

Mail Stop 3561

February 25, 2010

Pieter Muntendam, M.D.
President and Chief Executive Officer
BG Medicine, Inc.
610 Lincoln Street North
Waltham, MA 02451

**Re: BG Medicine, Inc.
Registration Statement on Form S-1
Filed January 29, 2010
Amendment No. 1 to Registration Statement on Form S-1
Filed February 12, 2010
File No. 333-164574**

Dear Mr. Muntendam:

We have reviewed your filing and have the following comments. Where indicated, we think you should revise your document in response to these comments. If you disagree, we will consider your explanation as to why our comment is inapplicable or a revision is unnecessary. Please be as detailed as necessary in your explanation. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure. After reviewing this information, we may raise additional comments.

Please understand that the purpose of our review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filing. We look forward to working with you in these respects. We welcome any questions you may have about our comments or any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

Registration Statement on Form S-1

General

1. In the amended registration statement, please fill in all blanks other than the information that Rule 430A permits you to omit. Please note that we may have comments on the non-430A disclosure included in your amended filing.
2. Please note that we will need sufficient time to review your filing once the offering price range is established as it impacts various disclosures and several schedules within your registration statement.

3. Prior to the effectiveness of the registration statement, please ensure that we receive a copy of the letter, or a phone call, from FINRA, stating that FINRA has finished its review and has no concerns regarding the proposed underwriting arrangements.
4. Please note that compliance with the Regulation S-K amendments described in the Proxy Disclosure Enhancements Release (Release No. 33-9089 (Dec. 16, 2009)) would be required for the registration statement in order for it to be declared effective on or after February 28, 2010. Please consider the Compliance and Disclosure Interpretations located at <http://www.sec.gov/divisions/corpfin/guidance/pdetinterp.htm>.
5. Please add the disclosure required by Item 201(b)(1) of Regulation S-K. See Item 11(d) of Form S-1.
6. We understand that you have submitted a confidential treatment request application for portions of certain of the exhibits to your registration statement. Any comments we issue regarding your application will be sent to you under separate cover.

Management's Discussion and Analysis of Financial Condition and Results of Operations, page 35

Liquidity and Capital Resources, page 44

Contractual Obligations and Commitments, page 46

7. We note your disclosure at page 63 describing your strategic collaboration with Abbott Laboratories, including your umbrella product development agreement with Abbott and Fujirebio Diagnostics, Inc. Please clarify whether your statement at page 46 and page F-23 indicating you 'may be obligated to pay up to \$800,000 in milestone payments under a development agreement' references the Umbrella Agreement described at page 63. If it is not referencing the Umbrella Agreement, describe the magnitude and expected timing of all potential milestone payments.

Business, page 48

8. Please add the disclosure required by Item 101(c)(xi) of Regulation S-K, or tell us why the disclosure is unnecessary.
9. Please add the disclosure required by Item 101(d) of Regulation S-K, or tell us why the disclosure is unnecessary. We note the statement on page one that you "have begun limited sales and marketing activities in certain countries in Europe."

10. We note the statements that you are in the process of developing multiple product candidates and novel diagnostic products and services for commercialization. Please revise to identify which products and services currently are commercially available, including any geographic limitations due to, for example, clearance from relevant regulatory agencies only in certain countries. Please explain the material barriers to completion of development and commercialization for your other products and services.
11. In this regard, please revise to clarify your intended market and customers. We note the statement that your agreement with Abbot permits you to enter into four similar agreements with other diagnostic laboratory instrument manufacturers for use on their respective platforms. It is unclear what you mean by use on a manufacturer's platform. For example, it is unclear what product would be sold and to whom it would be sold assuming "full commercialization of this automated version of our test under the Abbott agreement," which is expected to commence no sooner than 2012. Tell us if and how the sales occurring in certain European countries relate to this product that you do not expect to be commercially available until 2012 at the earliest. Please provide similar 2012 timeline disclosure for the commercialization of products in the "Pipeline" table on page 54.
12. With respect to the sales that you have generated, please revise to clarify their nature in light of the statement on page 45 that you "have not generated any product revenue since inception."
13. As an example of unclear disclosure of your current and intended operations, please revise to clarify what you mean by "leverage our proprietary technology platform" and "leverage our existing and any new collaborations and initiatives," including what your platform is and how you intend to translate it and any studies, assays or collaborations into products or services. Without such clarification it is unclear why you cite the prominent institutions and companies such as AstraZeneca, Merck and Philips.
14. As another non-exclusive example, it is unclear what you mean by "positioning ourselves as the leading provider of novel biomarker-based diagnostic content that can be utilized on the existing installed base of advanced diagnostic laboratory instruments." You do not clarify what your commercialized product or service would be or who the intended customers are.
15. We note your reference on page 50 to "Kalorama Information, an independent market research firm." Please tell us whether the information attributed to this entity is available to the public at no cost.

