

CANCER GENETICS, INC
Form 424B5
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This preliminary prospectus supplement relates to an effective registration statement under the Securities Act of 1933, but the information in this preliminary prospectus supplement is not complete and may be changed. This preliminary prospectus supplement and the accompanying prospectus are not an offer to sell and are not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED JANUARY 9, 2019

PRELIMINARY PROSPECTUS SUPPLEMENT

(To Prospectus dated June 5, 2017)

Shares

Common Stock

We are offering shares of our common stock, \$0.0001 par value per share. Our common stock is listed on the Nasdaq Capital Market under the symbol "CGIX." On January 8, 2019, the last reported sale price of our common stock as reported on the Nasdaq Capital Market was \$0.39 per share.

Investing in our common stock involves a high degree of risk. See "Risk Factors" beginning on page S-4 of this prospectus supplement and page 4 of the accompanying prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus supplement or the accompanying prospectus is

truthful or complete. Any representation to the contrary is a criminal offense.

	Per Share	Total
Public offering price	\$	\$
Underwriting discounts and commissions (1)	\$	\$
Proceeds, before expenses, to us	\$	\$

In addition, we have agreed to reimburse the underwriter for certain offering-related expenses, including a management fee of 1% of the gross proceeds raised in this offering, and to issue the underwriter or its designees (1) warrants to purchase a number of shares of common stock equal to 7% of the shares of common stock sold in this offering. See “Underwriting” beginning on page S-14 for more information.

We have granted the underwriter an option for a period of 45 days from the date of this prospectus supplement to purchase up to an additional _____ shares of common stock at the public offering price less underwriting discounts and commissions. If the underwriter exercises the option in full, the total underwriting discounts and commissions payable by us will be \$ _____ and the total proceeds to us, before expenses, will be \$ _____.

The underwriter expects to deliver the shares of common stock on or about January _____, 2019.

As of January 8, 2019, the aggregate market value of our outstanding common stock held by non-affiliates was \$13,680,946, based on 27,725,496 shares of our common stock outstanding on January 8, 2019, of which 22,801,576 shares were held by non-affiliates, and a price of \$0.60 per share, the closing price of our common stock on November 13, 2018. We have not offered any securities pursuant to General Instruction I.B.6 of Form S-3 during the 12 calendar months prior to and including the date of this prospectus.

H.C. Wainwright & Co.

The date of this prospectus supplement is January _____, 2019.

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No dealer, salesperson or other person is authorized to give any information or to represent anything not contained in this prospectus supplement or the accompanying prospectus. You must not rely on any unauthorized information or representations. This prospectus supplement and the accompanying prospectus

are an offer to sell only the securities offered hereby, but only under circumstances and in jurisdictions where it is lawful to do so. The information contained in this prospectus supplement and the accompanying prospectus is current only as of their respective dates.

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ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement and the accompanying prospectus are part of a registration statement that we filed with the U.S. Securities and Exchange Commission utilizing a “shelf” registration process. This document is in two parts. The first part is this prospectus supplement, which describes the specific terms of this offering and also adds to and updates information contained in the accompanying prospectus and the documents incorporated by reference herein. The second part, the accompanying prospectus, provides more general information. 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 or any document incorporated by reference therein filed prior to the date of this prospectus supplement, you should rely on the information in this prospectus supplement; 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 the accompanying prospectus—the statement in the document having the later date modifies or supersedes the earlier statement.

We further note that the representations, warranties and covenants made by us in any agreement that is filed as an exhibit to any document that is incorporated by reference herein were made solely for the benefit of the parties to such agreement, including, in some cases, for the purpose of allocating risk among the parties to such agreements, and should not be deemed to be a representation, warranty or covenant to you. Moreover, such representations, warranties or covenants were accurate only as of the date when made. Accordingly, such representations, warranties and covenants should not be relied on as accurately representing the current state of our affairs.

You should rely only on the information contained in this prospectus supplement or the accompanying prospectus, or incorporated by reference herein. We have not authorized, and the underwriter has not authorized, anyone to provide you with information that is different. The information contained in this prospectus supplement or the accompanying prospectus, or incorporated by reference herein or therein is accurate only as of the respective dates thereof, regardless of the time of delivery of this prospectus supplement and the accompanying prospectus or of any sale of our common stock. It is important for you to read and consider all information contained in this prospectus supplement and the accompanying prospectus, including the documents incorporated by reference herein and therein, in making your investment decision. You should also read and consider the information in the documents to which we have referred you in the sections entitled “Where you can find more information” and “Incorporation of certain information by reference” in this prospectus supplement and in the accompanying prospectus, respectively.

We are offering to sell, and seeking offers to buy, the securities offered by this prospectus supplement only in jurisdictions where offers and sales are permitted. The distribution of this prospectus supplement and the accompanying prospectus and the offering of the securities offered by this prospectus supplement in certain jurisdictions may be restricted by law. Persons outside the United States who come into possession of this prospectus supplement and the accompanying prospectus must inform themselves about, and observe any restrictions relating to, the offering of the common stock and the distribution of this prospectus supplement and the accompanying prospectus

outside the United States. This prospectus supplement and the accompanying prospectus do not constitute, and may not be used in connection with, an offer to sell, or a solicitation of an offer to buy, any securities offered by this prospectus supplement and the accompanying prospectus by any person in any jurisdiction in which it is unlawful for such person to make such an offer or solicitation.

All references in this prospectus supplement and the accompanying prospectus to “Cancer Genetics,” “CGI,” the “Company,” “we,” “us,” “our,” or similar references refer Cancer Genetics, Inc., a Delaware corporation, and its subsidiaries taken as a whole, except where the context otherwise requires or as otherwise indicated.

