

HEAT BIOLOGICS, INC.
Form S-3
October 10, 2014

As filed with the Securities and Exchange Commission on October 10, 2014

Registration No. 333-

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549**

FORM S-3

**REGISTRATION STATEMENT
UNDER THE SECURITIES ACT OF 1933**

HEAT BIOLOGICS, INC.

(Exact Name of Registrant as Specified in Its Charter)

Delaware

26-2844103

*(State or Other Jurisdiction of
Incorporation or Organization)*

*(I.R.S. Employer
Identification Number)*

**801 Capitola Drive
Durham, North Carolina 27713**

(919) 240-7133

(Address, Including Zip Code, and Telephone Number, Including Area Code, of Registrant's Principal Executive Offices)

Jeffrey Wolf

Chief Executive Officer and President

Heat Biologics, Inc.

801 Capitola Drive

Durham, North Carolina 27713

(919) 240-7133

(Name, Address, Including Zip Code, and Telephone Number, Including Area Code of Agent for Service)

With copies to:

Leslie Marlow, Esq.

Hank Gracin, Esq.

Gracin & Marlow, LLP

The Chrysler Building

405 Lexington Avenue, 26th Floor

New York, New York 10174

(212) 907-6457

APPROXIMATE DATE OF COMMENCEMENT OF PROPOSED SALE TO THE PUBLIC: From time to time after the effective date of this registration statement.

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. "

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. "

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective on filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box. "

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box. "

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer	<input type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/> (Do not check if a smaller reporting company)	Smaller reporting company	<input type="checkbox"/>

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee
Common Stock, par value \$0.0002 per share	(1)(2)	

Edgar Filing: HEAT BIOLOGICS, INC. - Form S-3

Warrants		(1)		
Units		(1)		
Total	\$	50,000,000(3)	\$	5,810(4)

- (1) An unspecified number of securities or aggregate principal amount, as applicable, is being registered as may from time to time be offered at unspecified prices.
- (2) Includes rights to acquire common stock of the Company under any shareholder rights plan then in effect, if applicable under the terms of any such plan.
- (3) The proposed maximum aggregate offering price per class of security will be determined from time to time by the Company in connection with the issuance by the Company of the securities registered hereunder and is not specified as to each class of security pursuant to General Instruction II.D. of Form S-3 under the Securities Act of 1933, as amended.
- (4) The registration fee has been calculated in accordance with Rule 457(o) under the Securities Act of 1933, as amended.

The registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the registration statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

EXPLANATORY NOTE

This registration statement contains two prospectuses:

- a base prospectus which covers the offering, issuance and sale by the registrant of up to a maximum aggregate offering price of \$50,000,000 of the registrant's common stock, warrants and/or units; and
- a sales agreement prospectus covering the offering, issuance and sale by the registrant of up to a maximum aggregate offering price of \$10,000,000 of the registrant's common stock that may be issued and sold under a sales agreement with Cantor Fitzgerald & Co.

The base prospectus immediately follows this explanatory note. The sales agreement prospectus immediately follows the base prospectus. The common stock that may be offered, issued and sold by the registrant under the sales agreement prospectus is included in the \$50,000,000 of securities that may be offered, issued and sold by the registrant under the base prospectus. Upon termination of the sales agreement with Cantor Fitzgerald & Co., any portion of the \$10,000,000 included in the sales agreement prospectus that is not sold pursuant to the sales agreement will be available for sale in other offerings pursuant to the base prospectus, and if no shares are sold under the sales agreement, the full \$50,000,000 of securities may be sold in other offerings pursuant to the base prospectus and a corresponding prospectus supplement.

The information in this prospectus is not complete and may be changed. These securities may not be sold until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell nor does it seek an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

Subject to Completion, dated October 10, 2014.

PROSPECTUS

\$50,000,000

Common Stock

Warrants

Units

We may offer and sell up to \$50,000,000 in the aggregate of the securities identified above from time to time in one or more offerings. This prospectus provides you with a general description of the securities.

Each time we offer and sell securities, we will provide a supplement to this prospectus that contains specific information about the offering and the amounts, prices and terms of the securities. The supplement may also add, update or change information contained in this prospectus with respect to that offering. You should carefully read this

prospectus and the applicable prospectus supplement before you invest in any of our securities.

We may offer and sell the securities described in this prospectus and any prospectus supplement to or through one or more underwriters, dealers and agents, or directly to purchasers, or through a combination of these methods. If any underwriters, dealers or agents are involved in the sale of any of the securities, their names and any applicable purchase price, fee, commission or discount arrangement between or among them will be set forth, or will be calculable from the information set forth, in the applicable prospectus supplement. See the sections of this prospectus entitled *About this Prospectus* and *Plan of Distribution* for more information. No securities may be sold without delivery of this prospectus and the applicable prospectus supplement describing the method and terms of the offering of such securities.

This prospectus may not be used to sell securities unless it is accompanied by a prospectus supplement.

INVESTING IN OUR SECURITIES INVOLVES RISKS. SEE THE RISK FACTORS ON PAGE 4 OF THIS PROSPECTUS AND ANY SIMILAR SECTION CONTAINED IN THE APPLICABLE PROSPECTUS SUPPLEMENT CONCERNING FACTORS YOU SHOULD CONSIDER BEFORE INVESTING IN OUR SECURITIES.

Our common stock is listed on the NASDAQ Capital Market under the symbol *HTBX*. On October 9, 2014, the last reported sale price of our common stock on the NASDAQ Capital Market was \$6.25 per share.

As of October 6, 2014, the aggregate market value of our outstanding common stock held by non-affiliates was \$32,269,856, based on 6,481,752 shares of outstanding common stock, of which 2,067,271 shares are held by affiliates, and a per share price of \$7.31 based on the closing sale price of our common stock on October 6, 2014. We have not offered any securities during the past twelve months pursuant to General Instruction I.B.6 of Form S-3.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

The date of this prospectus is _____, 2014

TABLE OF CONTENTS

<u>ABOUT THIS PROSPECTUS</u>	1
<u>PROSPECTUS SUMMARY</u>	2
<u>THE OFFERING</u>	4
<u>RISK FACTORS THAT MAY AFFECT FUTURE RESULTS</u>	4
<u>SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS</u>	5
<u>USE OF PROCEEDS</u>	6
<u>DIVIDEND POLICY</u>	6
<u>DESCRIPTION OF OUR CAPITAL STOCK</u>	6
<u>DESCRIPTION OF WARRANTS</u>	7
<u>DESCRIPTION OF UNITS</u>	8
<u>PLAN OF DISTRIBUTION</u>	9
<u>LEGAL MATTERS</u>	10
<u>EXPERTS</u>	11
<u>WHERE YOU CAN FIND MORE INFORMATION</u>	11
<u>INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE</u>	11

You should rely only on the information we have provided or incorporated by reference in this prospectus or in any prospectus supplement. We have not authorized anyone to provide you with information different from that contained or incorporated by reference in this prospectus or in any prospectus supplement. This prospectus and any prospectus supplement is an offer to sell only the securities offered hereby, but only under circumstances and in jurisdictions where it is lawful to do so. You should assume that the information contained in this prospectus and in any prospectus supplement is accurate only as of their respective dates and that any information we have incorporated by reference is accurate only as of the date of the document incorporated by reference, regardless of the time of delivery of this prospectus or any prospective supplement or any sale of securities. The registration statement, including the exhibits and the documents incorporated herein by reference, can be read on the Securities and Exchange Commission website or at the Securities and Exchange Commission offices mentioned under the heading **Where You Can Find More Information**.

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the U.S. Securities and Exchange Commission, or the SEC, using a shelf registration process. By using a shelf registration statement, we may sell securities from time to time and in one or more offerings up to a total dollar amount of \$50 million of securities as described in this prospectus. Each time that we offer and sell securities, we will provide a prospectus supplement to this prospectus (which term includes, as applicable, the sales agreement prospectus filed with the registration statement of which this prospectus forms a part) that contains specific information about the securities being offered and sold and the specific terms of that offering. The prospectus supplement may also add, update or change information contained in this prospectus with respect to that offering. If there is any inconsistency between the information in this prospectus and the applicable prospectus supplement, you should rely on the prospectus supplement. Before purchasing any securities, you should carefully read both this prospectus and the applicable prospectus supplement, together with the additional information described under the heading **Where You Can Find More Information** and **Incorporation of Certain Information by Reference**.

You should rely only on the information incorporated by reference or provided in this prospectus. We have not authorized any other person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. We will not make an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus and the applicable prospectus supplement to this prospectus is accurate as of the date on its respective cover, and that any information incorporated by reference is accurate only as of the date of the document incorporated by reference, unless we indicate otherwise. Our business, financial condition, results of operations and prospects may have changed since those dates.

Unless otherwise stated or the context otherwise requires, references in this prospectus to **Heat**, **the Company**, **we**, **our** and **us** refer to Heat Biologics, Inc., a Delaware corporation and its consolidated subsidiaries, unless otherwise specified. When we refer to **you**, we mean the holders of the applicable series of securities.

PROSPECTUS SUMMARY

The items in the following summary are described in more detail elsewhere in this prospectus and in the documents incorporated by reference herein. This summary provides an overview of selected information and does not contain all the information you should consider before investing in our common stock. Therefore, you should read the entire prospectus and any free writing prospectus that we have authorized for use in connection with this offering carefully, including the Risk Factors section and other documents or information included or incorporated by reference in this prospectus before making any investment decision.

Overview

We are a development stage biopharmaceutical company engaged in the development of novel allogeneic, off-the-shelf cellular therapeutic vaccines to combat a wide range of cancers and infectious diseases. Our proprietary *ImPACT* _ Immune_Pan_Antigen_Cytotoxic_Therapy is being designed to deliver live, genetically-modified, irradiated human cells which are reprogrammed to pump out a broad spectrum of cancer-associated antigens together with a potent immune adjuvant called gp96 to educate and activate a cancer patient's immune system to recognize and kill cancerous cells. We intend for our *ImPACT* cells to secrete an antigen-adjuvant complex that generates anti-cancer immune responses in patients by mobilizing and activating cytotoxic killer T cells that target multiple cancer antigens, thus harnessing a patient's own immune system to fight cancer.

