

HEAT BIOLOGICS, INC.

**9,100,000 Shares of Common Stock
Warrants to Purchase Up to 6,825,000 Shares of Common Stock**



This prospectus supplement amends and supplements our prospectus, dated March 18, 2016, (the “Prospectus”), relating to the offering of 9,100,000 shares of common stock of Heat Biologics, Inc. and warrants to purchase 6,825,000 shares of our common stock that were issued in our public offering that closed on March 23, 2016. Each warrant has an exercise price of \$1.00 per share, is immediately exercisable and expires on the fifth anniversary of the original issuance date.

Our common stock is listed on the NASDAQ Capital Market under the symbol “HTBX.” On May 10, 2016, the last reported sale price of our common stock on the NASDAQ Capital Market was \$0.61 per share. There is no established trading market for the warrants and we do not expect a market to develop. In addition, we do not intend to apply for the listing of the warrants on any national securities exchange or other trading market. Without an active trading market, the liquidity of the warrants will be limited.

We are an “emerging growth company” as that term is used in the Jumpstart Our Business Startups Act of 2012 (the “JOBS Act”) and, as such, have elected to comply with certain reduced public company reporting requirements. See “Prospectus Summary—Implications of Being an Emerging Growth Company” in the Prospectus.

This prospectus supplement is being filed to include the information set forth in the Current Report on Form 8-K filed on May 11, 2016, which is set forth below.

This prospectus supplement should be read in conjunction with the Prospectus. This prospectus supplement updates, amends and supplements the information included or incorporated by reference in the Prospectus. If there is any inconsistency between the information in the Prospectus and this prospectus supplement, you should rely on the information in this prospectus supplement.

Investing in our securities involves a high degree of risk. See “Risk Factors” beginning on page 4 of the Prospectus for more information.

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

The date of this Prospectus Supplement No. 5 is May 11, 2016.



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

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Date of Report (date of earliest event reported): **May 11, 2016**

Heat Biologics, Inc.

(Exact name of registrant as specified in charter)

Delaware

(State or other jurisdiction of incorporation)

001-35994

(Commission File Number)

26-2844103

(IRS Employer Identification No.)

**801 Capitola Drive
Durham, NC 27713**

(Address of principal executive offices and zip code)

(919) 240-7133

(Registrant's telephone number including area code)

N/A

(Former Name and Former Address)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of registrant under any of the following provisions:

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
 - Soliciting material pursuant to Rule 14a-12(b) under the Exchange Act (17 CFR 240.14a-12)
 - Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
 - Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))
-
-

Item 2.02 - Results of Operations and Financial Condition.

On May 11, 2016, Heat Biologics, Inc., a Delaware corporation (the "Registrant") issued a press release that included financial information for the quarter ended March 31, 2016. A copy of the press release is attached as Exhibit 99.1 to this Report on Form 8-K. The information contained in the press release is being furnished to the Securities and Exchange Commission (the "Commission") and shall not be deemed incorporated by reference into any of the Registrant's registration statements or other filings with the Commission.

Item 9.01. - Financial Statements and Exhibits.

(d) Exhibits

Exhibit Number	Description
99.1	Press Release issued by Heat Biologics, Inc., dated May 11, 2016

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Dated: May 11, 2016

HEAT BIOLOGICS, INC.

By: /s/ Jeff Wolf
Name: Jeff Wolf
Title: Chairman, President and Chief Executive Officer

EXHIBIT INDEX

Exhibit Number	Description
99.1	Press Release issued by Heat Biologics, Inc., dated May 11, 2016



Heat Biologics Reports First Quarter 2016 Financial Results

DURHAM, NC – May 11, 2016 – [Heat Biologics, Inc.](http://www.heatbiologics.com) (“Heat”) (Nasdaq: HTBX), an immuno-oncology company developing novel therapies that activate a patient’s immune system against cancer, reported its financial results for the first quarter ended March 31, 2016.

“We are focused on achieving near-term milestones to rebuild shareholder value. Our primary goal is to advance HS-410 for the treatment of non-muscle invasive bladder cancer with one-year disease-free survival, immune response, safety and tolerability data expected in the fourth quarter of this year,” said Jeff Wolf, Heat’s Founder and CEO. “In addition, we are looking forward to presenting new data at the upcoming ASCO Annual Meeting in June around our Phase 1b trial evaluating HS-110 in combination with an anti-PD-1 checkpoint inhibitor for the treatment of non-small cell lung cancer.”

