

CANCER GENETICS, INC
Form 424B5
December 11, 2017

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Filed Pursuant to Rule 424(b)(5)
Registration No. 333-218229

PROSPECTUS SUPPLEMENT
(To the Prospectus Dated June 5, 2017)

3,500,000 Shares of Common Stock

Warrants to Purchase up to 3,500,000 Shares of Common Stock

Placement Agent Warrants to Purchase up to 175,000 Shares of Common Stock

3,675,000 Shares of Common Stock Underlying the Warrants

CANCER GENETICS, INC.

We are offering 3,500,000 shares of our common stock, \$0.0001 par value per share, and warrants to purchase up to 3,500,000 shares of our common stock to institutional and accredited investors pursuant to this prospectus supplement and the accompanying prospectus and securities purchase agreements with such investors. Each share of our common stock is being sold together with a warrant to purchase one share of our common stock at a purchase price of \$2.00 per share and related warrant. Each warrant will have an exercise price of \$2.35 per share, will be exercisable six months after the issuance date and will expire 18 months after the issuance date. The shares of common stock and warrants will be immediately separable and will be issued separately, but will be purchased together in this offering. In addition, we are offering warrants to purchase up to 175,000 shares of our common stock to the placement agent in this offering as compensation. Each warrant offered to the placement agent will have an exercise price of \$2.50 per share, will be exercisable six months after the issuance date and will expire 18 months after the issuance date. This prospectus supplement and the accompanying prospectus also relate to the offering of the shares of common stock issuable upon exercise of the warrants being offered in this offering.

Our common stock is listed on the Nasdaq Capital Market under the symbol "CGIX". There is no established public trading market for the warrants, and we do not expect a market to develop. In addition, we do not intend to list the warrants on any securities exchange or other quotation system. Without an active trading market, the liquidity of the warrants will be limited. On December 7, 2017, the last reported sale price per share of our common stock was \$2.35 per share.

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

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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.

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 per share and related warrant	\$2.00	\$7,000,000
Placement agent's fees(1)	\$0.14	\$490,000
Proceeds to us, before expenses(2)	\$1.86	\$6,510,000

(1) 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-15 of this prospectus supplement and (ii) pay the placement agent \$50,000 for non-accountable expenses plus reimbursement of up to \$10,000 for the actual out-of-pocket cost of a clearing agent. For additional information about the compensation paid to the placement agent, see "Plan of Distribution."

(2) 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.

We expect that delivery of the securities being offered pursuant to this prospectus supplement and the accompanying prospectus will be made on or about December 12, 2017.

H.C. Wainwright & Co.

The date of this prospectus supplement is December 8, 2017.

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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 "Information Incorporated 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 placement agent (or any of our or its 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 placement agent 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 of such 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 "Information Incorporated 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 display of other companies' trade names or trademarks to imply a relationship with, or endorsement or sponsorship of us by, any other companies.

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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. 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 improve efficiency of billing and collection processes;

with respect to our Clinical Services, our ability to obtain reimbursement from governmental and other third-party payors for our tests and services;

our ability to integrate vivoPharm's operations with our own operations, to realize anticipated efficiencies and cost-savings, and to realize anticipated benefits of our recent acquisition of vivoPharm;

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

our ability to execute on our marketing and sales strategy for our tests and CRO services and gain acceptance of our tests and CRO services 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 raise additional capital to meet our liquidity needs;

competition from clinical laboratory services companies, 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 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;

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;

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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;

our ability to adequately support future growth; and

the risk factors discussed in our annual report on Form 10-K for the year ended December 31, 2016, as updated in the quarterly reports on Form 10-Q and other reports, as applicable, that we file with the Securities and Exchange Commission.

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 except as required by law.

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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 precision medicine, enabling individualized therapies 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 biotech and pharmaceutical 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 nine of the top ten cancers in prevalence in the United States, with additional unique capabilities offered by our FDA-cleared 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 pharmaceutical and biotech companies and clinicians by participating in the entire care continuum from bench to bedside. We believe the oncology industry is undergoing a rapid evolution in its approach to diagnostic, prognostic and treatment outcomes (theranostic) testing, embracing precision medicine and individualized testing as a means to drive higher standards of patient treatment and disease management. Similarly, pharmaceutical and biotech companies are increasingly working with precision diagnostic and molecular technology providers such as CGI to provide molecular profiles on clinical trial participants. These profiles may help identify biomarker and genomic variations that may be responsible for differing responses to oncology therapies, thereby increasing the efficiency of trials while lowering costs. We believe tailored and combination therapies can revolutionize oncology care through molecular- and biomarker-based testing services, enabling physicians and researchers to target the factors that make each patient and disease unique.

We believe the next wave in cancer management will bring together testing capabilities for germline, or inherited mutations, and somatic mutations that arise in tissues over the course of a lifetime. We have created a unique position in the industry by providing both targeted somatic analysis of tumor sample cells alongside germline analysis of an individual's non-cancerous cells' molecular profile as we attempt to continue achieving milestones in precision medicine.