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PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights selected information about us, this offering and information appearing elsewhere in this prospectus supplement, in the accompanying prospectus and in the documents incorporated by reference herein and therein. This summary is not complete and does not contain all the information you should consider before investing in our securities pursuant to this prospectus supplement and the accompanying prospectus. Before making an investment decision, to fully understand this offering and its consequences to you, you should carefully read this entire prospectus supplement and the accompanying prospectus, including “Risk Factors,” the financial statements, and related notes, and the other information incorporated by reference herein and therein.

Overview

We are an emerging leader in precision medicine, enabling individualized therapies in the field of oncology through tests, services and molecular markers. We develop, commercialize and provide molecular- and biomarker-based tests and services, including proprietary preclinical oncology and immuno-oncology services, 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. Through our clinical services, we enable physicians to personalize the clinical management of each individual patient by providing genomic information to better diagnose, monitor and inform cancer treatment. We have a comprehensive, disease-focused oncology testing portfolio, and an extensive set of anti-tumor referenced data based on predictive xenograft and syngeneic tumor models. Our tests and techniques target a wide range of indications, covering all ten of the top 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. Following the acquisition of vivoPharm Pty Ltd (“vivoPharm”) we provide contract research services, focused primarily on unique specialized studies to guide drug discovery and development programs in the oncology and immuno-oncology fields.

We are currently executing a strategy of partnering with pharmaceutical and biotech companies and clinicians as oncology diagnostic specialists by supporting therapeutic discovery, development and patient care. Pharmaceutical and biotech companies are increasingly attracted to work with us to provide molecular profiles on clinical trial participants. Similarly, 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. 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 shift 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.

Our clinical offerings include our portfolio of proprietary tests targeting hematological, urogenital and HPV-associated cancers, in conjunction with ancillary non-proprietary tests. Our proprietary tests target cancers that are difficult to prognose and predict treatment outcomes through currently available mainstream techniques. We provide our proprietary tests and services, along with a comprehensive range of non-proprietary oncology-focused tests and laboratory services, to oncologists and pathologists at hospitals, cancer centers, and physician offices, as well as biotech and pharmaceutical companies to support their clinical trials. Our proprietary tests are based principally on our expertise in specific cancer types, test development methodologies and proprietary algorithms correlating genetic events with disease specific information. Our portfolio primarily includes comparative genomic hybridization (CGH) microarrays and next generation sequencing (NGS) panels, gene expression tests, and DNA fluorescent in situ hybridization (FISH) probes.

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

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 Gentriss Corporation, a laboratory specializing in pharmacogenomics profiling for therapeutic development, companion diagnostics and clinical trials. On October 9, 2015, we acquired substantially all the assets and assumed certain liabilities of Response Genetics, Inc. On August 15, 2017, we purchased all of the outstanding stock of vivoPharm, with its principal place of business in Victoria, Australia.

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. We include our website address in this prospectus supplement only as an inactive textual reference and do not intend it to be an active link to our website. The information on our website is not incorporated by reference in this prospectus supplement.

THE OFFERING

Issuer	Cancer Genetics, Inc.
Securities offered by us in this offering	shares of our common stock, par value \$0.0001 per share
Offering price	\$ per share of common stock
Common stock outstanding immediately before this offering	27,725,496 shares
Common stock outstanding immediately after this offering	shares (shares if the underwriter exercises its option to purchase additional shares in full).
Over-allotment option	We have granted the underwriter an option to purchase up to additional shares of common stock at the public offering price per share, less underwriting discounts and commissions. This option is exercisable, in whole or in part, for a period of 45 days from the date of this prospectus supplement.
Use of proceeds	We intend to use the net proceeds from this offering to pay lender fees and other costs incurred in connection with the potential forbearance agreements we are negotiating with our banks, to pay certain costs previously incurred by us in connection with our terminated transaction with NovellusDx Ltd., and if any proceeds remain available, to fund working capital and other general corporate purposes. See “Use of Proceeds.”
Risk factors	Investing in our common stock involves a high degree of risk. You should carefully read and consider the information beginning on page S-4 of this prospectus supplement and page 4 of the accompanying prospectus set forth under the headings “Risk Factors” and all other information set forth in this prospectus supplement, the accompanying prospectus, and the documents incorporated herein and therein by reference before deciding to invest in our common stock.
Nasdaq Capital Market symbol for common stock	“CGIX”

The number of shares of common stock to be outstanding immediately after this offering is based on 27,725,496 shares of our common stock outstanding as of January 8, 2019, and excludes, as of such date:

3,012,029 shares issuable upon exercise of outstanding stock options at a weighted-average exercise price of \$5.68 per share;

10,054,990 shares issuable upon exercise of outstanding warrants at a weighted-average exercise price of \$3.71 per share;

approximately 3,466,424 shares issuable upon the conversion of the Convertible Promissory Note, dated July 17, 2018, issued by us in favor of Iliad Research and Trading, L.P. (the “Iliad Note”), at a conversion price of \$0.80 per share, which amount of shares represents the estimated maximum amount that may be issuable upon conversion of the Iliad Note as of January 8, 2019 giving effect to the provision therein that limits the holder of the Iliad Note from owning more than 9.99% of the number of shares of our common stock outstanding on the date of a conversion thereof (including for such purpose the shares of common stock issuable upon such conversion);

approximately 2,574,192 shares issuable upon the conversion of the outstanding balance under the Credit Agreement, dated September 18, 2018, between us and NovellusDx Ltd. (the “Novellus Credit Agreement”) at a conversion price of \$0.606 per share;

209,238 shares available for future grants under our 2011 Equity Incentive Plan, or the 2011 Plan; and

additional shares of common stock issuable upon the exercise of the underwriter’s warrants to be issued to the underwriter in connection with this offering.