Recent Developments & First Quarter 2016 Corporate Highlights

- In May, Heat had an abstract accepted for poster presentation at the ASCO Annual Meeting being held on June 3-7, 2016 in Chicago, IL. The poster is entitled “Broadening response rates to PD-1 therapy in advanced lung adenocarcinoma: Viagenpumatucel-L (HS-110) in combination with nivolumab in the ongoing DURGA trial” (Abstract #TPS9102). Abstracts will be made available on the ASCO website at www.asco.org in line with the conference’s embargo policy.
 - In April, Heat presented three posters at the AACR Annual Meeting. In the poster entitled “Phase I/II Study of Patients with Non-Muscle Invasive Bladder Cancer (NMIBC) Treated with Vesigenurtacel-L (HS-410) with or without BCG,” Heat reported that no additional recurrences had been reported to-date, with all patients now at least 18 months out from enrollment. In another poster, Heat reported initial preclinical results from its collaboration with OncoSec Medical Incorporated in which researchers concluded that combining Heat’s *ComPACT* vaccine with OncoSec’s intratumoral DNA electroporation delivery platform stimulated an expansion of neoantigen-specific CD8+ T cells, leading to a regression in both treated and untreated cancer lesions in two mouse studies. In the third poster, Heat reported positive preclinical data on its next generation *ComPACT* platform technology, which combines a T cell priming vaccine and a T cell co-stimulator in a single product.
-



- In April, Heat implemented cost-saving measures and a focused corporate strategy to achieve data readout, with its current cash on-hand, anticipated in the fourth quarter of 2016 for its lead Phase 2 program evaluating HS-410 for the treatment of NMIBC. These cost-saving measures included a workforce reduction of approximately 22 percent of the company's headcount.
 - In April, Heat appointed John Prendergast, Ph.D., to its Board of Directors.
 - In March, Heat closed a public offering of approximately \$6.8 million in gross proceeds, which will primarily be used to complete its Phase 2 clinical trial evaluating HS-410 for the treatment of NMIBC. Remaining funds will be used to advance the current eight patients enrolled in our Phase 1b trial evaluating HS-110 in combination with nivolumab for the treatment of non-small cell lung cancer (NSCLC) through the reporting of topline data, as well as for licensing or acquisition of assets complementary to our existing programs and working capital and general corporate purposes.
 - In March, Heat presented additional preclinical data from its *ComPACT* platform technology at the Keystone Symposia on Cancer Vaccines. Data presented demonstrated that *ComPACT* secreting OX40L generated the most potent immune response among other *ComPACT* co-stimulator variations including TL1A, 4-1BBL and ICOSL, as well as compared to systemic delivery of OX40 agonist antibody and vaccine alone.
 - In February, Heat announced that it will no longer enroll new patients in its Phase 2 monotherapy trial arm evaluating HS-410 alone for the treatment of NMIBC following the resolution of the standard of care BCG shortage and discussions with the U.S. FDA. Heat anticipates reporting topline 6-month data from the 16 enrolled patients in the fourth quarter of 2016, contemporaneous with reporting data from Heat's BCG combination cohorts.
 - In February, Heat announced that the U.S. FDA lifted the partial clinical hold on its HS-410 Phase 2 clinical trial and patient enrollment was resumed after less than one week; clinical timelines were materially unchanged. The partial clinical hold came after Heat concluded that the cell line on which HS-410 is based had been previously misidentified and immediately notified FDA of this conclusion. The FDA placed Heat's HS-410 Phase 2 clinical trial on partial clinical hold while they reviewed updated documentation. The partial clinical hold did not relate to concerns regarding the safety or efficacy of HS-410.
-



- In January, Heat reported three-month interim data from the unblinded, monotherapy arm in its Phase 2 trial evaluating HS-410 for the treatment of NMIBC. Images of the bladder taken from several patients treated with HS-410 alone showed changes that resemble T cell-rich structures that Heat has observed in biopsy samples, indicating that systemic administration with HS-410 leads to a localized immune response within the bladder that cannot be attributed to standard of care.

First Quarter 2016 Financial Highlights

- Research and development expenses decreased to approximately \$500,000 in the first quarter of 2016 compared to approximately \$504,000 in the first quarter of 2015, a decrease of approximately \$4,000. The decrease is attributable to reductions in patent, license and other professional fees offset by compensation costs associated with new hires, as well as supplies and facilities as we bring more capabilities in-house.
 - Clinical and regulatory expenses increased to approximately \$3.2 million in the first quarter of 2016 compared to approximately \$2.2 million in the first quarter of 2015, an increase of approximately \$1.0 million. The increase is attributable to clinical trial execution expenses, personnel costs and expenses related to the production of our clinical trial material.
 - General and administrative expenses decreased to approximately \$1.0 million in the first quarter of 2016 compared to approximately \$1.3 million in the first quarter of 2015, a decrease of approximately \$0.3 million. The decrease is attributable to non-cash stock compensation expense for non-employees associated with the company's reduced shared price, as well as reduced professional services and third party expenses.
 - Net loss for the first quarter of 2016 was \$4.7 million compared to a net loss of \$4.0 million for the first quarter of 2015.
 - Cash, cash equivalents and short-term investments totaled approximately \$11.8 million at March 31, 2016 compared to \$11.6 million at December 31, 2015. This includes the \$6.1 million in net proceeds raised during our March 2016 public offering.
-



About Heat Biologics, Inc.

