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

DIVISION OF
CORPORATION FINANCE

August 9, 2013

Dr. Michael Pellini, M.D.,
President, Chief Executive Officer and Director
Foundation Medicine, Inc.
One Kendall Square, Suite B3501
Cambridge, MA 02139

Re: Foundation Medicine, Inc.
Registration Statement on Form S-1
Filed July 29, 2013
Amendment No. 1 to Registration Statement on Form S-1
Filed August 2, 2013
File No. 333-190226

Dear Dr. Pellini:

We have reviewed your registration statement, and 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.

General

1. We are in the process of reviewing your request for confidential treatment, submitted to the Commission on August 5, 2013. Please note that any comments issued on the application must be cleared prior to effectiveness of the S-1.

Summary, page 1

2. We note your revised disclosure and response to comments regarding FoundationOne, limited payment coverage and delays in recognizing revenues for some of the tests that do result in payments to you. In light of the disclosure on page 2 and statements regarding your competitive advantages, including your "significant first mover advantage" and "rapid adoption," please revise to provide more balanced disclosure. For example, please quantify your losses from operations and accumulated deficit. Also,

please address (1) your lack of coverage and participating provider status for Medicare and commercial payors and (2) the significant percentage of testing done without expectation of payment.

The Offering, page 5

3. We note your response to comment nine of our letter dated July 22, 2013. Please further revise to disclose why the number of shares of common stock to be outstanding after this offering includes the 4,813,667 shares of common stock subject to repurchase by the Company. Also clarify for us why the unvested restricted stock remains subject to repurchase, and tell us whether it will vest or be repurchased in connection with the offering.

4. We note in your response to comment nine of our letter dated July 22, 2013 that the 16,612,097 shares outstanding after this offering includes 2,534 shares of common stock issued on May 21, 2013. Please further revise to also disclose that the 2,534 shares are included in the 16,612,097 shares.

Use of Proceeds, page 43

5. We note your revised disclosure in response to comment 14 of our letter dated July 22, 2013 and we reissue the comment as we are unable to locate responsive disclosure and continue to see disclosure that you retain the discretion to allocate the net proceeds of the offering among the identified uses and further reserve the right to change the allocation of net proceeds among the uses described above. Please revise to clarify the alternatives to the disclosed use of proceeds assuming you experience the identified contingencies. See Instruction 7 to Item 504 of Regulation S-K.

Management's Discussion and Analysis of Financial Condition and Results of Operations, page 52

Financial Operations Overview, page 52

6. Please tell us whether you use any key performance indicators, including non-financial performance indicators to manage your business. Refer to Item 303 of Regulation S-K and SEC Interpretive Release 33-8350 (http://www.sec.gov/rules/interp/33-8350.htm). To the extent you use key performance indicators that would be material to investors, please include these disclosures in the registration statement.

Revenue, page 52

7. We note in your response to comment 19 of our letter dated July 22, 2013 that the unrecorded revenue related to amounts payable to the Company by individual patients was not material to the Company's results of operations or liquidity in the year ended

December 31, 2012 or the three months ended March 31, 2013. Based on your disclosed average revenue per test for biopharmaceutical customers, it appears to us that the total amount of revenue that you did not recognize for both the FoundationOne tests that were billed to commercial third-party payors and patients covered by Medicare would represent a significant percentage of the total revenue that you recognized in fiscal 2012 and the three months ended March 31, 2013. In addition, it appears that such amounts may have a significant impact on the Company's liquidity if payment is ultimately received for these tests in future periods. Please quantify for us the total estimated revenue that you have not yet recognized for these tests and provide us with your analysis to support that this unrecognized revenue is not significant to the Company's results of operations or liquidity. Alternatively, further revise to quantify the total estimated amount of unrecorded revenue for these tests that may be received in future periods.

8. We note your revised disclosure on page 53 of the percentage of tests performed on behalf of Medicare patients for fiscal 2012 and the three months ended March 31, 2013 that was provided in response to comment 22 of our letter dated July 22, 2013. Please further revise to quantify the total number of tests performed on behalf of Medicare patients during each period, and the total number of cumulative tests as of December 31, 2012 and March 31, 2013, as applicable. Also further revise to clarify whether you currently anticipate to bill patients or pursue reimbursement from Medicare for these tests that were already performed in prior periods, or if you only anticipate being able to submit claims for tests performed in the future.