Except as otherwise indicated, all information in this prospectus supplement assumes no exercise of the underwriter’s option to purchase additional shares of common stock and no exercise of the underwriter’s warrants to be issued to the underwriter in connection with this offering.

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, together with the other information in this prospectus supplement, the accompanying prospectus, the information and documents incorporated by reference, and in any free writing prospectus that we have authorized for use in connection with this offering. 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 reports 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 Relating to Our Financial Condition and Capital Requirements

We are in default of financial covenants in the credit agreements with our senior lenders and need to obtain a waiver or amendment. We are also in default under the Credit Agreement with NovellusDx Ltd. and the Convertible Promissory Note with Iliad Research and Trading, L.P.

We have been in violation of certain of the financial and other covenants under our asset-based revolving line of credit agreement (“ABL”) with Silicon Valley Bank (“SVB”) and our term loan agreement (the “Term Loan”) with Partners for Growth IV, L.P. (“PFG”). On August 20, 2018, the Company received waivers from its senior lenders for the covenant violations for the months of July and August 2018. In consideration of these waivers, we agreed to reduce the maximum borrowings under the ABL from \$6.0 million to \$3.0 million, and agreed to enter into a binding and enforceable agreement satisfactory to each lender by August 31, 2018 with respect to a merger or other business combination transaction between the Company and an unrelated third party satisfactory to each lender (the “Transaction Condition”). While we were in violation of the Transaction Condition as of August 31, we subsequently entered into a binding and enforceable agreement satisfactory to each lender on September 18, 2018 by entering into a Merger Agreement with NovellusDx Ltd. and the other parties thereto (which was subsequently terminated in December 2018) (the “Novellus Merger Agreement”). On November 19, 2018, we obtained waivers from our lenders for the covenant violations for the months of September, October and November 2018, conditioned upon the Company raising \$3,000,000 through the sale of its equity securities or issuance of subordinated debt by November 30, 2018 (the “Financing Condition”). As of the date of this prospectus supplement, we did not satisfy the Financing Condition and continue to be in violation of certain of the financial and other covenants under the loan agreements.

We are in discussion with PFG and SVB to amend the terms of the loan agreements which would, among other modifications, waive the defaults. However, no assurances can be given that the lenders will agree to any such waiver or amendment, nor as to the cost or consequences to us of the terms of any such waiver or amendment if one is reached. If our lenders were to declare a default and seek repayment of the loans we would not have adequate capital to make such payment and continue to operate our business.

As a result of the termination of the Novellus Merger Agreement in December 2018, pursuant to the Credit Agreement (the “Novellus Credit Agreement”), dated September 18, 2018, between us and NovellusDx Ltd., the \$1.5 million advance previously made to us in connection with the signing of the Novellus Merger Agreement, plus interest thereon, would have become due and payable, but for the subordination agreements described below. The interest rate under the Novellus Credit Agreement was increased to the lesser of 21% per annum and the maximum rate permitted by applicable law. In addition, NovellusDx Ltd. has the right to convert all, but not less than all, of the outstanding balance under the Novellus Credit Agreement into shares of our common stock at a conversion price of \$0.606 per share.

Pursuant to subordination agreements entered into in connection with the Novellus Credit Agreement on September 18, 2018, NovellusDx Ltd.'s ability to be repaid under the Novellus Credit Agreement is subject to subordination to the ABL and the Term Loan.

Our default under the Novellus Credit Agreement may also be deemed to be a default under the obligations to SVB and PFG.

Our default under the Novellus Credit Agreement may also be deemed to be a default under the obligations due under the Convertible Promissory Note, dated July 17, 2018, in the aggregate principal amount of \$2,625,000.00 to Iliad Research and Trading, L.P. (the "Iliad Note").

Pursuant to subordination agreements entered into in connection with the Iliad Note on July 17, 2018, Iliad Research and Trading, L.P.'s ability to be repaid under the Iliad Note is subject to subordination to the ABL and the Term Loan.

We currently have limited funds and we will need to raise additional capital to fund our operations.

We will need to raise additional financing to fund our operations. At September 30, 2018, we had unrestricted cash and cash equivalents of \$1.2 million. Net cash used in operating activities was \$11.4 million and \$10.2 million for the nine months ended September 30, 2018 and 2017, respectively. We have continued to have negative cash flow in the fourth quarter of 2018.

Even if we are successful in negotiating a forbearance agreement with SVB and PFG, we will have very limited availability under our asset-based revolving line of credit agreement with Silicon Valley Bank. We can provide no assurance that any additional sources of financing will be available to us on favorable terms, if at all, when needed. Our forecast of the period of time through which our current financial resources will be adequate to support our operations and the costs to support our general and administrative, sales and marketing and research and development activities are forward-looking statements and involve risks and uncertainties. Absent sufficient additional financing, we may be unable to remain a going concern.

We are not currently in compliance with the continued listing requirements for the Nasdaq Capital Market. If we do not regain compliance and continue to meet the continued listing requirements, our common stock may be delisted from the Nasdaq Capital Market, which could affect the market price and liquidity for our common stock and reduce our ability to raise additional capital.

Our common stock is listed on the Nasdaq Capital Market. In order to maintain that listing, we must satisfy minimum financial and other requirements including, without limitation, a requirement that our closing bid price be at least \$1.00 per share, and that we hold an annual meeting of stockholders within twelve months of the end of our fiscal year.

On January 3, 2019, we received written notice from the Listing Qualifications Staff of The Nasdaq Stock Market (“Nasdaq”) notifying us that we no longer comply with Nasdaq Listing Rule 5620(a) due to our failure to hold an annual meeting of stockholders within twelve months of the end of our fiscal year ended December 31, 2017 (the “Annual Meeting Requirement”). We had contemplated holding our 2018 annual meeting of stockholders simultaneously with seeking stockholder approval of the Novellus Merger Agreement. As the Novellus Merger Agreement was terminated in December 2018 before any approval was sought, we still need to schedule an annual meeting.