Cancer is genetically-driven and constitutes a diverse class of diseases with various causes, each 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

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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 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 pharmaceutical 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 pharmaceutical 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 (theranosis) of cancers to guide patient management.
	Cancer Centers	
	Clinics	
Biopharma Services	Pharmaceutical 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	Pharmaceutical and Biotech companies	Discovery services provide the tools and testing methods for companies and researchers seeking to identify new molecular-based biomarkers for disease.
	Academic Institutions	
	Government-Sponsored Research Institutions	

In 2016, we generated approximately 57% of our revenue from Biopharma Services, approximately 39% from Clinical Services and approximately 4% from Discovery Services. In 2015, we generated approximately 64% of our revenue from Biopharma Services, approximately 31% from Clinical Services and approximately 5% from Discovery Services.

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 Clinical Laboratory Improvement Amendments ("CLIA") certified and College of American Pathologists ("CAP") accredited laboratories in Rutherford, NJ, Los Angeles, CA, and Raleigh, NC, as well as our NABL and GMP-certified laboratories in Victoria (Australia), Hyderabad, India and Shanghai, China.

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

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

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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 clinical markets in India, and as a result of the acquisition, BioServe became a subsidiary of ours. On October 9, 2015, Cancer Genetics 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 our common stock, with the common stock being valued at \$5.4 million. On August 15, 2017, we purchased all of the outstanding stock of vivoPharm, with its principal place of business in Victoria, Australia, in a transaction valued at approximately \$1.2 million in cash, \$9.5 million in our common stock based on the closing price of our common stock on August 15, 2017, plus an estimated settlement of \$345,000 for excess working capital in accounts payable and accrued expenses.

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 supplement and the accompanying prospectus.

Implications of Being an Emerging Growth Company

We are an "emerging growth company," as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. An emerging growth company may take advantage of relief from certain reporting requirements and other burdens that are otherwise generally applicable to public companies. These provisions include:

- providing only two years of audited financial statements, in addition to any required unaudited interim financial statements, with correspondingly reduced "Management's Discussion and Analysis of Financial Condition and Results of Operations" disclosure;
- exemption from the auditor attestation requirement on the effectiveness of our internal controls over financial reporting;
- reduced disclosure about our executive compensation arrangements; and
- no requirements for non-binding advisory votes on executive compensation or golden parachute arrangements.

We may take advantage of these provisions for up to December 31, 2018, which is the last day of our fiscal year following the fifth anniversary of the date of the completion of our initial public offering or such earlier time that we no longer qualify as an emerging growth company. We would cease to be an emerging growth company if we have more than \$1.07 billion in annual revenue, have more than \$700 million in market value of our capital stock held by non-affiliates or issue more than \$1.0 billion of non-convertible debt over a three-year period. We may choose to take advantage of some but not all of these reduced reporting requirements and other burdens. We have taken advantage of some reduced reporting burdens in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein and therein. Accordingly, the information that we provide stockholders may be different than you might obtain from other public companies in which you hold equity interests.

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THE OFFERING

Common Stock offered by us	3,500,000 shares of common stock
Warrants offered by us	Warrants to purchase up to 3,500,000 shares of common stock. Each warrant will have an exercise price of \$2.35 per share, will be exercisable on the six month anniversary of the issuance date and will expire 18 months from the date of issuance. We are issuing warrants to purchase 175,000 shares of common stock to the placement agent as part of the compensation payable to the placement agent in connection with this offering. The placement agent warrants will be substantially on the same terms as the other warrants issued in this offering, except that the placement agent warrants will have an exercise price of \$2.50 per share. This prospectus supplement also relates to the offering of the shares of common stock issuable upon exercise of the warrants. There is currently no market for the warrants and none is expected to develop after this offering. We do not intend to list the warrants on any national securities exchange or other trading market.
Public offering price	\$2.00 per share and related warrant
Common stock to be outstanding immediately after the offering⁽¹⁾	27,704,331 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

(1) The total shares of common stock outstanding immediately following this offering is based on 24,204,331 shares outstanding as of September 30, 2017. It excludes as of September 30, 2017:

approximately 2,816,000 shares issuable upon exercise of outstanding stock options at a weighted-average exercise price of \$7.05 per share;

approximately 7,033,000 shares issuable upon exercise of outstanding warrants at a weighted-average exercise price of \$4.93 per share; and

an aggregate of 525,671 shares available for future grants under our 2011 Equity Incentive Plan, or the 2011 Plan, and the 2008 Stock Option Plan, or 2008 Plan.

Unless otherwise indicated herein, all information in this prospectus supplement, including the number of shares that will be outstanding after this offering reflects and assumes no exercise of outstanding options or warrants after September 30, 2017, including the warrants issued in this offering.

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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 and the subsequent quarterly report on Form 10-Q and other reports that we file with the SEC 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. 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

There is no public market for the warrants to purchase common stock being offered in this offering.

There is no established public trading market for the warrants being offered in this offering, and we do not expect a market to develop. In addition, we do not intend to apply for listing of the warrants on any national securities exchange or other trading market. Without an active market, the liquidity of the warrants will be limited.

Holders of our warrants will have no rights as a common stockholder until such holders exercise their warrants and acquire our common stock.