Unlike autologous or personalized therapeutic vaccine approaches which require extraction and processing of cancer or blood from each individual patient, our *ImPACT* therapeutic vaccine uses a master cell line containing a host of known and unknown tumor associated antigens to mass-produce a single vaccine product applicable to all patients with a particular cancer type. We believe our off-the-shelf, allogeneic immunotherapy offers logistical, manufacturing and cost of goods benefits compared to autologous patient-specific approaches.

Our most advanced product candidates are HS-110 and HS-410.

HS-110

We have commenced a Phase 2 trial in non-small cell lung cancer (NSCLC) patients with our therapeutic vaccine candidate HS-110 (viagenpumatulcel-L). The Phase 2 trial will evaluate HS-110 in combination with low dose cyclophosphamide versus chemotherapy alone in third- and fourth-line NSCLC patients. The trial will enroll 123

patients at approximately 20-30 investigative centers over 24 months. Recruitment for the trial began in the third quarter of 2014 and we anticipate completion of dosing by the second quarter of 2016. We intend to complete an interim analysis for immune response in the first half of 2015 after 14 patients have been treated for nine weeks with HS-110 in combination with low dose cyclophosphamide. HS-110 is a biologic product which consists of a lung cancer cell line that has been genetically modified using our *ImPACT* technology platform to secrete a wide range of lung cancer associated antigens bound to a gp96 adjuvant and is designed to activate a T-cell mediated pan-antigen immune response against the patient's cancer.

The inventor of the *ImPACT* technology that we license reported results from a Phase 1 open-label, single center clinical trial of HS-110 in patients with advanced NSCLC. We believe the results provide clinical evidence that HS-110 is capable of generating anti-cancer immune responses. Eighteen patients were vaccinated, and 15 of the 18 vaccinated patients completed the first course of three planned courses of therapy. Two patients completed all three planned courses of therapy (defined as three, six week treatment cycles).

HS-110 showed no overt toxicity. There were no serious adverse events (SAEs) that were considered by the trial investigator to be treatment-related. Most of the adverse events (AEs) were reported as mild or moderate (grade 1 or 2) with the most frequent being skin induration and rash that were transitory and usually resolved in 1 to 2 weeks. HS-110 provides evidence of a CD8-CTL IFN- γ immune response in patients with advanced NSCLC. In 11 of the 15 patients (73%) that completed the first course of therapy with HS-110, there was a twofold or greater increase in CD8 cells secreting interferon gamma (CD8-CTL IFN- γ). These patients also exhibited an estimated median survival of 16.5 months (95% CI: 7.1-20.0). In contrast, 4 patients were immune non-responders and survived 2.1, 2.3, 6.7, and 6.7 months, or a median survival of 4.5 months, which is consistent with the expected survival times in this patient population. The protocol required that we look for such responses, but, as is typical in immunotherapy, no partial or complete tumor responses were observed. The median one-year overall survival rate of patients in the study was 44% (95% CI: 21.6-65.1), comparing favorably to a 5.5% rate based on published data from a 43-patient advanced lung cancer population. One of the late-stage lung cancer patients survived over four years since starting the therapy and another patient survived over three years since starting the therapy. These findings were consistent with multiple pre-clinical published studies on *ImPACT* therapy.

HS-410

We have initiated dosing in a Phase 1/2 bladder cancer trial with HS-410. HS-410 is a biologic product which consists of a bladder cancer cell line which has been genetically modified using our *ImPACT* technology platform to secrete a wide range of bladder cancer antigens bound to a gp96 adjuvant and is designed to activate a T-cell mediated pan-antigen immune response against the patient's bladder cancer. To date, we have dosed 9 patients in our 84-patient, Phase 1/2 trial to examine safety, tolerability, immune response and preliminary clinical activity of HS-410 in patients with high risk, superficial bladder cancer who have completed surgical resection and 3-6 weekly intravesical bacillus Calmette-Guérin (BCG) immunotherapy installations. We anticipate including approximately 12-18 clinical sites with an enrollment period of 18-24 months. Patient recruitment began in December 2013. In September 2014, we completed the required enrollment of the Phase 1 portion of the study to advance to the Phase 2 study. We anticipate that the Phase 2 study will commence in the fourth quarter of 2014 and that dosing will be completed in approximately the third quarter of 2015.

Additional Indications

We continue to evaluate other indications for our *ImPACT* therapeutic vaccines and have developed a cell line for ovarian cancer and one for triple negative breast cancer. Our decision to further pursue either of these two product candidates or any additional product candidates other than our two lead product candidates will be based in part upon available funding and partnering opportunities. To date, in excess of \$14,000,000 of funding has been awarded to the primary inventor of the technology we license by the National Institutes of Health (NIH) and through other research and clinical grants, which has been used to further develop our *ImPACT* technology platform that we license. We have little control over the direction of the NIH grant funds that have been received by the primary inventor of the technology we license and since payment is made to the inventors as opposed to us we do not recognize any revenue

from such grant funds nor do they fund any expenses that we incur. Although earmarked for further development of the technology that we license, any funds awarded to the primary inventor are used in his discretion and we have little control over his use of the funds. The NIH is also currently fully funding the primary inventor's study of an HS-HIV product candidate in non-human primates with a therapeutic and prophylactic vaccine for the treatment and prevention of HIV utilizing the *ImPACT* approach.

The table below summarizes our current product candidates and their stages of development:

Product Candidate	Indication	Phase of Development	Upcoming Milestone(s)
HS-110	Non-Small Cell Lung Cancer (NSCLC)	Enrolling patients	2015 - Interim analysis for immune response
HS-410	Bladder Cancer Adjuvant	Enrolling patients	2014 - Report Phase 1 data on safety 2015 - Report Phase 1 data on immune response

ImPACT Therapy Novel Pan-Antigen Immune Activation

Our *ImPACT* therapy is a novel technology platform designed to educate and stimulate the immune system to combat specific disease targets, such as cancer cells. *ImPACT* utilizes live attenuated, human-derived, genetically-modified cells to generate an array of tumor associated antigens and secrete an essential immunostimulatory protein called gp96-Ig . The secreted proteins are designed to generate an immune response against cancer cells by mobilizing and activating a patient's own killer T cells to target a broad array of different tumor antigens with the goal of eliminating cancer cells. In contrast with other vaccine technologies that target only one antigen, *ImPACT*'s pan-antigen approach which may enable the body to induce and maintain an immune response against a broad array of tumor-specific proteins, by potentially providing a more robust and sustained immune response and limiting cancer cells' ability to evade the immune system. We believe the clinical and pre-clinical results suggest that *ImPACT* generates anti-tumor immune responses capable of targeting and destroying tumors. We believe our novel, off-the-shelf, live cell therapy has the potential to be used to not only combat a wide range of cancers, but also against various infectious diseases, such as hepatitis C, malaria and HIV, for which non-human primate studies, which we believe are encouraging, have been completed. We have leveraged our existing infrastructure by developing additional product candidates in areas where we can use our proprietary technology. Our success will depend on the clinical and regulatory success of our product candidates and our ability to retain, on commercially reasonable terms, financial and managerial resources, which are currently limited. To date, we have not received regulatory approval for any of our product candidates or derived any revenues from their sales. Moreover, there can be no assurance that we will ever receive regulatory approval for any of our product candidates or derive any revenues from their sales. We should have sufficient capital to operate the company for at least 12 months.

General Corporate Information

We were incorporated under the laws of the State of Delaware on June 10, 2008. Our principal offices are located at 801 Capitola Drive, Durham, North Carolina 27713. Our website address is www.heatbio.com. The information contained in, and that can be accessed through, our website is not incorporated into and is not a part of this report.

THE OFFERING

We may offer shares of our common stock, warrants to purchase any of such securities, either individually or in combination, and/or units consisting of some or all of such securities for total gross proceeds of up to \$50 million, from time to time under this prospectus, together with the applicable prospectus supplement and any related free writing prospectus, at prices and on terms to be determined by market conditions at the time of any offering. Each time we offer a type or series of securities under this prospectus, we will provide a prospectus supplement that will describe the specific amounts, prices and other important terms of the securities being offered. Below is a summary of the securities we may offer under this prospectus (together with the applicable prospectus supplement).

We may sell the securities directly to investors or to or through agents, underwriters or dealers. We, and our agents or underwriters, reserve the right to accept or reject all or part of any proposed purchase of securities. Each prospectus supplement will set forth the names of any underwriters, dealers or agents involved in the sale of securities described in that prospectus supplement and any applicable fee, commission or discount arrangements with them.

RISK FACTORS THAT MAY AFFECT FUTURE RESULTS

*You should consider carefully the risks discussed under the section captioned **Risk Factors** contained in our annual report on Form 10-K for the year ended December 31, 2013 and in our subsequent quarterly reports on Form 10-Q, as updated by our subsequent filings under the Securities Exchange Act of 1934, as amended, or the Exchange Act, each of which is incorporated by reference in this prospectus in its entirety, together with other information in this prospectus, and the information and documents incorporated by reference in this prospectus, and any free writing prospectus that we have authorized for use in connection with this offering before you make a decision to invest in our common stock. If any of these events actually occur, our business, operating results, prospects or financial condition could be materially and adversely affected. This could cause the trading price of our common stock to decline and you may lose all or part of your investment.*

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, including the documents incorporated by reference in it, contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934 as amended, or the Exchange Act. These statements may be made directly in this document or they may be made part of this document by reference to other documents filed with the SEC, which is known as incorporation by reference. You can find many (but not all) of these statements by looking for words such as approximates, believes, expects, anticipates, estimates, intends, plans, would, could, may or other in this prospectus or the documents incorporated by reference.