Management, page 75

16. We note your disclosure on page 76 regarding Mr. Bains. Please revise this disclosure so that it fully complies with Item 401(e)(1) of Regulation S-K.

Compensation Discussion and Analysis, page 81

17. We note your statement on page 81 indicating that you “benchmark base salaries.” With a view to disclosure, advise us how you use benchmarks in setting compensation. Refer to Item 402(b)(2)(xiv) of Regulation S-K. Please consider Regulation S-K Compliance and Disclosure Interpretation 118.05 available at: <http://www.sec.gov/divisions/corpfin/guidance/regs-kinterp.htm>.
18. We note your disclosure on page 83 indicating that bonus awards for your named executive officers are based in part on “overall corporate performance.” In addition, it is unclear if the list of company goals on page 85 is exhaustive. Similarly, it is unclear if you disclose all material terms of the necessary performance targets to be achieved for your named executive officers to earn their incentive compensation. Please disclose the specific performance targets used to determine incentive amounts, or provide us with a supplemental analysis explaining why it is appropriate to omit these targets pursuant to Instruction 4 to Item 402(b) of Regulation S-K. To the extent that it is appropriate to omit specific targets, please provide the disclosure pursuant to Instruction 4 to Item 402(b). General statements regarding the level of difficulty, or ease, associated with achieving performance goals either corporately or individually are not sufficient. In discussing how likely it will be for the company to achieve the target levels or other factors, provide as much detail as necessary without providing information that poses a reasonable risk of competitive harm.

2009 Compensation of Named Executive Officers, page 87

19. Please revise this section to explain in more detail why your compensation committee made these compensation decisions. You should clearly explain how and why qualitative inputs were ultimately translated into objective pay determinations. In this regard, the first paragraph on page 87 does not clarify, for example, why Mr. Muntendam’s salary, bonus and option awards were the amounts identified in the summary compensation table.
20. As another non-exclusive example, it is unclear if you disclose the terms of Mr. White’s bonus awards, which you state on page 90 are “based on the achievement of certain milestones that our board of directors and Dr. Muntendam define annually.”

Underwriting, page 112

21. We note the following statement on page 112: “The underwriters are purchasing the shares subject to various conditions, including . . . the underwriters’ right to reject orders in whole or in part.” Please tell us why you believe this particular right is consistent with a firm-commitment offering.

Notes to Consolidated Financial Statements, page F-7

3. Fair Value of Financial Instruments, F-13

22. Explain to us why your cash equivalents as of December 31, 2009 are classified within Level 2 of the fair value hierarchy.

16. Licensing Arrangements, page F-23

23. We note your obligation to pay royalties to ACS Biomarker for any product sales or sublicensing income that incorporates the licensed biomarkers. Please clarify your disclosure to state, if true, that these royalty payments would be required on sales of your lead product candidate, BGM Galectin-3, and if so, describe the terms of the royalties in your footnotes.

Part II

Item 15. Recent Sales of Unregistered Securities

24. We note your reliance on Rule 506 of Regulation D. It is unclear why a Form D was not filed regarding the shares issued on September 28, 2009. Please advise.

Item 16. Exhibits and Financial Statement Schedules

25. Please file all missing exhibits as soon as practicable because we may have comments on the exhibits.
26. Please tell us why you have not filed your development and manufacturing agreement with Corgenix Medical Corporation and your agreement(s) regarding the HRP Initiative as exhibits to your registration statement.

As appropriate, please amend your registration statement in response to these comments. You may wish to provide us with marked copies of the amendment to expedite our review. Please furnish a cover letter with your amendment that keys your responses to our comments and provides any requested information. Detailed cover

letters greatly facilitate our review. Please understand that we may have additional comments after reviewing your amendment and responses to our comments.

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 all information required under the Securities Act of 1933 and that they have provided all information investors require for an informed investment decision. 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 the company requests acceleration of the effective date of the pending registration statement, it should furnish a letter, at the time of such request, 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.

In addition, please be advised that the Division of Enforcement has access to all information you provide to the staff of the Division of Corporation Finance in connection with our review of your filing or in response to our comments on your filing.

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. We will act on the request and, pursuant to delegated authority, grant acceleration of the effective date.

We direct your attention to Rules 460 and 461 regarding requesting acceleration of a registration statement. Please allow adequate time after the filing of any amendment for further review before submitting a request for acceleration. Please provide this request at least two business days in advance of the requested effective date.

Pieter Muntendam, M.D.
BG Medicine, Inc.
February 25, 2010
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You may contact Steve Lo at (202) 551-3394 or David Walz at (202) 551-3358 if you have questions regarding comments on the financial statements and related matters. Please contact Damon Colbert at (202) 551-3581 or James Lopez at (202) 551-3536 with any other questions.

Sincerely,

John Reynolds
Assistant Director

cc: William T. Whelan, Esq.
Scott A. Samuels, Esq.
Fax: (617) 542-2241