Until you acquire shares of our common stock upon exercise of your warrants, you will have no rights with respect to the shares of our common stock underlying such warrants. Upon exercise of your warrants, you will be entitled to exercise the rights of a common stockholder only as to matters for which the record date occurs after the exercise date.

The warrants being offered in this offering are speculative in nature. You may not be able to recover your investment in these warrants, and they may expire worthless.

If our common stock price does not increase to an amount sufficiently above the applicable exercise price of the warrants being offered in this offering during the period the corresponding warrants are exercisable, you will be unable to recover any of your investment in these warrants. There can be no assurance that the market price of the common stock will ever equal or exceed the exercise price of these warrants, and consequently, whether it will ever be profitable for holders of the warrants to exercise the warrants.

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

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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 \$0.36 per share as of September 30, 2017. Based on the offering price of \$2.00 per share and related warrant, if you purchase securities in this offering, you will suffer immediate dilution of \$1.46 per share in the net tangible book value of the common stock. In the event that you exercise your warrants, you will experience additional dilution to the extent that the exercise price of those warrants is higher than the book value per share of our common stock. See the section entitled "Dilution" below for a more detailed discussion of the dilution you will incur if you purchase shares in this offering.

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 3,500,000 shares of common stock, which represent approximately 14.4% of our outstanding common stock as of December 7, 2017 after giving effect to the sale of the shares of common stock. In addition, we will sell the investors in this offering warrants to purchase an aggregate of up to 3,500,000 shares of common stock and the placement agent will receive warrants to purchase up to 175,000 shares of common stock. 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.

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

As of September 30, 2017, we had outstanding options to purchase an aggregate of approximately 2,816,000 shares of our common stock at a weighted average exercise price of \$7.05 per share and warrants to purchase an aggregate of 7,033,000 shares of our common stock at a weighted average exercise price of \$4.93 per share. In addition, investors in this offering are purchasing 3,500,000 warrants with an exercise price of \$2.35 per share and we will be issuing to the placement agent an additional warrants to purchase up to 175,000 of our common stock with an exercise price of \$2.50. The exercise of such outstanding options and warrants and the warrants issued in connection with this offering may 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 2015 through December 7, 2017, the market price of our common stock has fluctuated from a high of \$12.75 per share in the third quarter of 2015, to a low of \$1.10 per share in the fourth 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;

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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"; 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. 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.

Because we do not expect to pay cash dividends for the foreseeable future, you must rely on appreciation of our common stock price for any return on your investment. Even if we change that policy, we may be restricted from paying dividends on our common stock.

We do not intend to pay cash dividends on shares of our common stock for the foreseeable future. Our loan agreements prohibit us from paying cash dividends on our common stock and the terms of any future loan agreement we enter into or any debt securities we may issue are likely to contain similar restrictions on the payment of dividends. Subject to the foregoing, any determination to pay dividends in the future will be at the discretion of our board of directors and will depend upon results of operations, financial performance, contractual restrictions, restrictions imposed by applicable law and other factors our board of directors deems relevant. Accordingly, you will have to rely on capital appreciation, if any, to earn a return on your investment in our common stock.

Table of Contents**PRICE RANGE OF COMMON STOCK**

Our common stock trades on the Nasdaq Capital Market under the symbol "CGIX." The last reported sale price for our common stock on December 7, 2017 was \$2.35 per share. As of December 7, 2017, we had approximately 100 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, 2017		
First Quarter	\$ 5.30	\$ 1.35
Second Quarter	\$ 4.78	\$ 3.00
Third Quarter	\$ 4.25	\$ 2.60
Fourth Quarter (through December 7, 2017)	\$ 3.50	\$ 2.10
Fiscal Year ended December 31, 2016		
First Quarter	\$ 3.38	\$ 1.90
Second Quarter	\$ 2.93	\$ 1.82
Third Quarter	\$ 2.73	\$ 1.72
Fourth Quarter	\$ 1.98	\$ 1.10
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

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 from the sale of the securities that we are offering will be approximately \$6.4 million, based on the offering price of \$2.00 per share and related warrant, after deducting placement agent fees and expenses and estimated offering expenses payable by us. Additionally, to the extent the warrants issued in this offering are exercised, we may receive additional proceeds, but we cannot predict whether, when or the extent to which any such exercises will occur.

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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Table of Contents**DILUTION**

If you invest in our common stock and warrants, your interest will be diluted immediately to the extent of the difference between the offering price per share and related warrant you will pay in this offering and the as adjusted net tangible book value per share of our common stock after this offering. Net tangible book value per share represents our total tangible assets less total liabilities, divided by the number of shares of our common stock outstanding.

As of September 30, 2017, our net tangible book value was \$8,622,000, or \$0.36 per share of common stock. After giving effect to our issuance and sale of 3,500,000 shares of common stock in this offering at the offering price of \$2.00 per share and related warrant, after deducting placement agent fees and expenses and estimated offering expenses payable by us, the as adjusted net tangible book value as of September 30, 2017 would have been \$15,022,000, or \$0.54 per share. This represents an immediate increase in as adjusted net tangible book value to existing stockholders of \$0.19 per share and an immediate dilution to new investors purchasing securities in this offering of \$1.46 per share.