We caution investors that any forward-looking statements presented in this prospectus or the documents incorporated by reference, or those which we may make orally or in writing from time to time, are based on our beliefs and assumptions, as well as information currently available to us. Such statements are based on assumptions and the actual outcome will be affected by known and unknown risks, trends, uncertainties and factors that are beyond our control or ability to predict. Although we believe that our assumptions are reasonable, they are not guarantees of future performance and some will inevitably prove to be incorrect. As a result, our actual future results can be expected to differ from our expectations, and those differences may be material. Accordingly, investors should use caution in relying on past forward-looking statements, which are based on known results and trends at the time they are made, to anticipate future results or trends.

Some of the risks and uncertainties that may cause our actual results, performance or achievements to differ materially from those expressed or implied by forward-looking statements include the following:

.

our ability to implement our business plan;

.

our ability to raise additional capital to meet our liquidity needs;

.

our ability to generate product revenues;

.

our ability to achieve profitability;

.
our ability to comply with our loan covenants;

.
our ability to satisfy U.S. (including FDA) and international regulatory requirements;

.
our ability to obtain market acceptance of our technology and products;

.
our ability to compete in the market;

.
our ability to advance our clinical trials;

.
our ability to fund, design and implement clinical trials;

.
our ability to maintain our present customer base and retain new customers;

.
our ability to demonstrate that our product candidates are safe for human use and effective for indicated uses;

.
our ability to gain acceptance of physicians and patients for use of our products;

.
our dependency on third-party researchers and manufacturers and licensors;

.
our ability to establish and maintain strategic partnerships, including for the distribution of products;

.
our ability to attract and retain a sufficient qualified personnel;

.
our ability our ability to obtain or maintain patents or other appropriate protection for the intellectual property;

.
our dependency on the intellectual property licensed to us or possessed by third parties;

.
our ability to adequately support future growth; and

.
our potential product liability or intellectual property infringement claims.

This prospectus and all subsequent written and oral forward-looking statements attributable to us or any person acting on our behalf are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. We do not undertake any obligation to release publicly any revisions to our forward-looking statements to reflect events or circumstances after the dates that such statements are made.

For more information on the uncertainty of forward-looking statements, see **Risk Factors** in our Annual Reports on Form 10-K and our Quarterly Reports on Form 10-Q and any applicable prospectus supplement.

USE OF PROCEEDS

We intend to use the net proceeds, if any, from the sales of securities offered by this prospectus for general corporate purposes, which may include, among other things, increasing our working capital, funding research and development (including clinical trials), vendor payables, regulatory submissions, hiring additional personnel and capital expenditures. In addition, we may use a portion of the net proceeds for licensing or acquiring intellectual property to incorporate into our products and product candidates or our research and development programs. We may also use a portion of the net proceeds to in-license, acquire or invest in complementary businesses or products; however, we have no current commitments or obligations to do so.

The amounts and timing of our actual expenditures will depend on numerous factors, including our development and commercialization efforts, as well as the amount of cash used in our operations. We therefore cannot estimate with certainty the amount of net proceeds to be used for the purposes described above. We may find it necessary or advisable to use the net proceeds for other purposes, and we will have broad discretion in the application of the net proceeds. Pending the uses described above, we plan to invest the net proceeds from this offering in short-term, investment-grade, interest-bearing securities.

DIVIDEND POLICY

We have never paid cash dividends on our common stock. Moreover, we do not anticipate paying periodic cash dividends on our common stock for the foreseeable future. We intend to use all available cash and liquid assets in the operation and growth of our business. Any future determination about the payment of dividends will be made at the discretion of our board of directors and will depend upon our earnings, if any, capital requirements, operating and financial conditions and on such other factors as our board of directors deems relevant.

DESCRIPTION OF OUR CAPITAL STOCK

The following is a summary of the rights of our common stock and related provisions of our articles of incorporation and bylaws. For more detailed information, please see our articles of incorporation and bylaws.

We are authorized to issue 50,000,000 shares of common stock, par value \$0.0002 per share, of which 6,464,178 shares are outstanding and 10,000,000 shares of Preferred Stock, par value \$.0001 per share, of which 112,500 shares are designated Series 1 Preferred Stock, 2,000,000 shares are designated Series A Preferred Stock, 4,100,000 are

designated as Series B-1 Preferred Stock and 2,000,000 are designated Series B-2 Preferred Stock. There are currently no shares of Preferred Stock outstanding.

Common Stock

Reverse Stock Split

On May 29, 2013, we effected a 1-for-2.3 reverse stock split. Upon the effectiveness of the reverse stock split, every 2.3 shares of outstanding common stock decreased to one share of common stock. Similarly, the number of shares of common stock into which each outstanding option and warrant to purchase common stock is exercisable decreased on a 1-for-2.3 basis and the exercise price of each outstanding option and warrant to purchase common stock increased proportionately. In addition, the applicable conversion price of the Preferred Stock was proportionately increased to adjust for the stock split resulting in a proportionate decrease in the number of shares that were issued upon conversion of the Preferred Stock upon the closing of our IPO.

Unless otherwise indicated, all references to share numbers in this prospectus filed as part of this registration statement reflect the effects of this reverse stock split.

The holders of our common stock are entitled to one vote per share on all matters to be voted on by the shareholders. Subject to preferences that may be applicable to any outstanding shares of Preferred Stock, holders of common stock are entitled to receive ratably such dividends as may be declared by the Board out of funds legally available therefore. If we liquidate, dissolve or wind up, holders of common stock are entitled to share ratably in all assets remaining after payment of liabilities and the liquidation preferences of any outstanding shares of Preferred Stock. Holders of common stock have no preemptive, conversion or subscription rights. There are no redemption or sinking fund provisions applicable to the common stock. All outstanding shares of common stock are, and all shares of common stock to be outstanding upon completion of this offering will be, fully paid and nonassessable. Except as otherwise required by Delaware law, all stockholder action, other than the election of directors, is taken by the vote of a majority of the outstanding shares of common stock voting as a single class present at a meeting of stockholders at which a quorum consisting of a majority of the outstanding shares of common stock is present in person or proxy. The election of directors by our stockholders, is determined by a plurality of the votes cast by the stockholders entitled to vote at any meeting held for such purposes at which a quorum consisting of a majority of the outstanding shares of common stock is present in person or proxy.

DESCRIPTION OF WARRANTS

Warrants

We may issue warrants for the purchase of common stock. We may issue warrants independently or in combination with common stock. In this prospectus, we have summarized certain general features of the warrants. We urge you, however, to read the applicable prospectus supplement (and any related free writing prospectus that we may authorize to be provided to you) related to the particular series of warrants being offered, as well as any warrant agreements and warrant certificates that contain the terms of the warrants. We will file as exhibits to the registration statement of which this prospectus is a part, or will incorporate by reference from reports that we file with the SEC, the form of warrant and/or the warrant agreement and warrant certificate, as applicable, that contain the terms of the particular series of warrants we are offering, and any supplemental agreements, before the issuance of such warrants.

Any warrants issued under this prospectus may be evidenced by warrant certificates. Warrants also may be issued under an applicable warrant agreement that we enter into with a warrant agent. We will indicate the name and address of the warrant agent, if applicable, in the prospectus supplement relating to the particular series of warrants being offered.

The following description, together with the additional information that we include in any applicable prospectus supplement and in any related free writing prospectus that we may authorize to be distributed to you, summarizes the material terms and provisions of the warrants that we may offer under this prospectus, which may be issued in one or more series. While the terms we have summarized below will apply generally to any warrants that we may offer under

this prospectus, we will describe the particular terms of any series of warrants in more detail in the applicable prospectus supplement and in any related free writing prospectus that we may authorize to be distributed to you. The following description of warrants will apply to the warrants offered by this prospectus unless we provide otherwise in the applicable prospectus supplement. The applicable prospectus supplement for a particular series of warrants may specify different or additional terms.

We will file as exhibits to the registration statement of which this prospectus is a part, or will incorporate by reference from reports that we file with the SEC, the form of warrant and/or the warrant agreement and warrant certificate, as applicable, that contain the terms of the particular series of warrants we are offering, and any supplemental agreements, before the issuance of such warrants.

The summary below and that contained in any prospectus supplement is qualified in its entirety by reference to all of the provisions of the warrant and/or the warrant agreement and warrant certificate, as applicable, applicable to a particular series of debt securities. We urge you to read the applicable prospectus supplements and any related free writing prospectuses related to the warrants that we may offer under this prospectus, as well as the complete warrant and/or the warrant agreement and warrant certificate, as applicable, that contains the terms of the warrants.

General

We will describe in the applicable prospectus supplement the terms of the series of warrants being offered, including:

- the offering price and aggregate number of warrants offered;
- the currency for which the warrants may be purchased;
- if applicable, the number of warrants issued with each such security;

the number of shares of common stock, as the case may be, purchasable upon the exercise of one warrant and the price at which these shares may be purchased upon such exercise;

the effect of any merger, consolidation, sale or other disposition of our business on the warrant agreements and the warrants;

the terms of any rights to redeem or call the warrants;

any provisions for changes to or adjustments in the exercise price or number of securities issuable upon exercise of the warrants;

the dates on which the right to exercise the warrants will commence and expire;

the manner in which the warrant agreements and warrants may be modified;

a discussion of any material or special U.S. federal income tax considerations of holding or exercising the warrants;

the terms of the securities issuable upon exercise of the warrants; and

any other specific terms, preferences, rights or limitations of or restrictions on the warrants.

Before exercising their warrants, holders of warrants will not have any of the rights of holders of the securities purchasable upon such exercise, including the right to receive dividends, if any, or, payments upon our liquidation, dissolution or winding up or to exercise voting rights, if any:

Exercise of Warrants

Each warrant will entitle the holder to purchase the securities that we specify in the applicable prospectus supplement at the exercise price that we describe in the applicable prospectus supplement. The warrants may be exercised as set forth in the prospectus supplement relating to the warrants offered. Unless we otherwise specify in the applicable prospectus supplement, warrants may be exercised at any time up to the close of business on the expiration date set forth in the prospectus supplement relating to the warrants offered thereby. After the close of business on the expiration date, unexercised warrants will become void.