9. We note the revised disclosure concerning the percentage of tests for patients covered by Medicare. Please revise to clarify if you receive any revenues for such testing. Please also revise to state whether and how you receive revenue for testing provided to commercial payors that do not pay "based upon the stacked CPT codes."

Results of Operations, page 56

Comparison of Years Ended December 31, 2011 and 2012, page 56

Revenue, page 57

10. Please revise the average revenue per test discussion on page 57 to also address the averages without backing out tests for patients covered by Medicare or tests that were billed to third-party payors for which you did not receive payment.

Comparison of Three Months Ended March 31, 2012 and 2013, page 59

Revenue, page 59

11. We note your revised disclosure on page 57 of the cumulative number of FoundationOne tests that have been billed to commercial third-party payors in 2012 presented in response to comment 22 of our letter dated July 22, 2013. Please further revise to also present the cumulative number of such tests as of March 31, 2013.

Business, page 76

Overview, page 76

12. We note your response and your supplemental materials provided in response to comment 28 of our letter dated July 22, 2013. We reissue the comment. Please supplementally provide materials to support your statement that your single identified genomic alteration is "associated with an FDA-approved targeted therapy or with a clinical trial, in 82% of the first 3,936 clinical specimens analyzed." In this regard, it appears, based on your response, that these numbers were determined in a study conducted from July 2012 through May 17, 2013 but we are not able to locate materials specific to this study.

13. We note your revised disclosure in response to comment 29 of our letter dated July 22, 2013 in which you clarify that the 3,936 clinical specimens you analyzed with FoundationOne were received during the period from June 2012 through May 17, 2013. We further note in your response that the Company does not complete the calculation of this percentage on a regular basis, and that the Company has not observed any pattern that it believes would substantially alter this percentage. Please further revise your disclosure to inform investors of these factors regarding the disclosed percentage of instances where at least one actionable genomic alteration was identified.

14. Please revise here, the first risk factor on page 12 and where appropriate to address limitations to your business due to the ownership of Laboratory Corporation and other significant holders. For example, it appears that disclosure of anticipated "new product innovations" and similar statements should be qualified by a discussion of Article 7 of your charter, in which you renounce any interest or expectancy in certain corporate opportunities.

Our Industry, page 79

15. We note your revised disclosure in response to comment 31 of our letter dated July 22, 2013. Please further revise your disclosure to provide a citation for the 2008 survey published in the Journal of Clinical Pathology relating to your table on page 81.

16. We reissue comment 34 of our letter dated July 22, 2013, as we are unable to locate responsive disclosure. Please revise to disclose the basis for the statements regarding sensitivity and success rates. In this regard, we note the currently rephrased disclosure regarding the validation studies.

17. We note your revised disclosure in response to comment 35 of our letter dated July 22, 2013. Please revise to clearly state that the results of Case Study 2 have not been published.

Investing in Ongoing and new Product Innovations, page 99

18. We note your revised disclosure in response to comment 39 of our letter dated July 22, 2013. In particular, we note that you discuss Interactive Cancer Explorer and development plan for additional applications related to it. Please advise whether your online portal and mobile application are the same product. If they are not the same product, we reissue our comment. Please address your mobile application under this heading or refer to the page number where the discussion appears.

Certain Relationships and Related Party Transactions, page 133

19. We note your response to comment 43 of our letter dated July 22, 2013. Specifically, we note that you address the applicability of Regulation S-K Item 601(b)(10) to your agreements with Agios Pharmaceuticals, Inc. and Third Rock Ventures, ultimately concluding that neither agreement is material. We are unable to locate responsive disclosure relating to disclosure of each agreement's material terms. Please revise or advise.

20. Please revise to address the arrangement or agreement with Google regarding your Interactive Cancer Explorer referenced on pages 78, 100 and elsewhere.

Principal Stockholders, page 136

21. We note your response to comment 44 of our letter dated July 22, 2013 and we partially reissue the comment. Please revise to identify the natural person with voting and dispositive control over shares attributed to Gates Ventures, LLC or advise.

Index to Financial Statements, page F-1

22. Please update your financial statements pursuant to Rule 3-01 of Regulation S-X, as applicable.

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 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 Myra Moosariparambil at (202) 551-3796 or John Archfield at (202) 551-3315 if you have questions regarding comments on the financial statements and related matters. Please contact Erin Wilson at (202) 551-6047 or James Lopez at (202) 551-3536 with any other questions.

Sincerely,

/s/ James Lopez (for)

John Reynolds
Assistant Director