The following table illustrates this per share dilution:

Offering price per share of common stock and related warrant	\$ 2.00
Net tangible book value per share as of September 30, 2017	\$ 0.36
Increase in net tangible book value per share attributable to this offering	\$ 0.19
Pro forma net tangible book value per share as of September 30, 2017 after giving effect to this offering	\$ 0.54
Dilution per share to the new investors in this offering	\$ 1.46

The table above excludes as of September 30, 2017 the following:

approximately 2,816,000 shares issuable upon exercise of outstanding stock options at a weighted-average exercise price of \$7.05 per share;

approximately 7,033,000 shares issuable upon exercise of outstanding warrants at a weighted-average exercise price of \$4.93 per share; and

an aggregate of 525,671 shares available for future grants under our 2011 Plan and 2008 Plan.

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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DESCRIPTION OF THE SECURITIES WE ARE OFFERING

In this offering, we are offering 3,500,000 shares of common stock and warrants to purchase up to 3,500,000 shares of common stock. This prospectus supplement also relates to the offering of placement agent warrants to purchase up to 175,000 shares of common stock on substantially the same terms as the other warrants issued in the offering, except as described under the caption "Placement Agent Warrants." This prospectus supplement and the accompanying prospectus also includes the offering of the shares of common stock issuable upon exercise of the offered warrants.

Common Stock

The material terms and provisions of our common stock are described under the caption "Description of Common Stock" beginning on page 5 of the accompanying prospectus.

Warrants

The material terms and provisions of the warrants to purchase 3,500,000 shares of common stock being offered and the placement agent warrants to purchase 175,000 shares of common stock being offered pursuant to this prospectus supplement and the accompanying prospectus are summarized below. This summary is subject to and qualified in its entirety by the form of warrant provided to each investor in this offering and filed on a Current Report on Form 8-K in connection with this offering.

General Terms of the Warrants

The warrants to be issued in this offering represent the rights to purchase up to 3,500,000 shares of common stock at an initial exercise price of \$2.35 per share. Each warrant may be exercised at any time commencing six months after the issuance prior to 18 months after the original issuance date.

Exercise

Holders of the warrants may exercise their warrants to purchase shares of our common stock on or before the expiration date by delivering (i) notice of exercise, appropriately completed and duly signed, and (ii) if such holder is not utilizing the cashless exercise provisions with respect to the warrants, payment of the exercise price for the number of shares with respect to which the warrant is being exercised. Warrants may be exercised in whole or in part, but only for full shares of common stock. We provide certain rescission and buy-in rights to a holder if we fail to deliver the shares of common stock underlying the warrants by the trading day after the date on which delivery of the shares underlying the warrants is required by the warrant, subject to a maximum liability of 5% of such holder's subscription amount. With respect to the rescission rights, the holder has the right to rescind the exercise if stock certificates are not timely delivered. The buy-in rights apply if after the trading day on which delivery of the shares underlying the warrants is required by the warrant, the holder purchases (in an open market transaction or otherwise) shares of our common stock to deliver in satisfaction of a sale by the holder of the warrant shares that the holder anticipated receiving from us upon exercise of the warrant. In this event, we will:

pay in cash to the holder the amount equal to the excess (if any) of the buy-in price over the product of (A) the number of warrant shares that we were required to deliver to the holder, times (B) the price at which the sell order giving rise to holder's purchase obligation was executed; and

at the election of the holder, either (A) reinstate the portion of the warrant as to such number of shares of common stock, or (B) deliver to the holder a certificate or certificates representing such number of shares of common stock.

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In addition, the warrant holders are entitled to a "cashless exercise" option if, at any time of exercise, there is no effective registration statement registering, or no current prospectus available for, the issuance or resale of the shares of common stock underlying the warrants. This option entitles the warrant holders to elect to receive fewer shares of common stock without paying the cash exercise price. The number of shares to be issued would be determined by a formula based on the total number of shares with respect to which the warrant is being exercised, the volume weighted average of the prices on the trading date immediately prior to the date of exercise or, at the option of the holder and subject to certain limitations, the volume weighted average of the prices on the date of exercise or the bid price, per share of our common stock at the time the notice of exercise is and the applicable exercise price of the warrants issued in this offering.

The shares of common stock issuable on exercise of the warrants will be, when issued and paid for in accordance with the warrants, duly and validly authorized, legally issued and fully paid and non-assessable. We will authorize and reserve at least that number of shares of common stock equal to the number of shares of common stock issuable upon exercise of all outstanding warrants.

