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

DIVISION OF
CORPORATION FINANCE

December 6, 2013

Via E-mail
Mr. Samuel D. Riccitelli
President and Chief Executive Officer
Signal Genetics LLC
667 Madison Avenue, 14th Floor
New York, New York 10065

Re: Signal Genetics LLC
Draft Registration Statement on Form S-1
Submitted November 12, 2013
CIK No. 0001590750

Dear Mr. Riccitelli:

We have reviewed your draft 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 providing the requested information and either submitting an amended draft registration statement or publicly filing your registration statement on EDGAR. 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 the information you provide in response to these comments and your amended draft registration statement or filed registration statement, we may have additional comments.

General

1. Please supplementally provide us with copies of all written communications, as defined in Rule 405 under the Securities Act, that you, or anyone authorized to do so on your behalf, present to potential investors in reliance on Section 5(d) of the Securities Act, whether or not they retain copies of the communications. Similarly, please supplementally provide us with any research reports about you that are published or distributed in reliance upon Section 2(a)(3) of the Securities Act of 1933 added by Section 105(a) of the Jumpstart Our Business Startups Act by any broker or dealer that is participating or will participate in your offering.

2. We will process your amendments without price ranges. As the price range you select will affect disclosure in several sections of the filing, we will need sufficient time to process your amendments once a price range is included and the material information

now appearing blank throughout the document has been provided. Please understand that the effect of the price range on disclosure throughout the document may cause us to raise issues in areas not previously commented on.

3. Prior to the effectiveness of the company's registration statement, please inform us as to whether or not the amount of compensation allowable or payable to the Underwriters has received clearance from FINRA.

4. Prior to effectiveness, please have a NASDAQ Capital Market representative call the staff to confirm that your securities have been approved for listing.

5. Please revise where and as appropriate to clarify highly specialized terms, such as karyotyping and cytogenetic.

6. Please clarify throughout your prospectus whether you offer a product or service. We note that your reference to tests and assays but also your references to your "innovative diagnostic services."

Prospectus Cover Page

7. We note the Representative's Warrants to be issued to the Representatives of the underwriters in this offering. Since these warrants and the common stock underlying the warrants are being registered in this offering, please revise the prospectus cover page, and the summary of the offering to clearly reflect these Representative's Warrants.

Inside Front Cover Page, page ii

8. We note your statement that "we have not independently verified" the industry and market data obtained from third-party sources. Please add disclosure confirming that the company is responsible for all of the disclosure in the prospectus. In addition, please remove such language, as this statement implies you are not responsible for the accuracy of the information you elect to include in your prospectus.

Market Opportunity, page 2

9. Please revise to reconcile your statement on page one that MM is a hematologic cancer with your reference on page three to MM being a "precursor condition" or clarify.

10. We note the disclosure on page 8 regarding the reduced disclosure requirements as an emerging growth company. Please clearly disclose in this section that you have elected to avail yourselves of the extended transition period for complying with new or revised accounting standards.

Use of Proceeds, page 44

11. Please remove the statement that you "cannot predict with certainty all of the particular uses for the net proceeds to be received upon the closing of this offering or the amounts that we will actually spend on the uses set forth…. Our management will retain broad discretion over the allocation of the net proceeds from this offering." Also remove the second risk factor on page 40. The company may reserve the right to change the use of proceeds, provided that such reservation is due to certain contingencies that are discussed specifically and the alternatives to such use in that event are indicated. See Instruction 7 to Item 504 of Regulation S-K.

Management's Discussion and Analysis of Financial Condition and Results of Operations, page 50

12. The Management's Discussion and Analysis section is one of the most critical aspects of your disclosure. As such, we request that you revise this section to provide a detailed executive overview to discuss the events, trends, and uncertainties that management views as most critical to your future revenues, financial position, liquidity, plan of operations, and results of operations, to the extent known and foreseeable. To assist you in this regard, please refer to the Commission Guidance Regarding Management's Discussion and Analysis of Financial Condition and Results of Operations, Release Nos. 33-8350 (December 19, 2003) at http://www.sec.gov/rules/interp/33-8350.htm.

