purchases to cover the syndicate short sales or to stabilize the market price of our securities may have the effect of raising or maintaining the market price of our securities or preventing or mitigating a decline in the market price of our securities. As a result, the price of the securities may be higher than the price that might otherwise exist in the open market. The imposition of a penalty bid might also have an effect on the price of shares if it discourages resales of the securities.

If commenced, the underwriters may discontinue any of the activities at any time.

In compliance with guidelines of the Financial Industry Regulatory Authority, or FINRA, the maximum consideration or discount to be received by any FINRA member or independent broker dealer may not exceed 8% of the aggregate amount of the securities offered pursuant to this prospectus and any applicable prospectus supplement.

LEGAL MATTERS

The validity of the issuance of the securities offered by this prospectus will be passed upon for us by Lowenstein Sandler LLP, Roseland, New Jersey.

EXPERTS

The consolidated financial statements as of and for the year ended December 31, 2013, incorporated in this prospectus by reference from the Company's Annual Report on Form 10-K filed with the SEC on March 28, 2014, have been audited by McGladrey LLP, an independent registered public accounting firm, as stated in their report, which is incorporated herein by reference. Such consolidated financial statements have been so incorporated in reliance upon the report of such firm given upon their authority as experts in accounting and auditing.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The following documents previously filed by us with the SEC are incorporated in this prospectus by reference:

- (a) Our Annual Report on Form 10-K for the fiscal year ended December 31, 2013, filed with the SEC on March 28, 2014.
- (b) Our Proxy Statement on Schedule 14A for our 2014 Annual Meeting of Stockholders, filed with the SEC on April 21, 2014.
- (c) Our Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2014 filed with the SEC on May 15, 2014.

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- (d) Our Current Reports on Form 8-K and amendments thereto, filed with the SEC on January 6, February 21, March 19, April 4, May 15 and May 22, 2014, (excluding any information deemed furnished pursuant to Item 2.02 or Item 7.01 of any such Current Report on Form 8-K).
- (e) Description of our common stock contained in the Registration Statement on Form 8-A, declared effective on August 12, 2013 (including any amendment or report filed with the SEC for the purpose of updating such description).

All reports and other documents that we file pursuant to Section 13(a) and 13(c), 14 and 15(d) of the Exchange Act prior to the filing of a post-effective amendment which indicates that all securities offered hereunder have been sold or which deregisters all such securities then remaining unsold shall be deemed to be incorporated by reference in this prospectus and to be a part hereof from the date of filing of such reports and documents.

We will provide to each person, including any beneficial owner, to whom a prospectus is delivered, copies of these filings, excluding all exhibits unless an exhibit has been specifically incorporated by reference in such filings, at no cost, upon written or oral request made to:

Cancer Genetics, Inc.
201 Route 17 North, 2nd Floor
Rutherford, NJ 07070
(201) 528-9200
Attention: Edward J. Sitar, Secretary

WHERE YOU CAN FIND MORE INFORMATION

We have filed a registration statement on Form S-3 with the Securities and Exchange Commission under the Securities Act of 1933. This prospectus omits some information and exhibits included in the registration statement, copies of which may be obtained upon payment of a fee prescribed by the Commission or may be examined free of charge at the principal office of the SEC in Washington, D.C.

We are subject to the informational requirements of the Securities Exchange Act of 1934 and in accordance therewith file reports, proxy statements and other information with the SEC. The reports, proxy statements and other information filed by us with the SEC can be inspected and copied at the Public Reference Room maintained by the SEC at 100 Fifth Street, N.E., Washington, D.C. 20549. Copies of filings can be obtained from the Public Reference Room maintained by the SEC by calling the SEC at 1-800-SEC-0330. In addition, the Commission maintains a website that contains reports, proxy and informational statements and other information filed electronically with the SEC at <http://www.sec.gov>.

You may request, orally or in writing, a copy of these documents, which will be provided to you at no cost, by contacting Edward J. Sitar, Secretary, Cancer Genetics, Inc., 201 Route 17 North, 2nd Floor, Rutherford, NJ 07070, telephone (201) 528-9200.

You should rely only on the information contained in this prospectus, including information incorporated by reference as described above, or any prospectus supplement that we have specifically referred you to. We have not authorized anyone else to provide you with different information. You should not assume that the information in this prospectus or any prospectus supplement is accurate as of any date other than the date on the front of those documents or that any document incorporated by reference is accurate as of any date other than its filing date. You should not consider this prospectus to be an offer or solicitation relating to the securities in any jurisdiction in which such an offer or solicitation relating to the securities is not authorized. Furthermore, you should not consider this prospectus to be an offer or solicitation relating to the securities if the person making the offer or solicitation is not qualified to do so, or if it is unlawful for you to receive such an offer or solicitation.

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2,467,820 Shares of Common Stock

PROSPECTUS SUPPLEMENT

**Rodman & Renshaw
a unit of H.C. Wainwright & Co.**

The date of this prospectus supplement is May 23, 2016