Nasdaq’s notice has no immediate effect on the listing of our common stock on the Nasdaq Capital Market. Under Nasdaq Listing Rule 5810(c)(2)(G), we have 45 calendar days from January 3, 2019, or February 19, 2019, to submit to Nasdaq a plan to regain compliance with the Annual Meeting Requirement. If Nasdaq accepts our plan, Nasdaq may grant an extension of up to 180 calendar days from December 31, 2018, the date of our fiscal year end for our last fiscal year, or July 1, 2019, to regain compliance. If Nasdaq does not accept our plan, we will have the right to appeal such decision to a Nasdaq hearings panel.

We intend to submit to Nasdaq, within the requisite period, a plan to regain compliance with the Annual Meeting Requirement. There can be no assurance that Nasdaq will accept our plan or that we will be able to regain compliance with the Annual Meeting Requirement or maintain compliance with any other Nasdaq requirement in the future.

On November 13, 2018, we received a written notice from NASDAQ indicating that we are not in compliance with the minimum bid price requirement for continued listing on the NASDAQ Capital Market. We have 180 calendar days in which to regain compliance. We can regain compliance if at any time during this 180 day period the bid price of our common stock closes at or above \$1.00 per share for a minimum of ten consecutive business days.

We intend to monitor the closing bid price of our common stock and consider our available options to resolve our noncompliance with the minimum bid price requirement, which may include submitting for approval by our stockholders a proposal to grant discretionary authority to our board of directors to amend our certificate of incorporation to effect a reverse split of our outstanding shares of common stock within an appropriate range, with the exact reverse split ratio to be decided and publicly announced by the board of directors prior to the effective time of the amendment to our certificate of incorporation. No determination regarding our response has been made at this time. There can be no assurance that we will be able to regain compliance with the minimum bid price requirement or we will otherwise be in compliance with other NASDAQ listing criteria.

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If we fail to regain compliance with the minimum bid requirement or the Annual Meeting Requirement or to meet the other applicable continued listing requirements for the NASDAQ Capital Market in the future and NASDAQ determines to delist our common stock, the delisting could adversely affect the market price and liquidity of our common stock and reduce our ability to raise additional capital. In addition, if our common stock is delisted from NASDAQ and the trading price remains below \$5.00 per share, trading in our common stock might also become subject to the requirements of certain rules promulgated under the Exchange Act, which require additional disclosure by broker-dealers in connection with any trade involving a stock defined as a “penny stock” (generally, any equity security not listed on a national securities exchange or quoted on NASDAQ that has a market price of less than \$5.00 per share, subject to certain exceptions).

We are engaged in shareholder litigation.

Following periods of volatility in the market price of a company’s securities, securities class action litigation has often been instituted against companies. On April 5, 2018 and April 12, 2018, purported stockholders of the Company filed nearly identical putative class action lawsuits in the U.S. District Court for the District of New Jersey, against the Company, Panna L. Sharma, John A. Roberts, and Igor Gitelman, captioned *Ben Phetteplace v. Cancer Genetics, Inc. et al.*, No. 2:18-cv-05612 and *Ruo Fen Zhang v. Cancer Genetics, Inc. et al.*, No. 2:18-06353, respectively. The complaints alleged violations of Sections 10(b) and 20(a) of the Securities Exchange Act of 1934 and SEC Rule 10b-5 based on allegedly false and misleading statements and omissions regarding our business, operational, and financial results. The lawsuits sought, among other things, unspecified compensatory damages in connection with purchases of our stock between March 23, 2017 and April 2, 2018, as well as interest, attorneys’ fees, and costs. On August 28, 2018, the Court consolidated the two actions in one action captioned *In re Cancer Genetics, Inc. Securities Litigation* (the “Securities Litigation”) and appointed shareholder Randy Clark as the lead plaintiff. On October 30, 2018, the lead plaintiff filed an amended complaint, adding Edward Sitar as a defendant and seeking, among other things, compensatory damages in connection with purchases of CGI stock between March 10, 2016 and April 2, 2018. On December 31, 2018, Defendants filed a motion to dismiss the amended complaint for failure to state a claim. The Company is unable to predict the ultimate outcome of the Securities Litigation and therefore cannot estimate possible losses or ranges of losses, if any.

In addition, on June 1, 2018, September 20, 2018, and September 25, 2018, purported stockholders of the Company filed nearly identical derivative lawsuits on behalf of the Company in the U.S. District Court for the District of New Jersey against the Company (as a nominal defendant) and current and former members of the Company’s Board of Directors. The three cases are captioned: *Bell v. Sharma et al.*, No. 2:18-cv-10009-CCC-MF, *McNeece v. Pappajohn et al.*, No. 2:18-cv-14093, and *Workman v. Pappajohn, et al.*, No. 2:18-cv-14259 (the “Derivative Litigation”). The complaints allege claims for breach of fiduciary duty, violations of Section 14(a) of the Securities Exchange Act of 1934 (premised upon alleged omissions in the Company’s 2017 proxy statement), and unjust enrichment, and allege that the individual defendants failed to implement and maintain adequate controls, which resulted in ineffective disclosure controls and procedures, and conspired to conceal this alleged failure. The lawsuits seek, among other things, damages and/or restitution to the Company, appropriate equitable relief to remedy the alleged breaches of fiduciary duty, and attorneys’ fees and costs. On November 9, 2018, the Court in the *Bell v. Sharma* action entered a stipulation filed by the parties staying the *Bell* action until the Securities Litigation is dismissed, with prejudice, and

all appeals have been exhausted; or the defendants' motion to dismiss in the Securities Litigation is denied in whole or in part; or either of the parties in the *Bell* action gives 30 days' notice that they no longer consent to the stay. On December 10, 2018, the parties in the *McNeece* action filed a stipulation that is substantially identical to the *Bell* stipulation. The Company is unable to predict the ultimate outcome of the Derivative Litigation and therefore cannot estimate possible losses or ranges of losses, if any.