Fundamental Transactions

If, at any time while the warrants are outstanding, we, directly or indirectly, (1) consolidate or merge with or into another person, (2) sell, lease, license, assign, transfer, convey or otherwise dispose of all or substantially all of our assets, (3) are subject to or complete a tender or exchange offer pursuant to which holders of our common stock are permitted to tender or exchange their shares for other securities, cash or property and which has been accepted by 50% or more of the outstanding common stock, (4) effect any reclassification, reorganization or recapitalization of our common stock or any compulsory share exchange pursuant to which our common stock is effectively converted into or exchanged for other securities, cash or property, or (5) in one or more transactions consummate a stock purchase agreement or other business combination where the other party acquires more than 50% of our outstanding shares of common stock (each, a "Fundamental Transaction"), then the holder shall have the right thereafter to receive, upon exercise of the warrant, the same amount and kind of securities, cash or property as it would have been entitled to receive upon the occurrence of such Fundamental Transaction if it had been, immediately prior to such Fundamental Transaction, the holder of the number of warrant shares then issuable upon exercise of the warrant, and any additional consideration payable as part of the Fundamental Transaction. Any successor to us or surviving entity shall assume the obligations under the warrant.

Subsequent Rights Offerings

If, at any time while the warrants are outstanding, we issue rights, options or warrants to all holders of our common stock entitling them to purchase our common stock, then the holders of the warrants will be entitled to acquire those rights, options and warrants on the basis of the number of shares of common stock acquirable upon complete exercise of the warrants.

Pro Rata Distributions

If, at any time while the warrants are outstanding, we make a dividend or distribution of assets or rights to acquire assets to all holders of our common stock, the holders of the warrants will be entitled to participate in the dividend or distribution of assets or rights to acquire assets on the basis of the number of shares of common stock acquirable upon complete exercise of the warrants.

Certain Adjustments

The exercise price and the number of shares of common stock purchasable upon the exercise of the warrants are subject to adjustment upon the occurrence of specific events, including stock dividends, stock splits, combinations and reclassifications of our common stock.

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Delivery of Shares

Upon the holder's exercise of a warrant, we will promptly, but in no event later than two (2) trading days after the holder delivers to us a notice of exercise, or the Warrant Share Delivery Date, issue and deliver, or cause to be issued and delivered, the shares of common stock issuable upon exercise of the warrant. We will, if either there is an effective registration statement permitting the issuance of the warrant shares to or resale of the warrant shares by holder or the warrant is being exercised via cashless exercise, issue and deliver the shares electronically through The Depository Trust Corporation through its Deposit Withdrawal Agent Commission System (DWAC) or another established clearing corporation performing similar functions.

Notice of Corporate Action

We will provide notice to holders of the warrants to provide them with the opportunity to exercise their warrants and hold common stock in order to participate in or vote on the following corporate events:

if we shall take a record of the holders of our common stock for the purpose of entitling them to receive a dividend or other distribution, or any right to subscribe for or purchase any shares of stock of any class or any other right;

any reclassification of our common stock, any consolidation or merger to which we are a party, any sale or transfer of all or substantially all of our assets, or any compulsory share exchange whereby our common is converted into other securities, cash or property; or

a voluntary or involuntary dissolution, liquidation or winding up.

Limitations on Exercise

The number of warrant shares that may be acquired by any holder upon any exercise of the warrant shall be limited to the extent necessary to insure that, following such exercise (or other issuance), the total number of shares of common stock then beneficially owned by such holder and its affiliates and any other persons whose beneficial ownership of common stock would be aggregated with the holder's for purposes of Section 13(d) of the Exchange Act, does not exceed 4.99% of the total number of issued and outstanding shares of common stock (including for such purpose the shares of common stock issuable upon such exercise), or beneficial ownership limitation. The holder may elect to change this beneficial ownership limitation from 4.99% to 9.99% of the total number of issued and outstanding shares of common stock (including for such purpose the shares of common stock issuable upon such exercise) upon 61 days' prior written notice.

Placement Agent Warrants

In addition, we have agreed to issue placement agent warrants to the placement agent to purchase up to 175,000 shares of common stock, which represent 5% of the aggregate number of shares of common stock sold in this offering. The placement agent warrants shall have substantially the same terms as the warrants issued to the purchasers in this offering, except that the placement agent warrants have an exercise price of \$2.50 per share, which represents 125% of the offering price of each share of common stock and related warrant.

Additional Provisions

The above summary of certain terms and provisions of the warrants is qualified in its entirety by reference to the detailed provisions of the warrants, the form of which was filed as an exhibit to a Current Report on Form 8-K that is incorporated herein by reference. We are not required to issue fractional shares upon the exercise of the warrants. No holders of the warrants will possess any rights as a stockholder under those warrants until the holder exercises those warrants, except as set forth in the warrants. The warrants may be transferred independent of the common stock they were issued with, on a form of assignment, subject to all applicable laws.

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PLAN OF DISTRIBUTION

Pursuant to an engagement agreement dated December 3, 2017, 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 and warrants to purchase our 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 and warrants 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 purchasers. The engagement agreement provides that the obligations of the placement agent are subject to certain conditions precedent, including the absence of any material adverse change in our business and the receipt of certain certificates, opinions and letters from us and our counsel. The engagement agreement does not give rise to any commitment by the placement agent to purchase any of our shares of common stock and 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.

We have entered into securities purchase agreements directly with investors in connection with this offering, and we will only sell to investors who have entered into securities purchase agreements.

An associated person of the placement agent has agreed to purchase an aggregate of 150,000 shares of common stock and warrants to purchase up to 150,000 shares of common stock in this offering for a total purchase price of \$300,000.

