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

DIVISION OF
CORPORATION FINANCE

July 23, 2013

Via E-Mail
Robert W. Peabody
Chief Financial Officer
Asterias Biotherapeutics, Inc.
1301 Harbor Bay Parkway, Suite 100
Alameda, California 94

Re: Asterias Biotherapeutics, Inc.
Amendment No. 1 to Registration Statement on Form S-1
Filed June 26, 2013
File No. 333-187706

Dear Mr. Peabody:

We have reviewed your amended registration statement and have the following comments. We have also included comments below in relation to your June 26, 2013 letter responding to comments in our prior letter dated June 5, 2013. 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.

Prior Comments

1. We note your response to our prior comment 2 and your accompanying analysis as to why Geron is not required to be identified as an underwriter in the prospectus. We are unable to concur with your analysis regarding the applicability of Staff Legal Bulletin No. 4 to the facts and circumstances surrounding your proposed offering. Accordingly, please amend your registration statement to identify Geron as an underwriter.

2. We note your response to prior comment 3 and your statement that the that the sales of fractional shares and shares otherwise issuable to Geron stockholders in excluded jurisdictions by an independent agent should be exempt from the registration requirements of the Securities Act under Section 4(1) of the Act. We are unable to concur with your analysis regarding the applicability of the guidance you have cited to the facts and circumstances surrounding your proposed offering. Accordingly, please

confirm that you intend to register the sales of fractional shares and shares otherwise issuable to Geron stockholders in excluded jurisdictions under your registration statement. In this regard, we note that the cover page of your prospectus appears to indicate that the sale of aggregated fractional shares and shares otherwise issuable to Geron stockholders in excluded jurisdictions are intended to be included within the offering prospectus.

General

3. Please note that where we provide examples or references to portions of your filing to illustrate what we mean by our comments, they are examples and not exhaustive lists. If our comments are applicable to portions of the filings that we have not cited as examples, please make the appropriate changes elsewhere in the filing in accordance with our comments.

4. Please submit all exhibits as soon as practicable. We may have further comments upon examination of these exhibits.

5. Since you appear to qualify as an "emerging growth company," as defined in the Jumpstart Our Business Startups Act, please:
   - Disclose that you are an emerging growth company;
   - Describe how and when a company may lose emerging growth company status;
   - Briefly describe the various exemptions that are available to you, such as exemptions from Section 404(b) of the Sarbanes-Oxley Act of 2002 and Section 14A(a) and (b) of the Securities Exchange Act of 1934; and
   - State your election under Section 107(b) of the JOBS Act:
     - If you have elected to opt out of the extended transition period for complying with new or revised accounting standards pursuant to Section 107(b), include a statement that the election is irrevocable; or
     - If you have elected to use the extended transition period for complying with new or revised accounting standards under Section 102(b)(1), provide a risk factor explaining that this election allows you 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 state in your risk factor that, as a result of this election, your financial statements may not be comparable to companies that comply with public company effective dates. Include a similar statement in your critical accounting policy disclosures.

   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.

Prospectus Summary, page 3

6. We note your reference to the safe harbor provisions for forward looking statements available under Section 27A of the Securities Act and Section 21E of the Exchange Act. As you are not currently a public company subject to the reporting requirements of section 13(a) or section 15(d) of the Securities Exchange Act of 1934, the safe harbors available under these provisions are not currently available to you. Accordingly, please revise your disclosure to remove any reference to the availability of safe harbors for forward-looking statements.

7. We note that your summary only discusses the positive aspects of your proposed business. The prospectus summary should provide a brief, but balanced, description of the key aspects of the company. Please revise the summary to add a brief discussion of any negative aspects of or risks associated with your strategy and prospects. Please also note that the balancing disclosure you provide should be no less prominent than your positive disclosure. This means that you cannot satisfy the comment by merely providing a cross-reference to the risk factors section.

The Asset Contribution, page 4

8. Please describe the distinction between your Series A shares and your Series B shares and explain how holders of Series B shares may convert their shares into Series A shares.

Cash Contribution by Private Investor, page 6

9. Please revise your prospectus to discuss the circumstances under which Romulus might fail to make its $5 million contribution.

Products Under Development, page 8

10. At your first reference, please provide a brief description of Canavan's disease.

11. Please provide an estimated number of patients for the other treatment indications that you identify in the chart on page 8.

Summary Financial Data, page 10

12. Please disclose the individual entries that adjust actual amounts to the "as adjusted" amounts at December 31, 2012 and March 31, 2013. Also, please clarify in the filing the expected accounting treatment for each transaction in the asset contribution agreement. Cite the accounting literature you are using to support your accounting treatment.