Additional shareholder lawsuits may be filed in the future. We may not be successful in defending ourselves in litigation or arbitration which may result in large judgments or settlements against us, any of which could have a negative effect on our business, financial condition, cash flows and results of operations. Additionally, lawsuits can be expensive to defend, whether or not they have merit, and the defense of these actions may divert the attention of our management and other resources that would otherwise be engaged in managing our business. Our liability insurance coverage may not be sufficient to satisfy, or may not cover, any expenses or liabilities that may arise.

Risks Related to this Offering

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

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

If you purchase our common stock sold in this offering you will experience immediate dilution in your investment as a result of this offering.

Because the price per share of common stock being offered in this offering may be higher than the net tangible book value per share of our common stock, you will experience dilution to the extent of the difference between the public offering price per share of common stock you pay in this offering and the net tangible book value per share of our common stock immediately after this offering. Our net tangible book value (deficit) as of September 30, 2018, was \$(12,131,125), or \$(0.44) per share of common stock. Net tangible book value (deficit) per share is equal to our total tangible assets minus total liabilities, all divided by the number of shares of common stock outstanding. See “Dilution” on page S-13 for a more detailed discussion of the dilution you will incur 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 _____ shares of common stock, which represent approximately _____ % of our outstanding common stock as of January 8, 2019 after giving effect to the sale of the shares of common stock. In addition, the underwriter will receive warrants to purchase up to _____ 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 and conversion of convertible notes.

As of January 8, 2019, we had outstanding options to purchase an aggregate of approximately 3,012,029 shares of our common stock at a weighted average exercise price of \$5.68 per share and warrants to purchase an aggregate of 10,054,990 shares of our common stock at a weighted average exercise price of \$3.71 per share. We also had approximately 3,466,424 shares issuable upon the conversion of the Iliad Note, at a conversion price of \$0.80 per share, which amount of shares represents the estimated maximum amount that may be issuable upon conversion of the Iliad Note as of January 8, 2019 giving effect to the provision therein that limits the holder of the Iliad Note from owning more than 9.99% of the number of shares of our common stock outstanding on the date of a conversion thereof (including for such purpose the shares of common stock issuable upon such conversion), and approximately 2,574,192 shares issuable upon the conversion of the outstanding balance under the Novellus Credit Agreement at a conversion price of \$0.606 per share. In addition, we will be issuing to the underwriter warrants to purchase up to of our common stock with an exercise price of \$. The exercise or conversion, as applicable, of such outstanding options, warrants and convertible debt 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 January 8, 2019, 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 \$0.20 per share in the fourth quarter of 2018. Market prices for securities of early-stage life sciences companies have historically been particularly volatile. The factors that may cause the market price of our common stock to fluctuate include, but are not limited to:

- progress, or lack of progress, in developing and commercializing our proprietary tests;
- favorable or unfavorable decisions about our tests or services from government regulators, insurance companies or other third-party payors;
- our ability to recruit and retain qualified regulatory and research and development personnel;
- changes in investors' and securities analysts' perception of the business risks and conditions of our business;
- changes in our relationship with key collaborators;
- changes in the market valuation or earnings of our competitors or companies viewed as similar to us;
- changes in key personnel;
- depth of the trading market in our common stock;
- changes in our capital structure, such as future issuances of securities or the incurrence of additional debt;
- the granting or exercise of employee stock options or other equity awards;
- realization of any of the risks described under this section titled "Risk Factors"; 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.

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement and the accompanying prospectus and the information incorporated by reference herein and therein contain “forward-looking statements,” which include information relating to future events, future financial performance, strategies, expectations, competitive environment and regulation. Words such as “may,” “should,” “could,” “would,” “predicts,” “potential,” “continue,” “expects,” “anticipates,” “future,” “intends,” “plans,” “believes,” “estimates,” and other expressions, as well as statements in future tense, identify forward-looking statements. Forward-looking statements should not be read as a guarantee of future performance or results and will probably not be accurate indications of when such performance or results will be achieved. Forward-looking statements are based on information we have when those statements are made or our management’s good faith belief as of that time with respect to future events, and are subject to risks and uncertainties that could cause actual performance or results to differ materially from those expressed in or suggested by the forward-looking statements. Important factors that could cause such differences include, but are not limited to:

our ability to achieve revenue growth and profitability;

our ability to secure financing and the amount thereof;

our ability to save money by moving our California operations to New Jersey and North Carolina;

our ability to satisfy our obligations to our existing lenders;

our ability to achieve profitability by increasing sales of our laboratory tests and services and to continually develop and commercialize novel and innovative laboratory tests and services focused on oncology and immuno-oncology;

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 regain compliance with Nasdaq Capital Market listing standards;

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 services and gain acceptance of our tests and 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;

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

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

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

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

our ability to expand internationally and launch our tests and services in emerging markets, such as China and Japan;

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, 2017, as updated in other reports, as applicable, that we file with the Securities and Exchange Commission.

You should review carefully the section entitled “Risk Factors” beginning on page S-4 of this prospectus supplement for a discussion of these and other risks that relate to our business and investing in our securities. The forward-looking statements contained or incorporated by reference in this prospectus supplement are expressly qualified in their entirety by this cautionary statement. We do not undertake any obligation to publicly update any forward-looking statement to reflect events or circumstances after the date on which any such statement is made or to reflect the occurrence of unanticipated events.

