



DIVISION OF
CORPORATION FINANCE

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

January 30, 2012

Via Email

Mike Tomas
Chief Executive Officer
Bioheart, Inc.
13794 NW 4th Street, Suite 212
Sunrise, Florida 33325

Re: Bioheart, Inc.
Registration Statement on Form S-1
Filed January 19, 2012
File No. 333-179096

Dear Mr. Tomas:

We have limited our review of your registration statement to those issues we have addressed in our 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. Where 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. In view of the large number of shares offered by the selling stockholder in relation to the number of outstanding shares of common stock held by non-affiliates of the company, we view the transaction to be a primary offering. Accordingly, you must reduce the size of the offering or it cannot proceed on an at-the-market basis. If you do not reduce the size of the offering, you must set a fixed price for the shares to be offered.
2. Please file a copy of the Standby Equity Distribution Agreement as an exhibit to the registration statement. Please note that we may have additional comments once we have reviewed the agreement.

Selling Stockholder, page 18

3. We note that the amount listed in the fourth column of the selling stockholder table

indicates the number of shares of common stock to be owned by the selling stockholder after the offering. The calculation appears to merely provide the sum of columns one and three of the table reflecting the number of shares owned prior to the offering plus the number of shares you are offering. Please calculate the number of shares in the fourth column assuming that the selling stockholder sells all of the shares you are registering. Please revise.

Capitalization, page 20

4. Please delete the "Capitalization" table provided on page 20, as the information included concerns beneficial ownership rather than capitalization. Please also note that this information is inconsistent with the beneficial ownership information beginning on page 69.

Signatures, page 88

5. We note that your chief executive officer has signed the filing on behalf of the registrant and in his own capacities, but that the filing has not been signed by your chief financial officer and controller or principal accounting officer. Please amend your filing to include these signatures. If Mike Tomas, the company's chief executive officer, also serves in either of these capacities, please indicate beneath his signature that he is signing the filing in the additional capacities as well. See Instruction 1 to the Signatures section of Form S-1 for further information.

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

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- 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 Laura Crotty at (202) 551-3563 or me at (202) 551-3715 with any questions.

Sincerely,

/s/ Jeffrey P. Riedler

Jeffrey P. Riedler
Assistant Director

cc: Andrew Smith, Esq. (Sichenzia Ross Friedman Ference LLP)