GRACIN & MARLOW, LLP
405 Lexington Avenue, 26th Floor
New York, New York 10174
(212) 907-6457

May 6, 2013

VIA EDGAR

United States Securities
and Exchange Commission
100 F Street, NE
Mail Stop 4720
Washington, D.C. 20549
Attention: Jeffrey P. Riedler
Assistant Director

Re: Heat Biologics, Inc.
Amendment No. 1 to
Confidential Draft Registration Statement on Form S-1
Submitted February 12, 2013
CIK No. 0001476963

Dear Mr. Riedler:

Thank you for your February 25, 2013 letter regarding Heat Biologics, Inc. ("Heat"). In order to assist you in your review of Heat's Form S-1, we hereby submit a letter responding to the comments and Amendment No. 2 to Form S-1 marked to show changes. For your convenience, we have set forth below the staff's numbered comments in their entirety followed by our responses thereto.

General

1. We note your response to our prior comment 2 that you do not have any written communications that have been presented to potential investors nor do you have any research reports that have been published or distributed. Please note that the request to provide us with copies of all such written communications continues during the entire course of our review, and any communications distributed or published in reliance on the referenced rules during pendency of the registration statement should be provided to us supplementally as soon as practicable after their use.

Response: At this time the Company does not have any written communications that have been presented to potential investors nor does it have any research reports that have been published or distribute. We will provide the Commission with all such do not written communications supplementally as soon as practicable after their use.

Prospectus Summary, page 1
Overview, page 1

2. We note your statement on page 35 that the recently completed Phase I clinical trial in lung cancer patients consisted of 18 patients of which 15 patients remained at the end of the trial and were evaluated. Please add similar disclosure to your summary discussion of this trial.

Response: Complied with. We have added the disclosure to the prospectus summary.

The Offering, page 4

3. Please update your disclosure regarding the use of proceeds to reflect your disclosure on page 22 that you will use $300,000 of the proceeds to repay a portion of the loan from Square 1 Bank that is due and payable in the next 18 months.

Response: Complied with. We have added the disclosure to the Offering, Use of Proceeds.

Risk Factors, page 7
"Until the Offering contemplated herein is consummated…," page 9

4. In your response to our prior comment 12 you state that Square 1 Bank has not foreclosed on the Company's assets secured by the loan. Please add this statement to your disclosure regarding the status of your loan and discussions with Square 1 Bank here and on pages 33 and 72.

Response: Complied with. Inasmuch as the Company has recently raised in excess of $5,000,000 in a private placement of its Series B Preferred Stock it is no longer in breach of the terms of the loan and therefore the language has been removed from the registration statement.

"We rely on licenses to use various technologies that are material to our business.," page 15

5. We note your additional disclosure that if you breach the terms of your licensing agreements, including failure to make payments or failure to reach certain milestones, the licensor has the right to terminate the license. Please include a separate risk factor addressing the risks associated with your ability to generate revenues, your ability to make milestone payments or reach milestones and the potential loss of your material license agreements.

Response: Complied with. We have added an additional risk factor.

Management's Discussion and Analysis of Financial Condition
and Results of Operations, page 26

Overview, page 26

6. We note the additional disclosure added in response to our prior comment 6. We also note that your Phase I clinical trial was fully funded by the NIH. Please expand your disclosure here and in your business section to more fully describe the nature of your research and development expenses and clinical trials and research expenses in light of the work by your primary inventor and the flow of funds from the NIH grant including how such expenses are incurred. Your disclosure should indicate how you expect costs to be apportioned for the proposed Phase II clinical trial and what your direct expenses from such trial will be. For example, on page 34 you have estimated the amount of funds you will need to complete your Phase II trial and Phase I/II trial of HS-410 to be $13.5 million. Please estimate what portion of such expenses you will be responsible for and how such apportionment of costs is governed. To the extent that the apportionment of costs may influence your estimated use of proceeds, please also revise your disclosure on page 22.

Response: Complied with. We have added the requested disclosure.

Critical Accounting Policies
Stock Based Compensation, page 27

7. Please revise your disclosure to include the amount of the discount taken for lack of marketability for each valuation. Please include a discussion of the evidence that supports the amount of the discount selected.

Response: Complied with. We have added the requested disclosure.

Results of Operations
Operating Expenses, page 32

8. Please refer to your response to comment 23. Please revise your disclosures to include the costs incurred for lung cancer and ovarian cancer separately for each period presented and also the total costs incurred from inception to date. Your current disclosure only includes the most recent periods presented.