USE OF PROCEEDS

We estimate that the net proceeds from the sale of the securities offered in this offering will be approximately \$ _____, or approximately \$ _____ if the underwriter exercises in full its option to purchase additional shares of common stock, after deducting the underwriting discounts and commissions and estimated offering expenses payable by us.

We intend to use the net proceeds from this offering to pay lender fees and other costs incurred in connection with the potential forbearance agreements we are negotiating with our banks, to pay certain costs previously incurred by us in connection with our terminated transaction with NovellusDx Ltd., and if any proceeds remain available, to fund working capital and other general corporate purposes.

The expected use of net proceeds of this offering represents our current intentions based upon our present plan and business conditions. Investors are cautioned, however, that expenditures may vary substantially from these uses. Investors will be relying on the judgment of our management, who will have broad discretion regarding the application of the proceeds of this offering. The amounts and timing of our actual expenditures will depend upon numerous factors, including the amount of cash generated by our operations, the amount of competition we face and other operational factors. We may find it necessary or advisable to use portions of the proceeds from this offering for other purposes.

From time to time, we evaluate these and other factors and we anticipate continuing to make such evaluations to determine if the existing allocation of resources, including the proceeds of this offering, is being optimized. Circumstances that may give rise to a change in the use of proceeds include:

- a change in development plan or strategy;

- the addition of new products or applications;

- technical delays;

- failure to achieve sales as anticipated; and

- the availability of other sources of cash including cash flow from operations and new bank debt financing arrangements, if any.

Until we use the net proceeds of this offering, we intend to hold such funds in cash or invest the funds in short-term, investment grade, interest-bearing securities.

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PRICE RANGE OF OUR COMMON STOCK

Our common stock trades on the Nasdaq Capital Market under the symbol “CGIX.”

The following table sets forth the intra-day high and low sales price per share for our common stock, as reported on the Nasdaq Capital Market, for the periods indicated.

Fiscal Year Ended December 31, 2019	High	Low
First Quarter (through January 8, 2019)	\$0.45	0.24

Fiscal Year Ended December 31, 2018	High	Low
First Quarter	\$2.20	1.55
Second Quarter	\$1.75	0.82
Third Quarter	\$1.30	0.85
Fourth Quarter	\$1.05	0.20

Fiscal Year Ended December 31, 2017	High	Low
First Quarter	\$5.30	1.35
Second Quarter	\$4.78	3.00
Third Quarter	\$4.25	2.60
Fourth Quarter	\$3.50	1.75

The closing price of our common stock on the Nasdaq Capital Market on January 8, 2019, was \$0.39 per share. As of January 8, 2019, there were 97 holders of record of our common stock.

DIVIDEND POLICY

In the past, we have not declared or paid cash dividends on our common stock. We do not intend to pay cash dividends in the future, rather, we intend to retain future earnings, if any, to fund the operation and expansion of our business and for general corporate purposes.

DILUTION

If you invest in our common stock, your interest will be diluted immediately to the extent of the difference between the offering price per share 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, 2018, our net tangible book value (deficit) was \$(12,131,125), or \$(0.44) per share of common stock. After giving effect to our issuance and sale of _____ shares of common stock in this offering at the offering price of \$ _____ per share, after deducting the underwriting discounts and commissions and estimated offering expenses payable by us, the as adjusted net tangible book value as of September 30, 2018 would have been \$ _____, or \$ _____ per share. This represents an immediate increase in as adjusted net tangible book value to existing stockholders of \$ _____ per share and an immediate dilution to new investors purchasing securities in this offering of \$ _____ per share.

The following table illustrates this per share dilution:

Public offering price per share	\$
Net tangible book value (deficit) per share of as September 30, 2018	\$(0.44)
Increase in net tangible book value per share attributable to this offering	\$
As adjusted net tangible book value per share as of September 30, 2018, after giving effect to this offering	\$
Dilution per share to new investors purchasing our common stock in this offering	\$

If the underwriter exercises in full its option to purchase an additional shares of common stock at the public offering price of \$ _____ per share, less underwriting discounts and commissions, our as adjusted net tangible book value after this offering would be approximately \$ _____, or \$ _____ per share, representing an increase in net tangible book value of approximately \$ _____ per share to existing shareholders and immediate dilution in net tangible book value of approximately \$ _____ per share to investors purchasing our shares of common stock in this offering at the public offering price.

The above discussion and table are based on 27,726,496 shares outstanding as of September 30, 2018, and excludes as of that date:

3,040,924 shares issuable upon exercise of outstanding stock options at a weighted-average exercise price of \$5.83 per share;

10,054,990 shares issuable upon exercise of outstanding warrants at a weighted-average exercise price of \$3.71 per share;

approximately 3,349,361 shares issuable upon the conversion of the Iliad Note, at a conversion price of \$0.80 per share, which amount of shares represents the estimated maximum amount that may be issuable upon conversion of the Iliad Note as of September 30, 2018 giving effect to the provision therein that limits the holder of the Iliad Note from owning more than 9.99% of the number of shares of our common stock outstanding on the date of a conversion thereof (including for such purpose the shares of common stock issuable upon such conversion);

186,843 shares available for future grants under the 2011 Plan; and

additional shares of common stock issuable upon the exercise of the underwriter's warrants to be issued to the underwriter in connection with this offering.

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.

UNDERWRITING

We have entered into an underwriting agreement with H.C. Wainwright & Co., LLC, as underwriter, with respect to the common stock being offered hereby. Subject to the terms and conditions of the underwriting agreement, the underwriter has agreed to purchase from us the number of shares of our common stock set forth opposite its name below.

	Number of Shares
Underwriter	
H.C. Wainwright & Co., LLC	
Total	

The underwriting agreement provides that the obligations of the underwriter are subject to certain conditions precedent and that the underwriter has agreed to purchase all of the shares sold under the underwriting agreement if any of these shares are purchased.