Heat Biologics, Inc. (NASDAQ: HTBX) is an immuno-oncology company developing novel therapies that activate a patient's immune system against cancer. Heat's highly specific T cell-stimulating platform technologies, *ImPACT* and *ComPACT*, form the basis of its product candidates. These platforms, in combination with other therapies, such as checkpoint inhibitors, are designed to address three distinct but synergistic mechanisms of action: robust activation of CD8+ "killer" T cells (one of the human immune system's most potent weapons against cancer); reversal of tumor-induced immune suppression; and T cell co-stimulation to further enhance patients' immune response. Currently, Heat is conducting a Phase 2 trial with its HS-410 (vesigenurtacel-L) in patients with non-muscle invasive bladder cancer (NMIBC) and a Phase 1b trial with its HS-110 (viagenpumatu cel-L) in combination with an anti-PD-1 checkpoint inhibitor to treat patients with non-small cell lung cancer (NSCLC). For more information, please visit www.heatbio.com.

Forward Looking Statements

This press release includes forward-looking statements on our current expectations and projections about future events. In some cases, forward-looking statements can be identified by terminology such as "may," "should," "potential," "continue," "expects," "anticipates," "intends," "plans," "believes," "estimates," and similar expressions. These statements are based upon current beliefs, expectations and assumptions and include statements regarding the new data to be presented at the upcoming ASCO Annual Meeting in June, the anticipated data readout in the fourth quarter of 2016 for Heat's lead Phase 2 program evaluating HS-410 for the treatment of NMIBC, anticipated reporting of topline 6-month data from the 16 enrolled patients in our Phase 2 monotherapy trial arm evaluating HS-410 in the fourth quarter of 2016 and the potential of Heat's *ImPACT* and *ComPACT* therapies. These statements are subject to a number of risks and uncertainties, many of which are difficult to predict, including the ability of Heat's *ImPACT* and *ComPACT* therapies to perform as designed, the ability to enroll patients and complete the clinical trials on time, the other factors described in our annual report on Form 10-K for the year ended December 31, 2015 and our other filings with the SEC. The information in this release is provided only as of the date of this release, and we undertake no obligation to update any forward-looking statements contained in this release based on new information, future events, or otherwise, except as required by law.



Financial Statements

Heat Biologics, Inc.
Condensed Consolidated Statements of Operations
(Unaudited)

	<u>Quarter ended March 31,</u>	
	<u>2016</u>	<u>2015</u>
Operating expenses:		
Research and development	\$ 500,173	\$ 503,551
Clinical and regulatory	3,157,835	2,169,473
General and administrative	1,031,158	1,309,156
Loss from operations	(4,689,166)	(3,982,180)
Interest expense, net	(125,021)	(66,304)
Other income, net	79,701	21,617
Net loss	(4,734,486)	(4,026,867)
Net loss non-controlling interest	(174,883)	(117,669)
Net loss attributable to Heat Biologics, Inc.	<u>\$(4,559,603)</u>	<u>\$(3,909,198)</u>
Net loss per share attributable to Heat Biologics, Inc. -basic and diluted	<u>\$ (0.50)</u>	<u>\$ (0.57)</u>
Weighted-average number of common shares used in net loss per share calculation - basic and diluted	<u>9,124,641</u>	<u>6,814,863</u>

Condensed Consolidated Balance Sheets
(Unaudited)

	<u>March 31,</u>	<u>December 31,</u>
	<u>2016</u>	<u>2015</u>
Assets		
Cash, cash equivalents, and short term investments	\$ 11,835,487	\$ 11,629,598
Other assets	1,321,651	1,565,457
Total Assets	<u>\$ 13,157,138</u>	<u>\$ 13,195,055</u>
Liabilities and Stockholders' Equity		
Accounts payable and other liabilities	\$ 3,243,927	\$ 3,977,331
Long term debt, including current portion	5,942,175	6,722,994
Total Liabilities	9,186,102	10,700,325
Common stock	3,186	1,366
Additional paid-in-capital	54,851,230	48,566,451
Accumulated deficit	(48,990,306)	(44,430,703)
Accumulated other comprehensive loss	(162,391)	(86,584)
Non-Controlling Interest	(1,730,683)	(1,555,800)
Total Liabilities and Stockholders' Equity	<u>\$ 13,157,138</u>	<u>\$ 13,195,055</u>

CONTACT:

Heat Biologics, Inc.

Jennifer Almond

Investor and Media Relations

919-240-7133

investorrelations@heatbio.com