Critical Accounting Policies, page 51

13. We note that your accounts receivable represents 43% of total assets as of December 31, 2012. In order to enhance an investor's understanding of your business and improve disclosure regarding the composition of your accounts receivable balances, please expand your revenue recognition disclosure to include the following:

    a. State if your billing system generates contractual billing adjustments based on fee schedules from the patient's insurance plan for each test performed, or if an estimate of billing allowances is made. If an estimate is made, state what factors are considered in determining your estimate.
    b. Disclose the payor mix classifications and related aging of accounts receivable. The aging schedule may be based on management's own reporting criteria (i.e. unbilled, less than 30 days, 30 to 60 days etc.) or some other reasonable presentation. At a minimum, the disclosure should indicate the past due amounts and a breakdown by payor classification (i.e. Medicare, Medicaid, Managed care, Self-pay, and other etc.). Self-pay should be separately classified from any other grouping. If your billing system does not have the capacity to provide an aging schedule of your receivables, disclose that fact and clarify how this affects your ability to estimate your allowance for bad debts.

c. If you have amounts that are pending approval from third party payors (i.e. Medicaid Pending), please disclose the balances of such amounts, where they have been classified in year aging categories, and what payor classification they have been grouped with. If amounts are classified outside of self-pay, tell us why this classification is appropriate, and disclose the historical percentage of amounts that get reclassified into self pay.
d. Please disclose the days' sales outstanding for each period presented and the reasons for significant changes from the prior period, if applicable.

Liquidity and Capital Resources, page 54

14. Please describe any material commitments for capital expenditures as of the latest fiscal period and indicate the general purpose of such commitments and the anticipated source of funds. See Item 303(a)(2)(i) of Regulation S-K.

15. We note your auditor's going concern opinion. Please disclose the company's ability to continue in operation for the next twelve months. In doing so, please disclose the internal source(s) of funds necessary to fund such operations and detail any need for external funding.

16. Identify any known trends or demands, commitments, events or uncertainties that will result in or are reasonably likely to result in a material increase or decrease in the company's liquidity. See Item 303 (a)(1) of Regulation S-K.

The JOBS Act, page 56

17. We note your disclosures under this heading and on page 8 and 40 indicating that you have elected under the JOBS Act to delay the adoption of new or revised accounting standards that have different effective dates for public and private companies until those standards apply to private companies. Please expand your disclosure to indicate that as a result of this election, your financial statements may not be comparable to companies that comply with public company effective dates. Please also include similar disclosures about the delay in adoption of new or revised accounting standards in your significant accounting policies footnotes.

Business, page 57

18. Revise to provide the basis for your statements in this section. For instance, we note statements such as, "experts caring for MM patients have been faced with a staging system that predates the current era," "induction therapy vincristine, doxorubicin and dexamethasone, followed by stem cell transplant after high dose melphalan was introduced" resulted in longer term remissions but "patients always relapsed," "[b]ased on the published medical literature, many experts in MM have concluded that the MyPRS should be used as part of routine patient management" and "we believe that as much as 30% to 40% of the future market for our tests may be derived from patients covered by

Medicare and Medicaid." Please note that these are only examples and do not represent all statements for which a basis should be provided throughout the Business section. Please remove any statements for which a basis cannot be provided and provide a citation to all of the sources to which you refer. Please provide us supplementally with copies of these sources.

19. Please disclose your dependence on a major customer, as required by Item 101(h)(4)(vi) of Regulation S-K.

Our Services, page 59

20. We note your intention to add, offer and/or explore additional tests for patients with MM. Please revise to clarify the current state and expected timeframe for such additional products.

Market Opportunity, page 60

21. Revise to clarify whether the "1988 clinical study" and the "Nature's MM supplement" refer to the same study. Also, advise us of whether this is the most current information available to support your statement on page 61 that "many doctors worry that they could do more harm than good if they treat otherwise healthy people."

Our Growth Strategy, page 61

22. We note the disclosure on page 63 of the material terms of the License Agreement with UAMS. Please disclose the potential range of royalty payments (for example, "low single digits," "high single digits," or a range not to exceed ten percent. In addition, please disclose the minimum royalty payments or provide your analysis as to why this information is not material.

23. We note on page 64 that you believe the MyPRS test is one of the most "extensively validated molecular prognostic assays on the market today." Please revise to provide the basis for this statement in an appropriate location in your prospectus or remove.

24. Please name the "several large academic centers," referred to on page 61, that use MyPRS on their MM patients or advise.

25. Revise to address the duration of the patents you discuss on pages 65-66 and 69-70. See Item 101(h)(4)(vii) of Regulation S-K.

26. Please clarify the significance of the positive LCD for MyPRS with the Jurisdiction H MAC.

Competition, page 67

27. Please discuss the independent groups, peer-reviewed journals and independent clinical trials referred to in this section in greater details. Include in your revised discussion, identifying information so that the studies and journals may be located by investors.

Management, page 82

28. Please disclose Mr. Riccitelli's beginning and ending dates of employment for Genoptix. Also, please remove the specific financial information about this company and its subsequent sale.