Upon receipt of payment and the warrant or warrant certificate, as applicable, properly completed and duly executed at the corporate trust office of the warrant agent, if any, or any other office, including ours, indicated in the prospectus supplement, we will, as soon as practicable, issue and deliver the securities purchasable upon such exercise. If less than all of the warrants (or the warrants represented by such warrant certificate) are exercised, a new warrant or a new warrant certificate, as applicable, will be issued for the remaining warrants.

Enforceability of Rights by Holders of Warrants

Each warrant agent, if any, will act solely as our agent under the applicable warrant agreement and will not assume any obligation or relationship of agency or trust with any holder of any warrant. A warrant agent may act as warrant agent for more than one issue of warrants. A warrant agent will have no duty or responsibility in case of any default by us under the applicable warrant agreement or warrant, including any duty or responsibility to initiate any proceedings at law or otherwise, or to make any demand upon us. Any holder of a warrant may, without the consent of the related warrant agent or the holder of any other warrant, enforce by appropriate legal action its right to exercise, and receive the securities purchasable upon exercise of, its warrants.

Governing Law

Unless we otherwise specify in the applicable prospectus supplement, the warrants and any warrant agreements will be governed by and construed in accordance with the laws of the State of New York.

DESCRIPTION OF UNITS

Units

We may issue units consisting of any combination of our common stock and warrants. We will issue each unit so that the holder of the unit is also the holder of each security included in the unit. As a result, the holder of a unit will have the rights and obligations of a holder of each included security. The unit agreement under which a unit is issued may provide that the securities included in the unit may not be held or transferred separately, at any time or at any time before a specified date.

The summary below and that contained in any prospectus supplement is qualified in its entirety by reference to all of the provisions of the unit agreement and/or unit certificate, and depositary arrangements, if applicable. We urge you to read the applicable prospectus supplements and any related free writing prospectuses related to the units that we may offer under this prospectus, as well as the complete unit agreement and/or unit certificate, and depositary arrangements, as applicable, that contain the terms of the units.

We will file as exhibits to the registration statement of which this prospectus is a part, or will incorporate by reference from reports that we file with the SEC, the form of unit agreement and/or unit certificate, and depositary arrangements, as applicable, that contain the terms of the particular series of units we are offering, and any supplemental agreements, before the issuance of such units.

The applicable prospectus supplement, information incorporated by reference or free writing prospectus may describe:

- the designation and terms of the units and of the securities comprising the units, including whether and under what circumstances those securities may be held or transferred separately;
- any provisions for the issuance, payment, settlement, transfer, or exchange of the units or of the securities composing the units;
- whether the units will be issued in fully registered or global form; and
- any other terms of the units.

The applicable provisions described in this section, as well as those described under **Common Stock** and **Warrants** above, will apply to each unit and to each security included in each unit, respectively.

PLAN OF DISTRIBUTION

We may sell the securities from time to time pursuant to underwritten public offerings, negotiated transactions, block trades or a combination of these methods or through underwriters or dealers, through agents and/or directly to one or more purchasers. The securities may be distributed from time to time in one or more transactions:

- at a fixed price or prices, which may be changed;
- at market prices prevailing at the time of sale;
- at prices related to such prevailing market prices; or

- at negotiated prices.

Each time that we sell securities covered by this prospectus, we will provide a prospectus supplement or supplements that will describe the method of distribution and set forth the terms and conditions of the offering of such securities, including the offering price of the securities and the proceeds to us, if applicable.

Offers to purchase the securities being offered by this prospectus may be solicited directly. Agents may also be designated to solicit offers to purchase the securities from time to time. Any agent involved in the offer or sale of our securities will be identified in a prospectus supplement.

If a dealer is utilized in the sale of the securities being offered by this prospectus, the securities will be sold to the dealer, as principal. The dealer may then resell the securities to the public at varying prices to be determined by the dealer at the time of resale.

If an underwriter is utilized in the sale of the securities being offered by this prospectus, an underwriting agreement will be executed with the underwriter at the time of sale and the name of any underwriter will be provided in the prospectus supplement that the underwriter will use to make resales of the securities to the public. In connection with the sale of the securities, we, or the purchasers of securities for whom the underwriter may act as agent, may compensate the underwriter in the form of underwriting discounts or commissions. The underwriter may sell the securities to or through dealers, and those dealers may receive compensation in the form of discounts, concessions or commissions from the underwriters and/or commissions from the purchasers for which they may act as agent. Unless otherwise indicated in a prospectus supplement, an agent will be acting on a best efforts basis and a dealer will purchase securities as a principal, and may then resell the securities at varying prices to be determined by the dealer.

Any compensation paid to underwriters, dealers or agents in connection with the offering of the securities, and any discounts, concessions or commissions allowed by underwriters to participating dealers will be provided in the applicable prospectus supplement. Underwriters, dealers and agents participating in the distribution of the securities may be deemed to be underwriters within the meaning of the Securities Act, and any discounts and commissions received by them and any profit realized by them on resale of the securities may be deemed to be underwriting discounts and commissions. We may enter into agreements to indemnify underwriters, dealers and agents against civil liabilities, including liabilities under the Securities Act, or to contribute to payments they may be required to make in respect thereof and to reimburse those persons for certain expenses.

Any common stock will be listed on the NASDAQ Capital Market, but any other securities may or may not be listed on a national securities exchange. To facilitate the offering of securities, certain persons participating in the offering may engage in transactions that stabilize, maintain or otherwise affect the price of the securities. This may include over-allotments or short sales of the securities, which involve the sale by persons participating in the offering of more securities than were sold to them. In these circumstances, these persons would cover such over-allotments or short positions by making purchases in the open market or by exercising their over-allotment option, if any. In addition, these persons may stabilize or maintain the price of the securities by bidding for or purchasing securities in the open market or by imposing penalty bids, whereby selling concessions allowed to dealers participating in the offering may be reclaimed if securities sold by them are repurchased in connection with stabilization transactions. The effect of these transactions may be to stabilize or maintain the market price of the securities at a level above that which might otherwise prevail in the open market. These transactions may be discontinued at any time.

If indicated in the applicable prospectus supplement, underwriters or other persons acting as agents may be authorized to solicit offers by institutions or other suitable purchasers to purchase the securities at the public offering price set forth in the prospectus supplement, pursuant to delayed delivery contracts providing for payment and delivery on the date or dates stated in the prospectus supplement. These purchasers may include, among others, commercial and savings banks, insurance companies, pension funds, investment companies and educational and charitable institutions. Delayed delivery contracts will be subject to the condition that the purchase of the securities covered by the delayed delivery contracts will not at the time of delivery be prohibited under the laws of any jurisdiction in the United States to which the purchaser is subject. The underwriters and agents will not have any responsibility with respect to the validity or performance of these contracts.

We may engage in at the market offerings into an existing trading market in accordance with Rule 415(a)(4) under the Securities Act. In addition, we may enter into derivative transactions with third parties, or sell securities not covered by this prospectus to third parties in privately negotiated transactions. If the applicable prospectus supplement so indicates, in connection with those derivatives, the third parties may sell securities covered by this prospectus and the applicable prospectus supplement, including in short sale transactions. If so, the third party may use securities pledged by us or borrowed from us or others to settle those sales or to close out any related open borrowings of stock, and may use securities received from us in settlement of those derivatives to close out any related open borrowings of stock. The third party in such sale transactions will be an underwriter and, if not identified in this prospectus, will be named

in the applicable prospectus supplement (or a post-effective amendment). In addition, we may otherwise loan or pledge securities to a financial institution or other third party that in turn may sell the securities short using this prospectus and an applicable prospectus supplement. Such financial institution or other third party may transfer its economic short position to investors in our securities or in connection with a concurrent offering of other securities.

The specific terms of any lock-up provisions in respect of any given offering will be described in the applicable prospectus supplement.

The underwriters, dealers and agents may engage in transactions with us, or perform services for us, in the ordinary course of business for which they receive compensation.

LEGAL MATTERS

Gracin & Marlow, LLP, New York, New York will pass upon certain legal matters relating to the issuance and sale of the common stock, warrants and units offered hereby on behalf of Heat Biologics, Inc. Additional legal matters may be passed upon for us or any underwriters, dealers or agents, by counsel that we will name in the applicable prospectus supplement.

EXPERTS

The financial statements as of December 31, 2013 and December 31, 2012 and for each of the two years in the period ended December 31, 2013 incorporated by reference in this Prospectus have been so incorporated in reliance on the report of BDO USA, LLP, an independent registered public accounting firm, incorporated herein by reference, given on authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and special reports, proxy statements and other information with the Securities and Exchange Commission. You may read and copy any document we file at the SEC's public reference room located at 100 F Street N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the operation of the public reference room. Our public filings are also available to the public at the SEC's web site at <http://www.sec.gov>.

This prospectus is part of a registration statement on Form S-3 that we have filed with the SEC under the Securities Act. This prospectus does not contain all of the information in the registration statement. We have omitted certain parts of the registration statement, as permitted by the rules and regulations of the SEC. You may inspect and copy the registration statement, including exhibits, at the SEC's public reference room or Internet site.

Additional information about Heat Biologics, Inc. is contained at our website, www.heatbiologics.com. Information on our website is not incorporated by reference into this report. We make available on our website our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K as soon as reasonably practicable after those reports are filed with the SEC. The following Corporate Governance documents are also posted on our website: Code of Ethics and the Charters for the Audit Committee, Compensation Committee and Nominating and Governance Committee of the Board of Directors.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The SEC allows us to incorporate by reference the information we file with it which means that we can disclose important information to you by referring you to those documents instead of having to repeat the information in this

prospectus. The information incorporated by reference is considered to be part of this prospectus, and later information that we file with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below and any future filings made with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act between the date of this prospectus and the termination of the offering, however, we are not incorporating by reference any documents or portions thereof, whether specifically listed below or filed in the future, that are not deemed filed with the SEC, or any information furnished pursuant to Items 2.02 or 7.01 of Form 8-K or related exhibits furnished pursuant to Item 9.01 of Form 8-K:

- Our annual report on Form 10-K for the fiscal year ended December 31, 2013 filed with the SEC on March 31, 2014;
- Our quarterly report on Form 10-Q for the quarter ended March 31, 2014 filed with the SEC on May 12, 2014;
- Our quarterly report on Form 10-Q for the quarter ended June 30, 2014 filed with the SEC on August 13, 2014;
- Our annual report on Form 10-K/A Amendment No. 1 for the fiscal year ended December 31, 2013 filed with the SEC on October 10, 2014;
- Our current reports on Form 8-K filed with the SEC on January 21, February 3, March 5, March 31, May 7, June 13, August 25, 2014 and October 2, 2014;
- Our Definitive Proxy Statement on Schedule 14A filed with the SEC on May 8, 2014; and
- The description of our common stock set forth in our registration statement on Form 8-A12B, filed with the SEC on July 8, 2013 (File No. 001-35994).