13. Your disclosure on page 33 indicates that you are unable to determine which Geron products will be developed, the required cost and development time. Please clarify in the filing how the value of the intangible assets was determined and cite the accounting literature you used to support your accounting treatment.

Risk Factors
"We are a newly organized, development stage company…" page 11

14. Please expand this risk factor or add a standalone risk factor that states that you have a history of operating losses and negative cash flows since inception, and expect to continue to incur losses and negative cash flows in the future. Please also disclose that since inception you have received funding for formation and operating costs from BioTime and that you expect to continue to receive such funding from BioTime until the consummation of the Asset Contribution.

"There is no certainty that our pending or future patent applications…" page 19

15. Please expand the third bullet point of this risk factor to explain what you mean by "mathematical correlation of the presence of a…metabolite." In addition, please briefly explain how the decision in Mayo Collaborative Services may limit your ability to develop diagnostic methods and the potential impact of that limitation on your business.

"We will assume Geron's appeal of two adverse patent rulings, …" page 19

16. Please expand this risk factor to explain how the underlying patents concerning definitive endoderm cells relate to your potential products and why an adverse ruling in the cited appeals could preclude you from developing therapies to treat diabetes and other diseases.

Our stock price could decline due to the large number of outstanding shares…" page 25

17. We note your disclosure on page 25 that you have "agreed to register for sale under the Securities Act the 2,136,000 Series B Shares that will be sold to Romulus, and up to 350,000 additional Series B Shares that Romulus may acquire by exercising its warrants, and the Series A Shares into which Romulus's Series B Shares may be converted in the future." Please discuss whether the consummation of the Asset Contribution is

contingent upon the registration of the offering of shares to be acquired by Romulus and identify when you will seek to register shares.

Capitalization, page 28

18. Please explain to us why the amounts of total stockholders' equity (deficit) on an "as adjusted" basis at December 31, 2012 and March 31, 2013 differ from the corresponding amounts on page 10.

Management's Discussion and Analysis of Financial Condition and Results of Operations
Liquidity and Capital Resources, page 29

19. You state in the first paragraph of this Section that you "will also receive a minimum of 8,902,077 BioTime common shares in the Asset Contribution." Please revise this statement to clarify under what circumstances you may receive more than 8,902,077 shares in the transaction.

Business
Business Strategy, page 32

20. Please revise your disclosure to clarify what you mean in the table by "fully characterized" and "partly characterized" cells.

Potential Products Overview, page 33

21. Your disclosure includes several scientific or technical terms that may be unfamiliar to lay readers. Where appropriate, please expand your disclosure to include explanations of terminology, in the first instance you use the terminology, so that it may be understood by average investors. Examples of terms you should explain further include:
    - *in vivo* and *in vitro* environments
    - allogeneic and autologous cells
    - cardiac sarcomeric and gap junction proteins and transcription factors, in the context of your immumo-cytochemical analysis of CM-1 cells
    - HERG-channel blockers
    - HL-A, B and C and Class 2 alleles
    - ejection fraction
    - glucose excursions
    - recapitulates the embryonic pancreatic development lineage
    - glucose homeostasis
    - xenograft barriers
    - qPCR
    - phagocytic activity
    - chemotactic responses
    - HLA and HLA matching

CM-1: Cell Therapy for Myocardial Disease, page 35

22. We note your statement that the magnitude of the improvement in ejection fraction in your CM-1 trial is highly clinically and statistically significant. Please expand your discussion to identify the p-values and to explain what the p-values measure.

IC-1: hESC-Derived Islets for the Treatment of Diabetes, page 37

23. Please expand your disclosure to explain briefly what you mean by "physiologically relevant concentrations" of human C-peptide.

VAC-1 and VAC-2, Technology For Potential New Cancer Vaccines, page 39

24. Please expand your disclosure to explain briefly what you mean by the notation "(95% CI: 42-95%)" in your discussion of the disease-free survival rate for patients with high risk of relapse.

25. Please expand your discussion of adverse events to explain briefly what you mean by "idiopathic thrombocytopenic purpura."

26. Please revise your disclosure to explain briefly what the ELISPOT assay is, as you do on page 41.

VAC2: hESC-Derived Dendritic Cells, page 40

27. Please expand your disclosure to explain briefly what you mean when you state that your protocol is "clinically compliant."

Manufacturing and Process Development Technologies, page 41

28. The disclosure throughout your prospectus appears to indicate that the verification processes, including those for the functional state of transferred cells and other biologic reagents, will be completed between three and six months following the Asset Contribution. However on page 41, you state that "the GMP banks of undifferentiated hES cells that we will acquire from Geron have been well characterized and validated" and "qualified for human biologics production per FDA guidelines." Please explain this apparent inconsistency and revise your disclosure accordingly.