We have agreed to indemnify the underwriter against specified liabilities, including liabilities under the Securities Act of 1933, as amended (the “Securities Act”), and to contribute to payments the underwriter may be required to make in respect thereof.

The underwriter is offering the shares, subject to prior sale, when, as and if issued to and accepted by it, subject to approval of legal matters by its counsel and other conditions specified in the underwriting agreement. The underwriter reserves the right to withdraw, cancel or modify offers to the public and to reject orders in whole or in part.

Option to Purchase Additional Shares. We have granted to the underwriter an option, exercisable for 45 days from the date of this prospectus supplement, to purchase, from time to time, in whole or in part, up to an aggregate of _____ shares of common stock from us at the public offering price set forth on the cover page of this prospectus supplement, less underwriting discounts and commissions.

Underwriting Discounts and Commissions. The following table shows the public offering price, underwriting discounts and commissions and proceeds, before expenses to us.

We estimate that the total expenses of the offering, excluding underwriting discounts and commissions, will be approximately \$ and is payable by us. We have agreed to reimburse the expenses of the underwriter in the non-accountable sum of \$35,000, the other actual expenses of the underwriter, including its legal fees, up to \$100,000 in connection with this offering, and \$10,000 for the clearing expenses of the underwriter in connection with this offering. We have also agreed to pay the underwriter a management fee equal to 1% of the aggregate gross proceeds in this offering.

	Per Share	Total
Public offering price	\$	\$
Underwriting discounts and commissions	\$	\$
Proceeds, before expenses	\$	\$

The underwriter proposes to offer the shares of common stock to the public at the public offering price set forth on the cover of this prospectus. The underwriter may offer the shares of common stock to securities dealers at the public offering price less a concession not in excess of \$ per share. If all of the shares are not sold at the public offering price, the underwriter may change the offering price and other selling terms.

In addition, we have agreed to issue to the underwriter warrants to purchase up to shares of common stock (representing 7% of the aggregate number of shares of common stock sold in this offering), at an exercise price of \$ per share (representing 110% of the public offering price for a share of common stock to be sold in this offering). The underwriter warrants will be exercisable immediately and for five years from the date of the underwriting agreement. Pursuant to FINRA Rule 5110(g), the underwriter warrants and any shares issued upon exercise of the underwriter warrants shall not be sold, transferred, assigned, pledged, or hypothecated, or be the subject of any hedging, short sale, derivative, put or call transaction that would result in the effective economic disposition of the securities by any person for a period of 180 days immediately following the date of effectiveness or commencement of sales of this offering, except the transfer of any security: (i) by operation of law or by reason of our reorganization; (ii) to any FINRA member firm participating in the offering and the officers or partners thereof, if all securities so transferred remain subject to the lock-up restriction set forth above for the remainder of the time period; (iii) if the aggregate amount of our securities held by the underwriter 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 pay the underwriter a tail fee equal to the cash and warrant compensation in this offering, if any investor, who was contacted or introduced to us by the underwriter during the 60-day term of engagement beginning December 18, 2018, provides us with capital in any public or private offering or other financing or capital raising transaction, during the twelve-month period following expiration or termination of our engagement of the underwriter.

We have also granted the underwriter a twelve-month right of first refusal to act as sole book-running manager, sole underwriter or sole placement agent for each and every future public or private equity offering by us or any of our successors or subsidiaries, under certain circumstances.

Discretionary Accounts. The underwriter does not intend to confirm sales of the shares to any accounts over which they have discretionary authority.

Stabilization. In connection with this offering, the underwriter may engage in stabilizing transactions, overallotment transactions, syndicate covering transactions and penalty bids in connection with our common stock.

Stabilizing transactions permit bids to purchase shares of common stock so long as the stabilizing bids do not exceed a specified maximum.

Overallotment transactions involve sales by the underwriter of shares of common stock in excess of the number of shares the underwriter is obligated to purchase. This creates a syndicate short position which may be either a covered short position or a naked short position. In a covered short position, the number of shares over-allotted by the underwriter is not greater than the number of shares that it may purchase in the overallotment option. In a naked short position, the number of shares involved is greater than the number of shares in the overallotment option. The underwriter may close out any short position by exercising its overallotment option and/or purchasing shares in the open market.

Syndicate covering transactions involve purchases of common stock in the open market after the distribution has been completed in order to cover syndicate short positions. Such a naked short position would be closed out by buying securities in the open market. A naked short position is more likely to be created if the underwriter is concerned that there could be downward pressure on the price of the securities in the open market after pricing that could adversely affect investors who purchase in the offering.

Penalty bids permit the underwriter to reclaim a selling concession from a syndicate member when the securities originally sold by the syndicate member are purchased in a stabilizing or syndicate covering transaction to cover syndicate short positions.

These stabilizing transactions, syndicate covering transactions and penalty bids may have the effect of raising or maintaining the market price of our common stock or preventing or retarding a decline in the market price of our common stock. As a result, the price of our common stock in the open market may be higher than it would otherwise be in the absence of these transactions. Neither we nor the underwriter make any representation or prediction as to the effect that the transactions described above may have on the price of our common stock. These transactions may be effected on the Nasdaq Capital Market, in the over-the-counter market or otherwise and, if commenced, may be discontinued at any time.

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In connection with this offering, the underwriter also may engage in passive market making transactions in our common stock in accordance with Regulation M during a period before the commencement of offers or sales of shares of our common stock in this offering and extending through the completion of the distribution. In general, a passive market maker must display its bid at a price not in excess of the highest independent bid for that security. However, if all independent bids are lowered below the passive market maker's bid that bid must then be lowered when specific 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.