You may obtain, free of charge, a copy of any of these documents (other than exhibits to these documents unless the exhibits are specifically incorporated by reference into these documents or referred to in this prospectus) by writing or calling us at the following address and telephone number:

801 Capitola Drive
Durham, North Carolina 27713

(919) 240-7133

The information in this prospectus is not complete and may be changed. These securities may not be sold until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell nor does it seek an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED OCTOBER 10, 2014

PROSPECTUS

Up to \$10,000,000 of Shares

Common Stock

We have entered into a Controlled Equity Offering sales agreement with Cantor Fitzgerald & Co., relating to shares of our common stock offered by this prospectus and the accompanying base prospectus. In accordance with the terms of the sales agreement, we may offer and sell shares of our common stock having an aggregate offering price of up to \$10,000,000 from time to time through Cantor Fitzgerald & Co., acting as agent.

Our common stock is listed on the NASDAQ Capital Market under the symbol HTBX. On October 9, 2014, the last reported sale price of our common stock on the NASDAQ Capital Market was \$6.25 per share.

As of October 6, 2014, the aggregate market value of our outstanding common stock held by non-affiliates as calculated pursuant to the rules of the Securities and Exchange Commission, was \$32,269,856, based on 6,481,752 shares of outstanding common stock, of which 2,067,271 shares are held by affiliates, and a per share price of \$7.31 based on the closing sale price of our common stock on October 6, 2014. Pursuant to General Instruction I.B.6 of Form S-3, in no event will we sell securities in a public primary offering with a value exceeding more than one-third of our public float (the market value of our common stock held by our non-affiliates) in any 12-month period so long as our public float remains below \$75,000,000. We have not offered any securities during the past twelve months pursuant to General Instruction I.B.6 of Form S-3.

Sales of our common stock, if any, under this prospectus may be made in sales deemed to be at-the-market equity offerings as defined in Rule 415 promulgated under the Securities Act of 1933, as amended, or the Securities Act, including sales made directly on or through the NASDAQ Capital Market, the existing trading market for our common stock, sales made to or through a market maker other than on an exchange or otherwise, in negotiated transactions at market prices prevailing at the time of sale or at prices related to such prevailing market prices, and/or any other method permitted by law, including in privately negotiated transactions. Cantor Fitzgerald & Co. will act as sales agent on a best efforts basis and use commercially reasonable efforts to sell on our behalf all of the shares of common stock requested to be sold by us, consistent with its normal trading and sales practices, on mutually agreed terms between Cantor Fitzgerald & Co. and us. There is no arrangement for funds to be received in any escrow, trust or similar arrangement.

Cantor Fitzgerald & Co. will be entitled to compensation at a fixed commission rate of 3.0% of the gross sales price per share sold. In connection with the sale of our common stock on our behalf, Cantor Fitzgerald & Co. will be deemed to be an underwriter within the meaning of the Securities Act and the compensation of Cantor Fitzgerald & Co. will be deemed to be underwriting commissions or discounts.

Investing in our common stock involves a high degree of risk. Before making an investment decision, please read the information under the heading Risk Factors beginning on page S-6 of this prospectus and in the documents incorporated by reference into this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus is _____, 2014.

TABLE OF CONTENTS

	Page
<u>ABOUT THIS PROSPECTUS</u>	S-1
<u>INDUSTRY AND MARKET DATA</u>	S-1
<u>PROSPECTUS SUMMARY</u>	S-2
<u>THE OFFERING</u>	S-5
<u>RISK FACTORS</u>	S-6
<u>SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS</u>	S-7
<u>USE OF PROCEEDS</u>	S-8
<u>DILUTION</u>	S-9
<u>PLAN OF DISTRIBUTION</u>	S-10
<u>LEGAL MATTERS</u>	S-11
<u>EXPERTS</u>	S-11
<u>WHERE YOU CAN FIND MORE INFORMATION</u>	S-11
<u>INCORPORATED OF CERTAIN DOCUMENTS BY REFERENCE</u>	S-11

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we have filed with the Securities and Exchange Commission, or SEC, utilizing a shelf registration process. Under the shelf registration process, we may offer shares of our common stock having an aggregate offering price of up to \$50,000,000 under the accompanying base prospectus. Under this prospectus and the accompanying base prospectus, we may offer shares of our common stock having an aggregate offering price of up to \$10,000,000 from time to time at prices and on terms to be determined by market conditions at the time of offering.

We provide information to you about this offering of shares of our common stock in two separate documents that are bound together: (1) this sales agreement prospectus, which describes the specific details regarding this offering; and (2) the accompanying base prospectus, which provides general information, some of which may not apply to this offering. Generally, when we refer to this prospectus, we are referring to both documents combined. If information in this sales agreement prospectus is inconsistent with the accompanying base prospectus, you should rely on this prospectus. However, if any statement in one of these documents is inconsistent with a statement in another document having a later date for example, a document incorporated by reference in this prospectus the statement in the document having the later date modifies or supersedes the earlier statement as our business, financial condition, results of operations and prospects may have changed since the earlier dates.

You should rely only on the information contained in, or incorporated by reference into, this prospectus and in any free writing prospectus that we may authorize for use in connection with this offering. We have not, and Cantor Fitzgerald & Co., or Cantor, has not, authorized any other person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. We are not, and Cantor is not, making an offer to sell or soliciting an offer to buy our securities in any jurisdiction in which an offer or solicitation is not authorized or in which the person making that offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make an offer or solicitation. You should assume that the information appearing in this prospectus, the documents incorporated by reference into this prospectus, and in any free writing prospectus that we may authorize for use in connection with this offering, is accurate only as of the date of those respective documents. Our business, financial condition, results of operations and prospects may have changed since those dates. You should read this prospectus, the documents incorporated by reference into this prospectus, and any free writing prospectus that we may authorize for use in connection with this offering, in their entirety before making an investment decision. You should also read and consider the information in the documents to which we have referred you in the sections of this prospectus entitled Where You Can Find More Information and Incorporation of Certain Information by Reference.

We are offering to sell, and seeking offers to buy, shares of common stock only in jurisdictions where offers and sales are permitted. The distribution of this prospectus and the offering of the common stock in certain jurisdictions may be restricted by law. Persons outside the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the offering of the common stock and the distribution of this prospectus outside the United States. This prospectus does not constitute, and may not be used in connection with,

an offer to sell, or a solicitation of an offer to buy, any securities offered by this prospectus by any person in any jurisdiction in which it is unlawful for such person to make such an offer or solicitation.

INDUSTRY AND MARKET DATA

We obtained the industry and market data in this prospectus from our own research as well as from industry and general publications, surveys and studies conducted by third parties. These data involve a number of assumptions and limitations, and you are cautioned not to give undue weight to such estimates. In addition, projections, assumptions and estimates of our future performance and the future performance of the industry in which we operate is necessarily subject to a high degree of uncertainty and risk due to a variety of factors, including those described in Risk Factors and elsewhere in this prospectus. These and other factors could cause results to differ materially from those expressed in the estimates made by the independent parties and by us.

S-1

PROSPECTUS SUMMARY

The items in the following summary are described in more detail elsewhere in this prospectus and in the documents incorporated by reference herein. This summary provides an overview of selected information and does not contain all the information you should consider before investing in our common stock. Therefore, you should read the entire prospectus and any free writing prospectus that we have authorized for use in connection with this offering carefully, including the Risk Factors section and other documents or information included or incorporated by reference in this prospectus before making any investment decision.

Overview

We are a development stage biopharmaceutical company engaged in the development of novel allogeneic, off-the-shelf cellular therapeutic vaccines to combat a wide range of cancers and infectious diseases. Our proprietary *ImPACT* _ Immune Pan Antigen Cytotoxic Therapy is being designed to deliver live, genetically-modified, irradiated human cells which are reprogrammed to pump out a broad spectrum of cancer-associated antigens together with a potent immune adjuvant called gp96 to educate and activate a cancer patient's immune system to recognize and kill cancerous cells. We intend for our *ImPACT* cells to secrete an antigen-adjuvant complex that generates anti-cancer immune responses in patients by mobilizing and activating cytotoxic killer T cells that target multiple cancer antigens, thus harnessing a patient's own immune system to fight cancer.

Unlike autologous or personalized therapeutic vaccine approaches which require extraction and processing of cancer or blood from each individual patient, our *ImPACT* therapeutic vaccine uses a master cell line containing a host of known and unknown tumor associated antigens to mass-produce a single vaccine product applicable to all patients with a particular cancer type. We believe our off-the-shelf, allogeneic immunotherapy offers logistical, manufacturing and cost of goods benefits compared to autologous patient-specific approaches.

Our most advanced product candidates are HS-110 and HS-410.