We will deliver the shares of common stock being issued to the purchasers electronically upon receipt of purchaser funds for the purchase of the shares of our common stock and warrants offered pursuant to this prospectus supplement. The warrants will be issued in registered physical form. We expect to deliver the shares of our common stock and warrants being offered pursuant to this prospectus supplement on or about December 12, 2017.

We have agreed to pay the placement agent a total cash fee equal to 7% of the gross proceeds of this offering. In addition, we agreed to issue placement agent warrants to the placement agent to purchase up to 175,000 shares of common stock, which represent 5% of the shares of common stock sold in this offering. The placement agent warrants will be substantially on the same terms as the warrants offered hereby, except that the Placement Agent Warrants will have an exercise price of \$2.50 per share, which represents 125% of the offering price per share of common stock and related warrant. Pursuant to FINRA Rule 5110(g), the placement agent warrants and any shares issued upon exercise of the placement agent warrants may 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 tail fee equal to the cash and warrant compensation in this offering, if any investor whom the placement agent contacted and brought

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over the wall during the term of the engagement agreement, or who purchased securities from the Company during the term of the engagement agreement, provides us with further capital during such twelve-month period following expiration or termination of the engagement agreement. We will also pay the placement agent (i) a non-accountable expense allowance of \$50,000 and (ii) up to \$10,000 for the actual out-of-pocket cost of a clearing agent. We estimate total expenses of this offering, excluding the placement agent fees and expenses, will be approximately \$65,000. We and the placement agent also agreed that we will pay The Benchmark Company, LLC an independent financial advisory fee in the amount of \$50,000, \$25,000 of which will be deducted from the fees payable to the placement agent by us at the closing of the offering.

We have agreed to indemnify the placement agent and specified other persons against some civil liabilities, including liabilities under the Securities Act of 1933, as amended, or 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.

Pursuant to the securities purchase agreement, subject to certain exceptions, we have agreed not to issue, enter into any agreement to issue or announce the issuance or proposed issuance of any shares of common stock or common stock equivalents for a period of 90 days following the consummation of this offering.

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". There is currently no market for the warrants and none is expected to develop after this offering. We do not intend to list the warrants on any national securities exchange or other trading market.

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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.

EXPERTS

The consolidated financial statements as of and for the years ended December 31, 2016 and 2015, incorporated in this prospectus by reference from the Company's Annual Report on Form 10-K filed with the SEC on March 23, 2017, have been audited by RSM US 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 <http://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, 2016, filed with the SEC on March 23, 2017;

Our Proxy Statement on Schedule 14A for our 2017 Annual Meeting of Stockholders, filed with the SEC on April 21, 2017;

Our Quarterly Report on Form 10-Q for the quarters ended March 31, 2017, June 30, 2017 and September 30, 2017 filed with the SEC on May 12, 2017, August 14, 2017 and November 13, 2017, respectively;

Our Current Reports on Form 8-K, or Form 8-K/A, as applicable, filed with the SEC on January 6, February 16, February 22, March 23, March 24, May 12, June 7, August 14, October 27, November 9, November 27 and December 8, 2017 (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: Corporate 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.

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PROSPECTUS

\$100,000,000

CANCER GENETICS, INC.

**Common Stock
Preferred Stock
Warrants
Overallotment Purchase Rights
Units**

We may from time to time offer and sell common stock, preferred stock, warrants, overallotment purchase rights 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. The preferred stock, warrants and overallotment purchase rights may be convertible into, or exercisable or exchangeable for, common or preferred stock or other securities of ours. The units may consist of any combination of the securities listed above. 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 23, 2017 was \$4.05 per share. We have no preferred stock, warrants, overallotment purchase rights or units listed on any market. Each prospectus supplement will indicate if the securities offered thereby will be listed on any securities exchange.

Investing in our securities involves risks. See "*Risk Factors*" at page 4 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, 2017.

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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.

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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

We are an emerging leader in the field of precision medicine, enabling individualized therapies 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 biotech and pharmaceutical 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 nine of the top ten cancers in prevalence in the United States, with additional unique capabilities offered by our FDA-cleared 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 pharmaceutical and biotech companies and clinicians by participating in the entire care continuum from bench to bedside. We believe the oncology industry is undergoing a rapid evolution in its approach to diagnostic, prognostic and treatment outcomes (theranostic) testing, embracing precision medicine and individualized testing as a means to drive higher standards of patient treatment and disease management. Similarly, pharmaceutical and biotech companies are increasingly working with precision diagnostic and molecular technology providers such as CGI to provide molecular profiles on clinical trial participants. These profiles may help identify biomarker and genomic variations that may be responsible for differing responses to oncology therapies, thereby increasing the efficiency of trials while lowering costs. We believe tailored and combination therapies can revolutionize oncology care through molecular- and

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biomarker-based testing services, enabling physicians and researchers to target the factors that make each patient and disease unique.

We believe the next wave in cancer management will bring together testing capabilities for germline, or inherited mutations, and somatic mutations that arise in tissues over the course of a lifetime. We have created a unique position in the industry by providing both targeted somatic analysis of tumor sample cells alongside germline analysis of an individual's non-cancerous cells' molecular profile as we attempt to continue achieving milestones in precision medicine.