Lock-Up Agreements. We and each of our directors and executive officers have entered into lock-up agreements that prevent us and them from selling any shares of our common stock or any securities convertible into or exercisable or exchangeable into share of common stock, subject to certain exceptions, for a period of 45 days and 90 days, respectively, after the date of this prospectus supplement. The underwriter, in its sole discretion, may release the common stock and other securities subject to the lock-up agreements described above in whole or in part at any time. When determining whether or not to release the common stock and other securities from lock-up agreements, the underwriter will consider, among other factors, the holder's reasons for requesting the release and the number of shares of common stock or other securities for which the release is being requested.

We have not authorized and do not authorize the making of any offer of securities through any financial intermediary on our behalf, other than offers made by the underwriter and its respective affiliates, with a view to the final placement of the securities as contemplated in this prospectus supplement. Accordingly, no purchaser of the shares, other than the underwriter, is authorized to make any further offer of shares on our behalf or on behalf of the underwriter.

Electronic Offer, Sale and Distribution of Shares. A prospectus in electronic format may be made available on the websites maintained by the underwriter or selling group members, if any, participating in this offering and the underwriter participating in this offering may distribute prospectuses electronically. Other than the prospectus in electronic format, the information on these websites is not part of this prospectus or the registration statement of which this prospectus forms a part, has not been approved or endorsed by us or any underwriter in its capacity as underwriter, and should not be relied upon by investors.

Other Relationships. The underwriter and its affiliates have provided, and may in the future provide, various other investment banking, commercial banking and other financial services for us and our affiliates for which they have received, and may in the future receive, customary fees. The underwriter acted as our lead placement agent, in connection with public offerings in May and September 2016 and December 2017, for which it received cash and warrant compensation.

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

Offers outside the United States. Other than in the United States, no action has been taken by us or the underwriter that would permit a public offering of the shares offered by this prospectus in any jurisdiction where action for that purpose is required. The shares offered by this prospectus may not be offered or sold, directly or indirectly, nor may this prospectus or any other offering material or advertisements in connection with the offer and sale of any such shares be distributed or published in any jurisdiction, except under circumstances that will result in compliance with the applicable rules and regulations of that jurisdiction. Persons into whose possession this prospectus comes are advised to inform themselves about and to observe any restrictions relating to the offering and the distribution of this prospectus. This prospectus does not constitute an offer to sell or a solicitation of an offer to buy any shares offered by this prospectus in any jurisdiction in which such an offer or a solicitation is unlawful.

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LEGAL MATTERS

The validity of the shares of common stock offered by this prospectus supplement has been passed upon for us by Lowenstein Sandler LLP, Roseland, New Jersey. Ellenoff Grossman & Schole LLP, New York, New York, is acting as counsel for the underwriter in connection with the shares of common stock offered hereby.

EXPERTS

The consolidated financial statements as of and for the years ended December 31, 2017 and 2016, incorporated in this prospectus by reference from the Company's Annual Report on Form 10-K filed with the SEC on April 2, 2018, 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 informational requirements of the Securities Exchange Act of 1934, as amended, and in accordance therewith file annual, quarterly and current reports, proxy statements and other information with the Securities and Exchange Commission. Such reports, proxy statements and other information can be read and copied at the Securities and Exchange Commission's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549, on official business days during the hours of 10:00 am to 3:00 pm. Please call the Securities and Exchange Commission at 1-800-732-0330 for further information on the operation of the Public Reference Room. In addition, the Securities and Exchange Commission maintains a website that contains reports, proxy and information statements and other information regarding registrants that file electronically with the Securities and Exchange Commission. The address of the Securities and Exchange Commission's website is www.sec.gov.

We make available free of charge on or through our website at www.cancergenetics.com, our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, as soon as reasonably practicable after we electronically file such material with or otherwise furnish it to the Securities and Exchange Commission.

We have filed with the Securities and Exchange Commission a registration statement under the Securities Act of 1933, as amended, relating to the offering of these securities. The registration statement, including the attached exhibits, contains additional relevant information about us and the securities. This prospectus does not contain all of the information set forth in the registration statement. You can obtain a copy of the registration statement, at prescribed rates, from the Securities and Exchange Commission at the address listed above, or for free at www.sec.gov. The registration statement and the documents referred to below under “Incorporation of Certain Information By Reference” are also available on our website, www.cancergenetics.com.

We have not incorporated by reference into this prospectus supplement the information on our website, and you should not consider it to be a part of this prospectus supplement.

INCORPORATION OF CERTAIN INFORMATION 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, 2017, filed with the SEC on April 2, 2018, as amended by Amendment No. 1 filed on Form 10-K/A with the SEC on April 30, 2018;

Our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2018, June 30, 2018 and September 30, 2018 filed with the SEC on May 15, 2017, August 14, 2018 and November 19, 2018, respectively;

Our Current Reports on Form 8-K, or Form 8-K/A, as applicable, filed with the SEC on February 5, April 27, May 1, June 13, June 27, July 5, July 18, August 21, September 21, October 9, October 16, November 14, November 16, November 21, December 17 and December 21, 2018 and January 7 and January 9, 2019 (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.

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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WHERE YOU CAN FIND MORE INFORMATION

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 17 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:

<u>Customer Category</u>	Types of Customers	Nature of Services
Clinical Services	• Hospitals • Cancer Centers • Clinics • Pharmaceutical and Biotech companies performing clinical trials	Clinical services provide information on diagnosis, prognosis and predicting treatment outcomes (theranosis) of cancers to guide patient management.
Biopharma Services		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 • Academic Institutions • Government-Sponsored Research Institutions	Discovery services provide the tools and testing methods for companies and researchers seeking to identify new molecular-based biomarkers for disease.

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.

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 overallotment 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 overallotment purchase rights will be contained in the applicable overallotment purchase rights certificate and overallotment 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 overallotment purchase rights certificate and the overallotment 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.

Shares

Common Stock

H.C. Wainwright & Co.

, 2019