HS-110

We have commenced a Phase 2 trial in non-small cell lung cancer (NSCLC) patients with our therapeutic vaccine candidate HS-110 (viagenpumatulcel-L). The Phase 2 trial will evaluate HS-110 in combination with low dose cyclophosphamide versus chemotherapy alone in third- and fourth-line NSCLC patients. The trial will enroll 123

patients at approximately 20-30 investigative centers over 24 months. Recruitment for the trial began in the third quarter of 2014 and we anticipate completion of dosing by the second quarter of 2016. We intend to complete an interim analysis for immune response in the first half of 2015 after 14 patients have been treated for nine weeks with HS-110 in combination with low dose cyclophosphamide. HS-110 is a biologic product which consists of a lung cancer cell line that has been genetically modified using our *ImPACT* technology platform to secrete a wide range of lung cancer associated antigens bound to a gp96 adjuvant and is designed to activate a T-cell mediated pan-antigen immune response against the patient's cancer.

The inventor of the *ImPACT* technology that we license reported results from a Phase 1 open-label, single center clinical trial of HS-110 in patients with advanced NSCLC. We believe the results provide clinical evidence that HS-110 is capable of generating anti-cancer immune responses. Eighteen patients were vaccinated, and 15 of the 18 vaccinated patients completed the first course of three planned courses of therapy. Two patients completed all three planned courses of therapy (defined as three, six week treatment cycles).

S-2

HS-110 showed no overt toxicity. There were no serious adverse events (SAEs) that were considered by the trial investigator to be treatment-related. Most of the adverse events (AEs) were reported as mild or moderate (grade 1 or 2) with the most frequent being skin induration and rash that were transitory and usually resolved in 1 to 2 weeks. HS-110 provides evidence of a CD8-CTL IFN- γ immune response in patients with advanced NSCLC. In 11 of the 15 patients (73%) that completed the first course of therapy with HS-110, there was a twofold or greater increase in CD8 cells secreting interferon gamma (CD8-CTL IFN- γ). These patients also exhibited an estimated median survival of 16.5 months (95% CI: 7.1-20.0). In contrast, 4 patients were immune non-responders and survived 2.1, 2.3, 6.7, and 6.7 months, or a median survival of 4.5 months, which is consistent with the expected survival times in this patient population. The protocol required that we look for such responses, but, as is typical in immunotherapy, no partial or complete tumor responses were observed. The median one-year overall survival rate of patients in the study was 44% (95% CI: 21.6-65.1), comparing favorably to a 5.5% rate based on published data from a 43-patient advanced lung cancer population. One of the late-stage lung cancer patients survived over four years since starting the therapy and another patient survived over three years since starting the therapy. These findings were consistent with multiple pre-clinical published studies on *ImPACT* therapy.

HS-410

We have initiated dosing in a Phase 1/2 bladder cancer trial with HS-410. HS-410 is a biologic product which consists of a bladder cancer cell line which has been genetically modified using our *ImPACT* technology platform to secrete a wide range of bladder cancer antigens bound to a gp96 adjuvant and is designed to activate a T-cell mediated pan-antigen immune response against the patient's bladder cancer. To date, we have dosed 9 patients in our 84-patient, Phase 1/2 trial to examine safety, tolerability, immune response and preliminary clinical activity of HS-410 in patients with high risk, superficial bladder cancer who have completed surgical resection and 3-6 weekly intravesical bacillus Calmette-Guérin (BCG) immunotherapy installations. We anticipate including approximately 12-18 clinical sites with an enrollment period of 18-24 months. Patient recruitment began in December 2013. In September 2014, we completed the required enrollment of the Phase 1 portion of the study to advance to the Phase 2 study. We anticipate that the Phase 2 study will commence in the fourth quarter of 2014 and that dosing will be completed in approximately the third quarter of 2015.

Additional Indications

We continue to evaluate other indications for our *ImPACT* therapeutic vaccines and have developed a cell line for ovarian cancer and one for triple negative breast cancer. Our decision to further pursue either of these two product candidates or any additional product candidates other than our two lead product candidates will be based in part upon available funding and partnering opportunities. To date, in excess of \$14,000,000 of funding has been awarded to the primary inventor of the technology we license by the National Institutes of Health (NIH) and through other research and clinical grants, which has been used to further develop our *ImPACT* technology platform that we license. We have little control over the direction of the NIH grant funds that have been received by the primary inventor of the technology we license and since payment is made to the inventors as opposed to us we do not recognize any revenue

from such grant funds nor do they fund any expenses that we incur. Although earmarked for further development of the technology that we license, any funds awarded to the primary inventor are used in his discretion and we have little control over his use of the funds. The NIH is also currently fully funding the primary inventor's study of an HS-HIV product candidate in non-human primates with a therapeutic and prophylactic vaccine for the treatment and prevention of HIV utilizing the *ImPACT* approach.

The table below summarizes our current product candidates and their stages of development:

Product Candidate	Indication	Phase of Development	Upcoming Milestone(s)
HS-110	Non-Small Cell Lung Cancer (NSCLC)	Enrolling patients	2015 - Interim analysis for immune response
HS-410	Bladder Cancer Adjuvant	Enrolling patients	2014 - Report Phase 1 data on safety 2015 - Report Phase 1 data on immune response

ImPACT Therapy Novel Pan-Antigen Immune Activation

Our *ImPACT* therapy is a novel technology platform designed to educate and stimulate the immune system to combat specific disease targets, such as cancer cells. *ImPACT* utilizes live attenuated, human-derived, genetically-modified cells to generate an array of tumor associated antigens and secrete an essential immunostimulatory protein called gp96-Ig . The secreted proteins are designed to generate an immune response against cancer cells by mobilizing and activating a patient's own killer T cells to target a broad array of different tumor antigens with the goal of eliminating cancer cells. In contrast with other vaccine technologies that target only one antigen, *ImPACT*'s pan-antigen approach which may enable the body to induce and maintain an immune response against a broad array of tumor-specific proteins, by potentially providing a more robust and sustained immune response and limiting cancer cells' ability to evade the immune system. We believe the clinical and pre-clinical results suggest that *ImPACT* generates anti-tumor immune responses capable of targeting and destroying tumors. We believe our novel, off-the-shelf, live cell therapy has the potential to be used to not only combat a wide range of cancers, but also against various infectious diseases, such as hepatitis C, malaria and HIV, for which non-human primate studies, which we believe are encouraging, have been completed. We have leveraged our existing infrastructure by developing additional product candidates in areas where we can use our proprietary technology. Our success will depend on the clinical and regulatory success of our product candidates and our ability to retain, on commercially reasonable terms, financial and managerial resources, which are currently limited. To date, we have not received regulatory approval for any of our product candidates or derived any revenues from their sales. Moreover, there can be no assurance that we will ever receive regulatory approval for any of our product candidates or derive any revenues from their sales. We should have sufficient capital to operate the company for at least 12 months.

General Corporate Information

We were incorporated under the laws of the State of Delaware on June 10, 2008. Our principal offices are located at 801 Capitola Drive, Durham, North Carolina 27713. Our website address is www.heatbio.com. The information contained in, and that can be accessed through, our website is not incorporated into and is not a part of this report.

S-4

THE OFFERING

Common stock offered by us	Shares of our common stock having an aggregate offering price of up to \$10,000,000.
Common stock to be outstanding after this offering	Up to 8,081,752 shares (as more fully described in the notes following this table), assuming sales of 1,600,000 shares of our common stock in this offering at an offering price of \$6.25 per share, which was the last reported sale price of our common stock on the NASDAQ Capital Market on October 9, 2014. The actual number of shares issued will vary depending on the sales price under this offering.
Manner of offering	At-the-market offering that may be made from time to time through our sales agent, Cantor Fitzgerald & Co. See Plan of Distribution on page S-10.
Use of Proceeds	We intend to use the net proceeds from this offering, if any, for general corporate purposes, which may include, among other things, increasing our working capital, funding research and development, clinical trials, vendor payables, potential regulatory submissions, hiring additional personnel and capital expenditures. In addition, we may use a portion of the net proceeds for licensing or acquiring intellectual property to incorporate into our products and product candidates or our research and development programs, and to fund possible investments in and acquisitions of complementary businesses or partnerships. See Use of Proceeds on page S-8.
Risk Factors	You should read the Risk Factors section of this prospectus and in the documents incorporated by reference in this

prospectus for a discussion of factors to consider before deciding to purchase shares of our common stock.

NASDAQ Capital Market symbol

HTBX

The number of shares of common stock shown above to be outstanding after this offering is based on 6,481,752 shares outstanding as of September 30, 2014, and excludes:

- 839,473 shares of our common stock issuable upon exercise of outstanding options under our equity incentive plans, at a weighted-average exercise price of \$4.77 per share; and
- 142,392 shares of our common stock reserved for issuance upon the exercise of outstanding warrants, each with a weighted-average exercise price of \$11.03 per share.

Unless otherwise stated, all information contained in this prospectus reflects an assumed public offering price of \$6.25 per share, which was the last reported sale price of our common stock on the NASDAQ Capital Market on October 9, 2014.

RISK FACTORS

You should consider carefully the risks described below and discussed under the section captioned Risk Factors contained in our annual report on Form 10-K for the year ended December 31, 2013 and in our subsequent quarterly reports on Form 10-Q as updated by our subsequent filings under the Securities Exchange Act of 1934, as amended, or the Exchange Act, each of which is incorporated by reference in this prospectus in their entirety, together with other information in this prospectus, and the information and documents incorporated by reference in this prospectus, and any free writing prospectus that we have authorized for use in connection with this offering before you make a decision to invest in our common stock. If any of the following events actually occur, our business, operating results, prospects or financial condition could be materially and adversely affected. This could cause the trading price of our common stock to decline and you may lose all or part of your investment. The risks below are not the only ones we face. Additional risks not presently known to us or that we currently deem immaterial may also affect our business operations.

If we do not meet the milestones for financing under our secured loans with Square 1 Bank, we may be forced to seek other sources of financing and if we default on our secured loan with Square 1 Bank we could be forced to suspend all operations.