Cells Derived from hES Cells for Drug Discovery, Development and Toxicology, page 43

29. You state that the GE Healthcare agreement will terminate upon expiration of all valid claims under the licensed patents. Please revise this description to specify the estimated year of termination of the agreement. Please also revise your disclosure to identify the

specific royalty percentage and potential milestone payments that may be paid by GE Healthcare under the agreement.

Patents and Trade Secrets, page 44

30. Please expand this section to identify the jurisdictions in which your material patents have been issued.

Licensed Stem Cell Technology and Stem Cell Product Development Agreements, page 47

31. Please expand your discussion to describe the material terms of the following agreements, including the parties' material rights and obligations, the duration of the agreement and any termination provisions, and material payments obligations including royalty percentages and potential milestone payments:

    - the license agreement with the University of California relating to the oligodendrocyte progenitor patents; and
    - the license agreement with the University of Oxford and the Robarts Research Institute of the University of Western Ontario relating to the dendritic cell patents.

    In addition, please file a copy of each agreement as an exhibit to your registration statement pursuant to Item 601(b)(10) of Regulation S-K.

Telomerase Sublicense, page 47

32. Please expand your discussion of the Telomerase Sublicense to specify the amount of the material payments, including the upfront license fee, the annual license fee, and the royalty rate, and file a copy of the agreement as an exhibit to your registration statement pursuant to Item 601(b)(10) of Regulation S-K.

Corning Agreement, page 47

33. Please expand your discussion of the Corning Agreement to disclose the approximate date of expiration of the royalty payment term and to specify the percentage royalties you may receive under the agreement. Please also file a copy of the agreement as an exhibit to your registration statement pursuant to Item 601(b)(10) of Regulation S-K.

Royalty Agreement with Geron, page 47

34. Please expand your discussion of the Royalty Agreement with Geron to disclose the duration of the agreement and any termination provisions, and file a copy of the agreement as an exhibit to your registration statement pursuant to Item 601(b)(10) of Regulation S-K.

Certain Relationships and Related Transactions, page 68

35. Please expand your disclosure in this section to include a description of the material terms of your April 2013 promissory note to BioTime.

The Asset Contribution Agreement
The Series A Distribution, page 80

36. Please expand your description here and in the Prospectus Summary on page 7 regarding the distribution of cash in lieu of shares in certain to-be-determined excluded jurisdictions to explain briefly the criteria for determining these excluded jurisdictions. Please also identify the minimum threshold for the number of Geron shares that must be held prior to triggering the aggregation, sale and distribution of proceeds of shares to be distributed in excluded jurisdictions.

Description of Capital Stock—Voting Rights, page 84

37. Please expand your disclosure to describe briefly the vote required by holders of your common stock to take action.

Financial Statements
Notes to the Financial Statements
1. Organization and Basis of Presentation, page F-7

38. Please disclose all significant terms of the asset contribution agreement, including the number of Series A and B shares and the number of warrants that the company will issue and the terms of the warrants.

2. Summary of Significant Accounting Policies
Basis of Presentation, page F-9

39. You state that historically you operated as part of BioTime and not as a stand-alone company. Please tell us how you considered Staff Accounting Bulletin Topic 1:B in preparing the stand alone financial statements and provide additional disclosure in the filing.

Part II
Item 13. Other Expenses of Issuance and Distribution, page II-1

40. Please revise your table to itemize separately any federal taxes, state taxes and fees, and/or transfer agents' fees in connection with the Series A Distribution.

Item 16. Exhibits and Financial Statement Schedules, II-2

41. We note that you have removed the asset contribution agreement, previously listed as Exhibit 10.1 to your registration statement. Please restore this exhibit pursuant to Item 601(b) of Regulation S-K.

42. Please file a copy of each of the following agreements as an exhibit to your registration statement pursuant to Item 601(b) of Regulation S-K:
    - the exclusive license and alliance agreement with GE Healthcare UK Limited;
    - the sublicense to use hES differentiation patents owned by BioTime's subsidiary ESI;
    - the employment agreement with Dr. Okarma;
    - stock option agreements with your named executive officers, or a form thereof; and
    - the stock purchase agreement relating to the September 2012 investment by BioTime

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 Franklin Wyman at (202) 551-3660 or Mary Mast at (202) 551-3613 if you have questions regarding comments on the financial statements and related matters. Please contact Amy Reischauer at (202) 551-3793, Bryan Pitko at (202) 551-3203, or me at (202) 551-3715 with any other questions.

Sincerely,

/s/ Bryan J. Pitko for

Jeffrey P. Riedler
Assistant Director

cc: Via E-Mail
Richard S. Soroko
Thompson, Welch, Soroko & Gilbert LLP
235 Pine Street, 13th Floor
San Francisco, California 94104