Executive Compensation, page 86

29. Please revise footnote one to the summary compensation table to reflect, if true, that the aggregate grant date fair value computed in accordance with FASB ASC Topic 718 is $0.

30. Please include the all other compensation and total compensation amounts in the summary compensation table.

31. Note 9 to the financial statements states that you have employment agreements with two of your employees. If you have an employment agreement with Mr. Johnson, please disclose the material terms and file as an exhibit.

Certain Relationships and Related Transactions, page 92

32. Please disclose the largest aggregate amount of principal outstanding during the period for which disclosure is provided and the amount of principal paid during the periods for which disclosure is provided for the Promissory Note. See Item 404(a)(5) of Regulation S-K.

33. Please revise to name the guarantors of the guaranty and security agreement.

Description of Securities, page 99

34. The statement that "all outstanding shares of common stock are fully paid and non-assessable" is a legal conclusion you are not qualified to make. Either attribute this statement to counsel and file counsel's consent or delete it.

Financial Statements

35. Please update your financial statements pursuant to Rule 8-08 of Regulation S-X. Also, please provide a current consent from your independent accountant.

Notes to Consolidated Financial Statements, page F-7

Summary of Significant Accounting Policies, page F-7

Accounts Receivable, page F-7

36. We note your disclosure indicating that management determines bad debt provisions based on evaluation of historical collection experience and industry trends. Please tell us how many years of historical cash collectability experience you have and further describe the methods and procedures used to determine the allowance. Please disclose the amount of allowance for doubtful accounts as at the end of the periods presented required by FASB ASC 310-10-50-4 or tell us why this guidance does not apply to you.

37. We note that you have adopted the guidance under FASB ASU No. 2011-07, "Health Care Entities: Presentation and Disclosure of Patient Service Revenue, Provision for Bad Debts, and the Allowance for Doubtful Accounts for Certain Health Care Entities" retrospectively in the accompany consolidated financial statements. Please expand your disclosures to provide qualitative and quantitative information for the changes in your allowance for doubtful accounts required by FASB ASC paragraph 954-310-50-3 or disclose why you believe this guidance does not apply to you.

Revenue Recognition, page F-8

38. Please revise to describe your revenue recognition policy in greater detail, including your consideration of the criteria in ASC 605-10-S99. To the extent that there are differences in your revenue recognition policies by payor type (e.g., Medicare, Medicaid, managed care programs, insurance carriers and self-pay), separately disclose each policy.

39. We note you indicate that revenues are recorded at contracted prices or establishing billing rates less an estimated billing adjustment. Please quantify for us the amount of adjustments that you recorded upon final settlement with third- party payors such as Medicare, Medicaid, private insurance plans and managed care programs for each period presented. To the extent that such adjustments were significant, also tell us how you considered these adjustments in your determination that the fee is fixed and determinable.

Research and Development, page F-9

40. Please clarify if your research and development expenses include an allocation of indirect costs such as depreciation, telephone, rent, supplies, insurance, repairs and maintenance. If so, please revise your disclosures accordingly.

Part II
Item 15. Recent Sales of Unregistered Securities, page II-1

41. Please provide the disclosure required by Item 701 of Regulation S-K to this section regarding the debt conversion that will occur as part of the corporate conversion.

Exhibits

42. We note that you have not filed your exhibits, including the underwriting agreement and your legality opinion. Please note that we may comment on these and other documents and allow for sufficient time for our review.

General

If you intend to respond to these comments with an amended draft registration statement, please submit it and any associated correspondence in accordance with the guidance we provide in the Division's October 11, 2012 announcement on the SEC website at http://www.sec.gov/divisions/corpfin/cfannouncements/drsfilingprocedures101512.htm.

Please keep in mind that we may publicly post filing review correspondence in accordance with our December 1, 2011 policy (http://www.sec.gov/divisions/corpfin/cfannouncements/edgarcorrespondence.htm). If you intend to use Rule 83 (17 CFR 200.83) to request confidential treatment of information in the correspondence you submit on EDGAR, please properly mark that information in each of your confidential submissions to us so we do not repeat or refer to that information in our comment letters to you.

You may Joanna Lam at (202) 551-3476 or Nasreen Mohammad, Assistant Chief Accountant, at (202) 551-3773 if you have questions regarding comments on the financial statements and related matters. Please contact Erin Wilson at (202) 551-6047 or Pamela Howell at (202) 551-3357 with any other questions.

Sincerely,

/s/ Pamela Howell
for

John Reynolds
Assistant Director