We have entered into loans with Square 1 Bank that are secured by substantially all of our assets, excluding our intellectual property. Our loan agreement with Square 1 Bank sets forth various affirmative and negative covenants that we must comply with, including covenants regarding financial reporting, limits on our cash burn, incurrence of indebtedness and liens and merger and acquisitions. In addition, we are unable to borrow certain amounts under the Square 1 loan until we have achieved certain clinical milestones and we are required to continually run two clinical trials. If we fail to achieve the milestones, we may not have enough funding to complete our clinical trials as currently planned and may be forced to seek other sources of financing. If we fail to comply with these covenants or if we fail to make timely monthly payments under the secured loans when due, Square 1 Bank could declare our loans in default. Additionally, if we do not commercialize a product by the maturity date of the loan, we may be unable to repay the loans to Square 1 Bank. If we default on the loans, Square 1 Bank has the right to seize the collateral secured by the loans, which could result in our licenses reverting back to our licensor and could force us to suspend all operations. In order to comply with the covenants of the loans and to make timely payments to Square 1 Bank under the loans, we may need to raise additional capital, which might not be available to us on favorable terms or at all.

Additional Risks Relating To The Offering

Our management team may invest or spend the proceeds of this offering in ways with which you may not agree or in ways which may not yield a significant return.

Our management will have broad discretion over the use of proceeds from this offering. The net proceeds from this offering will be used for general corporate purposes, which may include, among other things, increasing our working capital and funding research and development, clinical trials, vendor payables, potential regulatory submissions, hiring additional personnel and capital expenditures. In addition, we may use a portion of the net proceeds for licensing or acquiring intellectual property to incorporate into our products and product candidates or our research and development programs, and to fund possible investments in and acquisitions of complementary businesses or partnerships. Our management will have considerable discretion in the application of the net proceeds, and you will not have the opportunity, as part of your investment decision, to assess whether the proceeds are being used appropriately. The net proceeds may be used for corporate purposes that do not increase our operating results or enhance the value of our common stock.

You may experience future dilution as a result of future equity offerings.

In order to raise additional capital, we may in the future offer additional shares of our common stock or other securities convertible into or exchangeable for our common stock at prices that may not be the same as the price per share in this offering. We may sell shares or other securities in any other offering at a price per share that is less than the price per share paid by investors in this offering, and investors purchasing shares or other securities in the future could have rights superior to existing stockholders. The price per share at which we sell additional shares of our common stock, or securities convertible or exchangeable into common stock, in future transactions may be higher or lower than the price per share paid by investors in this offering.

Resales of our common stock in the public market during this offering by our stockholders may cause the market price of our common stock to fall.

We may issue common stock from time to time in connection with this offering. This issuance from time to time of these new shares of our common stock, or our ability to issue these shares of common stock in this offering, could result in resales of our common stock by our current stockholders concerned about the potential dilution of their holdings. In turn, these resales could have the effect of depressing the market price for our common stock.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, including the documents incorporated by reference in it, contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934 as amended, or the Exchange Act. These statements may be made directly in this document or they may be made part of this document by reference to other documents filed with the SEC, which is known as incorporation by reference. You can find many (but not all) of these statements by looking for words such as approximates, believes, expects, anticipates, estimates, intends, plans, would, could, may or other in this prospectus or the documents incorporated by reference.

We caution investors that any forward-looking statements presented in this prospectus or the documents incorporated by reference, or those which we may make orally or in writing from time to time, are based on our beliefs and assumptions, as well as information currently available to us. Such statements are based on assumptions and the actual outcome will be affected by known and unknown risks, trends, uncertainties and factors that are beyond our control or ability to predict. Although we believe that our assumptions are reasonable, they are not guarantees of future performance and some will inevitably prove to be incorrect. As a result, our actual future results can be expected to differ from our expectations, and those differences may be material. Accordingly, investors should use caution in relying on past forward-looking statements, which are based on known results and trends at the time they are made, to anticipate future results or trends.

Some of the risks and uncertainties that may cause our actual results, performance or achievements to differ materially from those expressed or implied by forward-looking statements include the following:

.

our ability to implement our business plan;

.
our ability to raise additional capital to meet our liquidity needs;

.
our ability to generate product revenues;

.
our ability to achieve profitability;

.
our ability to comply with our loan covenants;

.
our ability to satisfy U.S. (including FDA) and international regulatory requirements;

.
our ability to obtain market acceptance of our technology and products;

.
our ability to compete in the market;

.
our ability to advance our clinical trials;

.
our ability to fund, design and implement clinical trials;

.
our ability to maintain our present customer base and retain new customers;

.
our ability to demonstrate that our product candidates are safe for human use and effective for indicated uses;

.
our ability to gain acceptance of physicians and patients for use of our products;

.
our dependency on third-party researchers and manufacturers and licensors;

.
our ability to establish and maintain strategic partnerships, including for the distribution of products;

.
our ability to attract and retain a sufficient qualified personnel;

.
our ability our ability to obtain or maintain patents or other appropriate protection for the intellectual property;

.
our dependency on the intellectual property licensed to us or possessed by third parties;

.
our ability to adequately support future growth; and

.
our potential product liability or intellectual property infringement claims.

This prospectus and all subsequent written and oral forward-looking statements attributable to us or any person acting on our behalf are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. We do not undertake any obligation to release publicly any revisions to our forward-looking statements to reflect events or circumstances after the dates that such statements are made.

For more information on the uncertainty of forward-looking statements, see **Risk Factors** in our Annual Reports on Form 10-K and our Quarterly Reports on Form 10-Q and any applicable prospectus supplement.

USE OF PROCEEDS

The amount of proceeds from this offering will depend upon the number of shares of our common stock sold and the market price at which they are sold. There can be no assurance that we will be able to sell any shares under or fully utilize the sales agreement with Cantor as a source of financing. We intend to use the net proceeds, if any, from this offering for general corporate purposes, which may include, among other things, increasing our working capital, funding research and development (including clinical trials), vendor payables, potential regulatory submissions, hiring additional personnel and capital expenditures. In addition, we may use a portion of the net proceeds for licensing or acquiring intellectual property to incorporate into our products and product candidates or our research and development programs. We may also use a portion of the net proceeds to in-license, acquire or invest in complementary businesses or products; however, we have no current commitments or obligations to do so.

The amounts and timing of our actual expenditures will depend on numerous factors, including our development and commercialization efforts, as well as the amount of cash used in our operations. We therefore cannot estimate with certainty the amount of net proceeds to be used for the purposes described above. We may find it necessary or advisable to use the net proceeds for other purposes, and we will have broad discretion in the application of the net proceeds. Pending the uses described above, we plan to invest the net proceeds from this offering in short-term, investment-grade, interest-bearing securities.

DILUTION

If you invest in our common stock, your interest will be diluted immediately to the extent of the difference between the public offering price and the adjusted net tangible book value per share of our common stock after this offering.

Our net tangible book value on June 30, 2014 was approximately \$17,014,513 million, or \$2.63 per share. "Net tangible book value" is total assets minus the sum of liabilities and intangible assets. "Net tangible book value per share" is net tangible book value divided by the total number of shares outstanding.

After giving effect to the sale of \$10,000,000 of common stock in this offering at an assumed offering price of \$6.25 per share, which was the closing price of our common stock as reported on NASDAQ Capital Market on October 9, 2014, and after deducting estimated offering commissions and expenses payable by us, our net tangible book value as of June 30, 2014 would have been approximately \$26,914,503 million, or \$3.34 per share of common stock. This represents an immediate increase in net tangible book value of \$0.71 per share to our existing stockholders and an immediate dilution in net tangible book value of \$2.91 per share to investors participating in this offering. The following table illustrates this dilution per share to investors participating in this offering:

Assumed offering price per share		\$	6.25
Net tangible book value per share as of June 30, 2014	\$	2.63	
Increase in net tangible book value per share attributable to new investors in offering	\$	0.71	
Pro forma net tangible book value per share after giving effect to the offering	\$	3.34	
Dilution per share to new investors		\$	2.91

The above illustration of dilution per share to investors participating in this offering assumes no exercise of outstanding options to purchase our common stock or outstanding warrants to purchase shares of our common stock.

The above discussion and table are based on shares of our common stock issued and outstanding as of June 30, 2014, which does not include the following, all as of June 30, 2014:

- 839,473 shares issuable upon the exercise of outstanding stock options with a weighted-average exercise price of \$4.77 per share; and
- 142,932 shares of our common stock reserved for issuance upon the exercise of outstanding warrants, each with a weighted-average exercise price of \$11.03 per share.

To the extent that any of these outstanding options are exercised, there will be further dilution to new investors.

S-9

PLAN OF DISTRIBUTION

We have entered into a Controlled Equity OfferingSM sales agreement with Cantor under which we may issue and sell shares of our common stock having an aggregate gross sales price of up to \$10,000,000 from time to time through Cantor acting as agent. The sales agreement has been filed as an exhibit to our registration statement on Form S-3 of which this prospectus forms a part.

Upon delivery of a placement notice and subject to the terms and conditions of the sales agreement, Cantor may sell our common stock by any method permitted by law deemed to be an at-the-market offering as defined in Rule 415 promulgated under the Securities Act, including sales made directly on the NASDAQ Capital Market, on any other existing trading market for our common stock or to or through a market maker. Cantor may also sell our common stock by any other method permitted by law, including in privately negotiated transactions. We may instruct Cantor not to sell common stock if the sales cannot be effected at or above the price designated by us from time to time. We or Cantor may suspend the offering of common stock upon notice and subject to other conditions.

We will pay Cantor commissions, in cash, for its services in acting as agent in the sale of our common stock. Cantor will be entitled to compensation at a fixed commission rate of 3.0% of the gross sales price per share sold. Because there is no minimum offering amount required as a condition to close this offering, the actual total public offering amount, commissions and proceeds to us, if any, are not determinable at this time. We have also agreed to reimburse Cantor for certain specified expenses, including the fees and disbursements of its legal counsel in an amount not to exceed \$50,000. We estimate that the total expenses for the offering, excluding compensation and reimbursements payable to Cantor under the terms of the sales agreement, will be approximately \$100,000.

Settlement for sales of common stock will occur on the third business day following the date on which any sales are made, or on some other date that is agreed upon by us and Cantor in connection with a particular transaction, in return for payment of the net proceeds to us. Sales of our common stock as contemplated in this prospectus will be settled through the facilities of The Depository Trust Company or by such other means as we and Cantor may agree upon. There is no arrangement for funds to be received in an escrow, trust or similar arrangement.