Cancer is genetically-driven and constitutes a diverse class of diseases with various causes, each 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 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 pharmaceutical 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 pharmaceutical 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 (theranosis) of cancers to guide patient management.
	Cancer Centers	
	Clinics	
Biopharma Services	Pharmaceutical 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	Pharmaceutical and Biotech companies	Discovery services provide the tools and testing methods for companies and researchers seeking to identify new molecular-based biomarkers for disease.
	Academic Institutions	
	Government-Sponsored Research Institutions	

In 2016, we generated approximately 57% of our revenue from Biopharma Services, approximately 39% from Clinical Services and approximately 4% from Discovery Services. In 2015, we generated approximately 64% of our revenue from Biopharma Services, approximately 31% from Clinical Services and approximately 5% from Discovery Services.

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 Clinical Laboratory Improvement Amendments ("CLIA") certified and College of American Pathologists ("CAP") accredited laboratories in Rutherford, NJ, Los Angeles, CA, and Raleigh, NC, as well as our NABL and GMP-certified laboratories in Hyderabad, India and Shanghai, China.

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. 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 clinical markets in India, and as a result of the acquisition, BioServe became a subsidiary of ours. On October 9, 2015, Cancer Genetics acquired substantially all the assets and assumed certain liabilities of Response Genetics, Inc. ("Response Genetics") in connection with

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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. Unless otherwise stated, all references to "us," "our," "Cancer Genetics," "we," the "Company" and similar designations refer to Cancer Genetics, Inc. and its wholly-owned subsidiaries.

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," "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 and other general corporate purposes. We will set forth in the prospectus supplement our intended use for the net

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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 common stock or preferred stock;

overallotment purchase rights to purchase shares of common stock, preferred stock or warrants; and

units consisting of any combination of the securities listed above.

In this prospectus, we refer to the common stock, preferred stock, warrants, overallotment purchase rights 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, 2017, there were approximately 19,756,000 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.

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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 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

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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 66²/₃% 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, 2017, 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.

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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.

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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 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.

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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;

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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 OVERALLOTMENT PURCHASE RIGHTS

We summarize below some of the provisions that will apply to the overallocation purchase rights unless the applicable prospectus supplement provides otherwise. This summary may not contain all information that is important to you. The complete terms of the overallocation purchase rights will be contained in the applicable overallocation purchase rights certificate and overallocation purchase rights agreement. These documents have been or will be included or incorporated by reference as exhibits to the registration statement of which this prospectus is a part. You should read the overallocation purchase rights certificate and the overallocation purchase rights agreement. You should also read the

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prospectus supplement, which will contain additional information and which may update or change some of the information below.

General

We may issue, together with common or preferred stock or warrants as units or separately, overallotment purchase rights for the purchase of shares of our common or preferred stock or warrants. The terms of each overallotment purchase right will be discussed in the applicable prospectus supplement relating to the particular series of overallotment purchase rights. The form(s) of certificate representing the overallotment purchase rights and/or the overallotment purchase right agreement, will be, in each case, filed with the SEC as an exhibit to a document incorporated by reference in the registration statement of which this prospectus is a part on or prior to the date of any prospectus supplement relating to an offering of the particular overallotment purchase right. The following summary of material provisions of the overallotment purchase rights and the overallotment purchase right agreements is subject to, and qualified in their entirety by reference to, all the provisions of the overallotment purchase rights agreement and overallotment purchase rights certificate applicable to a particular series of overallotment purchase rights.

The prospectus supplement relating to any series of overallotment purchase rights that are offered by this prospectus will describe, among other things, the following terms to the extent they are applicable to that series of overallotment purchase rights:

the procedures and conditions relating to the exercise of the overallotment purchase rights;

the number of shares of our common or preferred stock or warrants, if any, issued with the overallotment purchase rights;

the date, if any, on and after which the overallotment purchase rights and any related shares of our common or preferred stock or warrants will be separately transferable;

the offering price of the overallotment purchase rights, if any;

the number of shares of our common or preferred stock or warrants which may be purchased upon exercise of the overallotment purchase rights and the price or prices at which the shares or warrants may be purchased upon exercise;

the date on which the right to exercise the overallotment purchase rights will begin and the date on which the right will expire;

a discussion of the material United States federal income tax considerations applicable to the exercise of the overallotment purchase rights;

anti-dilution provisions of the overallotment purchase rights, if any;

call provisions of the overallotment purchase rights, if any; and

any other material terms of the overallotment purchase rights.

Each overallotment purchase right may entitle the holder to purchase for cash, or, in limited circumstances, by effecting a cashless exercise for, the number of shares of our common or preferred stock or warrants at the exercise price that is described in the applicable prospectus supplement. Overallotment purchase rights will be exercisable during the period of time described in the applicable prospectus supplement. After that period, unexercised overallotment purchase rights will be void. Overallotment purchase rights may be exercised in the manner described in the applicable prospectus supplement.

