



DIVISION OF
CORPORATION FINANCE

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

April 12, 2012

Via E-mail

Panna L. Sharma
Chief Executive Officer
Cancer Genetics, Inc.
201 Route 17 North, 2nd Floor
Rutherford, NJ 07070

**Re: Cancer Genetics, Inc.
Amendment No. 3 to Registration Statement on Form S-1
Filed April 3, 2012
File No. 333-178836**

Dear Mr. Sharma:

We have reviewed your amended registration statement and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by amending your registration statement and providing the requested information. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your registration statement and the information you provide in response to these comments, we may have additional comments.

Summary, page 1

1. We note that your prospectus contains blanks such as the rate of the stock split that you intend to effect prior to completion of the offering, and that you have yet to file certain exhibits including the legal opinion referenced as exhibit 5.1. Please ensure that you include all required disclosure and exhibits prior to requesting effectiveness allowing adequate time for the staff to complete their review. We may have further comments.
2. Please refer to comment two of our letter dated March 2, 2012. We note the draft recent developments disclosure provided on April 12, 2012, including discussion and quantification of estimated revenues by category. Please revise your summary to address revenues generated from your proprietary MatBA-CLL test, which appears to have been available commercially for approximately a year, as well as your MatBA-SLL test, which appears to have been available commercially since January 2012. For example, if sales of these proprietary tests account for less than 1% of your revenues or are otherwise

immaterial, please revise to so state.

Liquidity and Capital Resources, page 58

3. We note the statement on page nine that your current cash resources, along with the March 11, 2011 letter provided by Mr. Pappajohn, are sufficient to satisfy your liquidity requirements at your current level of operations for the next twelve months. We also note statements on pages 61 and 62 regarding a potential cash shortfall and the possibility that you would be required to “scale back” your operations. See also comment eight of our letter dated March 2, 2012. Please revise to clarify the nature and extent of your current capital resources, and further address the timing and extent of potentially curtailing your operations assuming you continue to require external cash funding at the current rate. We note that you experienced over \$5 million of negative cash flows from operations in 2010 and 2010, and you had approximately \$3.4 million current assets as of the end of 2011.
4. Also, please revise to address the non-binding nature of the March 11, 2011 letter or advise.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes the information the Securities Act of 1933 and all applicable Securities Act rules require. Since the company and its management are in possession of all facts relating to a company’s disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

Notwithstanding our comments, in the event you request acceleration of the effective date of the pending registration statement please provide a written statement from the company acknowledging that:

- should the Commission or the staff, acting pursuant to delegated authority, declare the filing effective, it does not foreclose the Commission from taking any action with respect to the filing;
- the action of the Commission or the staff, acting pursuant to delegated authority, in declaring the filing effective, does not relieve the company from its full responsibility for the adequacy and accuracy of the disclosure in the filing; and
- the company may not assert staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

Please refer to Rules 460 and 461 regarding requests for acceleration. We will consider a written request for acceleration of the effective date of the registration statement as confirmation

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of the fact that those requesting acceleration are aware of their respective responsibilities under the Securities Act of 1933 and the Securities Exchange Act of 1934 as they relate to the proposed public offering of the securities specified in the above registration statement. Please allow adequate time for us to review any amendment prior to the requested effective date of the registration statement.

You may contact Joanna Lam, Staff Accountant, at (202) 551-3476 or John Archfield, Senior Staff Accountant, at (202) 551-3315 if you have questions regarding comments on the financial statements and related matters. Please contact Ruairi Regan at (202) 551-3269 or James Lopez, Branch Chief, at (202) 551-3536 with any other questions.

Sincerely,

/s/ James Lopez (for)

John Reynolds
Assistant Director

cc (via e-mail): Alan Wovsaniker, Esq.
Lowenstein Sandler PC