Cantor will use its commercially reasonable efforts, consistent with its sales and trading practices, to solicit offers to purchase the common stock shares under the terms and subject to the conditions set forth in the sales agreement. In connection with the sale of the common stock on our behalf, Cantor will be deemed to be an underwriter within the meaning of the Securities Act and the compensation of Cantor will be deemed to be underwriting commissions or discounts. We have agreed to provide indemnification and contribution to Cantor against certain civil liabilities, including liabilities under the Securities Act.

The offering of our common stock pursuant to the sales agreement will terminate upon the earlier of (1) the sale of all shares of our common stock subject to the sales agreement, or (2) termination of the sales agreement as permitted therein. We and Cantor may each terminate the sales agreement at any time upon ten days prior notice.

Cantor and its affiliates may in the future provide various investment banking, commercial banking and other financial services for us and our affiliates, for which services they may in the future receive customary fees. To the extent required by Regulation M, Cantor will not engage in any market making activities involving our common stock while the offering is ongoing under this prospectus.

This prospectus in electronic format may be made available on a website maintained by Cantor and Cantor may distribute this prospectus and the accompanying base prospectus electronically.

S-10

LEGAL MATTERS

Gracin & Marlow, LLP, New York, New York will pass upon certain legal matters relating to the issuance and sale of the common stock offered hereby on behalf of Heat Biologics, Inc. Cantor is being represented in connection with this offering by Reed Smith LLP, New York, New York.

EXPERTS

The financial statements as of December 31, 2013 and 2012 and for each of the two years in the period ended December 31, 2013 incorporated by reference in this Prospectus have been so incorporated in reliance on the report of BDO USA, LLP, an independent registered public accounting firm, incorporated herein by reference, given on authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and special reports, proxy statements and other information with the Securities and Exchange Commission. You may read and copy any document we file at the SEC's public reference room located at 100 F Street N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the operation of the public reference room. Our public filings are also available to the public at the SEC's web site at <http://www.sec.gov>.

This prospectus is part of a registration statement on Form S-3 that we have filed with the SEC under the Securities Act. This prospectus does not contain all of the information in the registration statement. We have omitted certain parts of the registration statement, as permitted by the rules and regulations of the SEC. You may inspect and copy the registration statement, including exhibits, at the SEC's public reference room or Internet site.

Additional information about Heat Biologics, Inc. is contained at our website, www.heatbiologics.com. Information on our website is not incorporated by reference into this report. We make available on our website our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K as soon as reasonably practicable after those reports are filed with the SEC. The following Corporate Governance documents are also posted on our website: Code of Conduct, Code of Ethics and the Charters for the Audit Committee, Compensation Committee and Nominations Committee of the Board of Directors.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The SEC allows us to incorporate by reference the information we file with it which means that we can disclose important information to you by referring you to those documents instead of having to repeat the information in this prospectus. The information incorporated by reference is considered to be part of this prospectus, and later information that we file with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below and any future filings made with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act between the date of this prospectus and the termination of the offering, however, we are not incorporating by reference any documents or portions thereof, whether specifically listed below or filed in the future, that are not deemed filed with the SEC, or any information furnished pursuant to Items 2.02 or 7.01 of Form 8-K or related exhibits furnished pursuant to Item 9.01 of Form 8-K:

Our annual report on Form 10-K for the fiscal year ended December 31, 2013 filed with the SEC on March 31, 2014;

Our quarterly report on Form 10-Q for the quarter ended March 31, 2014 filed with the SEC on May 12, 2014;

Our quarterly report on Form 10-Q for the quarter ended June 30, 2014 filed with the SEC on August 13, 2014;

Our annual report on Form 10-K/A Amendment No. 1 for the fiscal year ended December 31, 2013 filed with the SEC on October 10, 2014;

Our current reports on Form 8-K filed with the SEC on January 21, February 3, March 5, March 31, May 7, June 13, August 25, 2014 and October 2, 2014;

Our Definitive Proxy Statement on Schedule 14A filed with the SEC on May 8, 2014; and

The description of our common stock set forth in our registration statement on Form 8-A12B, filed with the SEC on July 8, 2013 (File No. 001-35994).

You may obtain, free of charge, a copy of any of these documents (other than exhibits to these documents unless the exhibits are specifically incorporated by reference into these documents or referred to in this prospectus) by writing or calling us at the following address and telephone number:

801 Capitola Drive
Durham, North Carolina 27713

(919) 240-7133

S-12

Up to \$10,000,000 of Shares

Common Stock

PROSPECTUS

, 2014

PART II
INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. *Other Expenses of Issuance and Distribution*

The following is an estimate of the expenses (all of which are to be paid by the registrant) that we may incur in connection with the securities being registered hereby.

SEC registration fee	\$	5,810
FINRA fee	\$	8,000
Legal fees and expenses	\$	(1)
Printing expenses	\$	(1)
Accounting fees and expenses	\$	(1)
Miscellaneous	\$	(1)
Total	\$	(1)

(1)

These fees are calculated based on the securities offered and the number of issuances and accordingly cannot be estimated at this time.

Item 15. *Indemnification of Directors and Officers.*

Section 145 of the Delaware General Corporation Law authorizes a court to award, or a corporation's board of directors to grant, indemnity to directors and officers in terms sufficiently broad to permit such indemnification under certain circumstances for liabilities, including reimbursement for expenses incurred, arising under the Securities Act of 1933, as amended, or the Securities Act.

Our third amended and restated certificate of incorporation provides for indemnification of our directors and executive officers to the maximum extent permitted by the Delaware General Corporation Law, and our amended and restated bylaws provide for indemnification of our directors and executive officers to the maximum extent permitted by the Delaware General Corporation Law.

Item 16. Exhibits.

- 1.1# Form of Underwriting Agreement
- 1.2* Controlled Equity OfferingSM Sales Agreement, dated October 10, 2014, by and between Heat Biologics, Inc. and Cantor Fitzgerald & Co.
- 3.1 Certificate of Incorporation (Incorporated by reference to Exhibit 3.1 of our Form S-1 (File No. 333-188365) filed with the Securities and Exchange Commission on May 6, 2013)
- 3.2 Amended and Restated Bylaws, as currently in effect (Incorporated by reference to Exhibit 3.2 of our Form S-1 (File No. 333-188365) filed with the Securities and Exchange Commission on May 6, 2013)
- 3.3 Third Amended and Restated Certificate of Incorporation (Incorporated by reference to Exhibit 3.5 of our Form S-1 (File No. 333-188365) filed with the Securities and Exchange Commission on May 6, 2013)
- 3.4 Certificate of Amendment to the Third Amended and Restated Certificate of Incorporation (Incorporated by reference to Exhibit 3.6 of our Form S-1/A (File No. 333-188365) filed with the Securities and Exchange Commission on May 30, 2013)
- 4.1 Specimen stock certificate evidencing the shares of common stock (Incorporated by reference to Exhibit 4.8 of our Form S-1 (File No. 333-188365) filed with the Securities and Exchange Commission on May 6, 2013)
- 4.2# Form of Warrant
- 4.3# Form of Warrant Agreement
- 4.4# Form of Unit
- 4.5# Form of Unit Agreement
- 5.1* Legal opinion of Gracin & Marlow, LLP
- 23.1* Consent of Independent Registered Public Accounting Firm - BDO USA, LLP
- 23.2* Consent of Gracin & Marlow, LLP (included in Exhibit 5.1)
- 24.1* Powers of Attorney for our directors (included on signature page)

* Filed herewith

To be filed by amendment.

Item 17. Undertakings

(a) The undersigned registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the SEC pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20 percent change in the maximum aggregate offering price set forth in the Calculation of Registration Fee table in the effective registration statement; and

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement; *provided, however*, that paragraphs (a)(1)(i), (a)(1)(ii), and (a)(1)(iii) above do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the SEC by the registrant pursuant to section 13 or section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is a part of the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser:

(A) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and

(B) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof. *Provided, however*, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date.

(5) That, for the purpose of determining liability of the registrant under the Securities Act of 1933 to any purchaser in the initial distribution of securities:

The undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:

(i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424;

(ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;

(iii) The portion of any other free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and

(iv) Any other communications that is an offer in the offering made by the undersigned registrant to the purchaser.

(b) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(c) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

II-3

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Durham, State of North Carolina, October 10, 2014.

HEAT BIOLOGICS, INC.

By: /s/ Jeffrey Wolf
Chief Executive Officer,

President and Director
(Principal Executive Officer)

By: /s/ Matthew Czajkowski
Chief Financial Officer

(Principal Financial and

Accounting Officer)

POWER OF ATTORNEY

We, the undersigned hereby severally constitute and appoint each of Jeffrey Wolf and Matthew Czajkowski our true and lawful attorney and agent, with full power to each to sign for us, and in our names in the capacities indicated below, any and all amendments to this registration statement, any subsequent registration statements pursuant to Rule 462 of the Securities Act of 1933, as amended, and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them or their or his or her substitute or substitutes, may lawfully do or cause to be done by virtue hereof. This power of attorney may be executed in counterparts.

Edgar Filing: HEAT BIOLOGICS, INC. - Form S-3

Pursuant to the requirements of the Securities Act 1933, this report has been signed by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

/s/ Jeffrey Wolf	Chief Executive Officer, President and Chairman	October 10, 2014
Jeffrey Wolf	(Principal Executive Officer)	
/s/ Matthew Czajkowski	Chief Financial Officer and	October 10, 2014
Matthew Czajkowski	(Principal Financial and Accounting Officer)	
/s/ Paul Belsky	Director	October 10, 2014
Paul Belsky		
/s/ Louis Bock	Director	October 10, 2014
Louis Bock		
/s/ Michael Kharitonov	Director	October 10, 2014
Michael Kharitonov		
/s/ John Monahan	Director	October 10, 2014
John Monahan		
/s/ Edward B. Smith	Director	October 10, 2014
Edward B. Smith		