Response: Complied with. We have added additional disclosure of costs incurred for lung cancer and ovarian cancer from inception to date.

Liquidity and Capital Resources, page 32

9. Please clarify your disclosure with respect to the Square 1 Bank loan to state, consistent with your disclosure on page 22, that you will repay $300,000 of the loan that is due and payable within the next 18 months and disclose the amount that will remain outstanding after repayment.

Response: We have added language to clarify the disclosure.

Business, page 35
Our Product Candidates and Clinical Development Program, page 44

10. Your disclosure states, for example, that you have initiated a clinical development program and that you are also completing an advanced study in primates for the development of a therapeutic and prophylactic vaccine for treatment and prevention of HIV. Please revise your disclosure to indicate whether such trials and/or were initiated or conducted by your primary inventor or by you and who will bear responsibility for future development and research.

Response: Complied with. We have added disclosure to indicate that such trials have been conducted by the primary inventor and that we do not have any obligations for future development or research expenses.

Phase I HS-110 Clinical Trials, page 45

11. Please disclose why three of the 18 patients dosed in the trial were not included in the evaluable set at the end of the trial.

Response: Complied with. We have added disclosure that explains that three of the patients, who were in the late stages of lung cancer, died before the Company could evaluate their results.

License Agreements, page 54

12. We acknowledge your pending confidential treatment request, however, milestone payments, royalty rates and payments made are material terms of the agreement. Accordingly, we reissue our prior comment 38. Please revise your disclosure to include for each agreement described the aggregate potential milestones payable, payments made to date and a range within which the royalty rate falls (within a ten percentage point range).

Response: Complied with. We have added disclosure regarding aggregate potential milestones payable and a range for royalty payments.

Intellectual Property, page 56

13. It appears that you have provided additional disclosure pursuant to our prior comment 39 only with respect to the "Recombinant cancer cell secreting modified heat shock protein-antigenic peptide complex" family of patents. Please provide the number of patents and the expiration dates of the material patent(s) for each family of patents.

Response: Complied with. We have added such disclosure.

Description of Our Securities, page 69

14. We note the revised disclosure added pursuant to our prior comment 44. Please revise the disclosure to provide the voting thresholds for matters to be voted upon by holders of your common and preferred stock based on the thresholds that will be in place upon consummation of the offering.

Response: Complied with. We have provided voting thresholds that will be in place upon consummation of the offering.

15. Please reconcile your disclosure that the Preferred Stock will automatically convert upon closing of the Offering with the disclosure that two-thirds of the Preferred Stock holders may vote in favor of a conversion. It appears from your disclosure that conversion is automatic only if proceeds of the Offering exceed a certain amount.

Response: Complied with. We have reconciled the disclosure.

Underwriters, page 78

16. Once available, please file copies of each of the lock-up agreements.

Response: The Company acknowledges the comment and will file the form of lock up agreement as an exhibit to the form of underwriting agreement which will be filed as Exhibit 1.1 to the Registration Statement.

Financial Statements, page F-1

17. Please provide updated audited financial statements as well as updated disclosures.

Response: Complied with. We have provided audited financial statements for the years ended December 31, 2012 and 2011.

Notes to Consolidated Financial Statements
2. Summary of Significant Accounting Policies
Preferred Stock Warrant Liability, page F-10

18. Please expand your disclosures to include the assumptions used in determining the fair value of the warrants for each period presented.

Response: Complied with. We have added the requested disclosure.

11. License Agreements, page F-17

19. Please expand your disclosures to include all of the license agreements related to the evaluation of certain biological materials disclosed on page 56. Please disclose the aggregate amount of future potential milestone payments related to these agreements.

Response: Complied with. We have expanded the disclosure as requested.

Signatures, page II-6

20. We note that the confidential draft submission is not required to be signed, however, we note for your future public filing that the power of attorney executed by your directors and filed with the initial draft submission will not suffice for purposes of the initial public filing, and all required individuals must sign the publicly filed registration statement.

Response: Complied with. We have filed the appropriate signature page for this filing and included the power of attorney with all of the director's signatures.

We acknowledge that the adequacy and accuracy of the disclosure in our filings is our responsibility. We acknowledge that the staff comments or changes to disclosure do not foreclose the Commission from taking any action with respect to the filings. We acknowledge that the company may not assert staff comments as a defense in any proceedings initiated by the Commission or any person under the federal securities laws of the United States.

If you have any questions or need additional information, please contact the undersigned at (516) 496-2223 or (212) 907-6457.

Sincerely,

/s/ Leslie Marlow

Leslie Marlow
Partner