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A holder of an overallotment purchase right will not have any of the rights of a holder of our common or preferred stock before the stock is purchased upon exercise of the overallotment purchase right. Therefore, before an overallotment purchase right is exercised, the holder of the overallotment purchase right will not be entitled to receive any dividend payments or exercise any voting or other rights associated with shares of our common or preferred stock which may be purchased when the overallotment purchase right is exercised.

Transfer Agent and Registrar

The transfer agent and registrar, if any, for any overallotment purchase rights will be set forth in the applicable prospectus supplement.

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 from time to time pursuant to underwritten public offerings, direct sales to the public, negotiated transactions, block trades or a combination of these methods. We may sell the securities to or through underwriters or dealers, through agents, or directly to one or more purchasers. We may distribute securities from time to time in one or more transactions:

at a fixed price or prices, which may be changed;

at market prices prevailing at the time of sale;

at prices related to such prevailing market prices; or

at negotiated prices.

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A prospectus supplement or supplements (and any related free writing prospectus that we may authorize to be provided to you) will describe the terms of the offering of the securities, including, to the extent applicable:

the name or names of the underwriters, if any;

the purchase price of the securities or other consideration therefor, and the proceeds, if any, we will receive from the sale;

any over-allotment options under 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.

Only underwriters named in the prospectus supplement will be underwriters of the securities offered by the prospectus supplement.

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 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 of the securities offered by the prospectus supplement, other than securities covered by any over-allotment option. Any public offering price and any discounts or concessions allowed or reallocated or paid to dealers may change from time to time. We may use underwriters with whom we have a material relationship. We will describe in the prospectus supplement, naming the underwriter, the nature of any such relationship.

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 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 authorize agents or underwriters to solicit offers by certain types of institutional investors to purchase securities from us at the public offering price set forth in the prospectus supplement pursuant to delayed delivery contracts providing for payment and delivery on a specified date in the future. We will describe the conditions to these contracts and the commissions we must pay for solicitation of these contracts in the prospectus supplement.

We may provide agents and underwriters with indemnification against civil liabilities, 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.

All securities we may 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.

Any underwriter may engage in over-allotment, stabilizing transactions, short-covering transactions and penalty bids in accordance with Regulation M under the Exchange Act. Over-allotment involves

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sales in excess of the offering size, which create a short position. Stabilizing transactions permit bids to purchase the underlying security so long as the stabilizing bids do not exceed a specified maximum price. Syndicate-covering or other short-covering transactions involve purchases of the securities, either through exercise of the over-allotment option or in the open market after the distribution is completed, to cover short positions. Penalty bids permit the underwriters to reclaim a selling concession from a dealer when the securities originally sold by the dealer are purchased in a stabilizing or covering transaction to cover short positions. Those activities may cause the price of the securities to be higher than it would otherwise be. If commenced, the underwriters may discontinue any of the activities at any time.

Any underwriters or agents that are qualified market makers on the NASDAQ Capital Market engage in passive market making transactions in the common stock on the NASDAQ Capital Market accordance with Regulation M under the Exchange Act, during the business day prior to the pricing of the offering, before the commencement of offers or sales of the common stock. Passive market makers must comply with applicable volume and price limitations and must be identified as passive market makers. In general, a passive market maker must display its bid at a price not in excess of the highest independent bid for such security; if all independent bids are lowered below the passive market maker's bid, however, the passive market maker's bid must then be lowered when certain purchase limits are exceeded. Passive market making may stabilize the market price of the securities at a level above that which might otherwise prevail in the open market and, if commenced, may be discontinued at any time.

LEGAL MATTERS

Unless otherwise indicated in the applicable prospectus supplement, 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. If the validity of the securities offered hereby in connection with offerings made pursuant to this prospectus are passed upon by counsel for the underwriters, dealers or agents, if any, such counsel will be named in the prospectus supplement relating to such offering.

EXPERTS

The consolidated financial statements as of and for the years ended December 31, 2016 and 2015, incorporated in this prospectus by reference from the Company's Annual Report on Form 10-K filed with the SEC on March 23, 2017, have been audited by RSM US 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, 2016, filed with the SEC on March 23, 2017.
- (b) Our Proxy Statement on Schedule 14A for our 2017 Annual Meeting of Stockholders, filed with the SEC on April 21, 2017.
- (c) Our Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2017 filed with the SEC on May 12, 2017.
- (d) Our Current Reports on Form 8-K and amendments thereto, filed with the SEC on January 6, February 16, February 22, March 23, March 24, and May 12, 2017, (excluding any information deemed furnished pursuant to Item 2.02 or Item 7.01 of any such Current Report on Form 8-K).

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(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 documents filed by us pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of the initial registration statement and prior to effectiveness of the registration statement 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. 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 and will supersede the information herein; provided, however, that all reports that we "furnish" to the SEC will not be considered incorporated by reference into this prospectus.

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: Corporate 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 our Corporate Secretary at 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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3,500,000 Shares of Common Stock

Warrants to Purchase up to 3,500,000 Shares of Common Stock

**Placement Agent Warrants to Purchase up to 175,000 Shares
of Common Stock**

3,675,000 Shares of Common Stock Underlying the Warrants

PROSPECTUS SUPPLEMENT

H.C. Wainwright & Co.

The date of this prospectus supplement is December 8, 2017
