

HEMISPHERX BIOPHARMA INC
Form S-1/A
February 06, 2019

As filed with the Securities and Exchange Commission on February 6, 2019

Registration No. 333- 229051

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

AMENDMENT NO. 1 TO

FORM S-1

REGISTRATION STATEMENT

UNDER

THE SECURITIES ACT OF 1933

Hemispherx Biopharma, Inc.

(Exact name of registrant as specified in its charter)

Delaware (State or other jurisdiction of	2836 (Primary Standard Industrial	52-0845822 (I.R.S. Employer
incorporation or organization)	Classification Code Number)	Identification Number)

2117 SW Highway 484

Ocala FL 34473

(215) 988-0080

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

Thomas K. Equels

Chief Executive Officer and President

Hemispherx Biopharma, Inc.

2117 SW Highway 484

Ocala FL 34473

(215) 988-0080

(Name, address, including zip code, and telephone number, including area code, of agent for service)

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Approximate date of commencement of proposed sale to the public: As soon as practicable after this registration statement becomes effective.

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, check the following box. [X]

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) 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 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 post-effective amendment filed pursuant to Rule 462(d) 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. []

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of “large accelerated filer,” “accelerated filer,” “smaller reporting company” and “emerging growth company” in Rule 12b-2 of the Exchange Act:

Large accelerated filer [] Accelerated filer []
 Non-accelerated filer [] Smaller reporting company [X]
 Emerging growth company []

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act. []

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	Proposed Maximum Aggregate Offering Price (1)	Amount of Registration Fee
Units consisting of shares of Series B Convertible Preferred Stock, par value \$0.01 per share, and warrants to purchase shares of Common Stock, par value	\$8,000,000	\$ 969.60

\$0.001 per share		
Non-transferable Rights to purchase Units (2)	-	-
Series B Convertible Preferred Stock included as part of the Units	Included with	-
	Units above	
Warrants to purchase shares of Common Stock included as part of the Units	Included with	-
(3)	Units above	
Common stock issuable upon conversion of the Series B Convertible Preferred Stock (including Series A Junior Participating Preferred Stock Purchase Rights) (4)(5) (6)	-	-
Common Stock issuable upon exercise of the Warrants (including Series A Junior Participating Preferred Stock Purchase Rights) (5)(6)	\$8,000,000	\$ 969.60
Total	\$16,000,000	\$ 1,939.20 (7)

(1) Estimated solely for purposes of calculating the registration fee in accordance with Rule 457(o) under the Securities Act of 1933, as amended (the “Act”).

(2) Non-transferable Rights to purchase Units are being issued without consideration. Pursuant to Rule 457(g) under the Act, no separate registration fee is required for the Rights because the Rights are being registered in the same registration statement as the securities of the Registrant underlying the Rights.

(3) Pursuant to Rule 457(g) of the Act, no separate registration fee is required for the Warrants because the Warrants are being registered in the same registration statement as the Common Stock of the Registrant issuable upon exercise of the Warrants.

(4) Pursuant to Rule 457(i) of the Act, no separate registration fee is required for the common stock issuable upon conversion of the Series B Convertible Preferred Stock because no additional consideration will be received in connection with the exercise of the conversion privilege.

(5) This Registration also relates to the rights to purchase shares of Series A Junior Participating Preferred Stock of the Registrant, which are attached to all shares of Common Stock pursuant to the terms of the Registrant’s Amended and Restated Rights Agreement dated November 14, 2017 described herein under the section “Description of Securities- Series A Junior Participating Preferred Stock”. Until the occurrence of prescribed events, the preferred share purchase rights are not exercisable, are evidenced by the certificates for the Common Stock and will be transferred with and only with such Common Stock. The preferred share purchase rights are appurtenant to and trade with the Common Stock and no separate consideration will be received for the preferred share purchase rights. Therefore, the registration fee for the preferred shares purchase rights is included in the fee for the Common Stock.

(6) In addition to the shares of Common Stock set forth in this table, pursuant to Rule 416 under the Act, this registration statement also registers such indeterminate number of shares of Common Stock as may become issuable upon exercise of these securities as the same may be adjusted as a result of stock splits, stock dividends, recapitalizations or other similar transactions.

(7) \$1,272.60 of this filing fee was previously paid.

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 Act or until the registration statement shall become effective on such date as the Commission, acting pursuant to said Section

8(a), may determine.

The information in this prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and is not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

PRELIMINARY PROSPECTUS, SUBJECT TO COMPLETION, DATED FEBRUARY 6, 2019

Hemispherx Biopharma, Inc.

Subscription Rights to Purchase Up to 8,000 Units

Consisting of an Aggregate of Up to 8,000 Shares of Series B Convertible Preferred Stock

and Warrants to Purchase Up to 32,000,000 Shares of Common Stock

at a Subscription Price of \$1,000 Per Unit

We are distributing to holders of our common stock and certain of our outstanding warrants and options who are entitled to participate in this offering, at no charge, non-transferable subscription rights to purchase units. Each unit, which we refer to as a Unit, consists of one share of Series B Convertible Preferred Stock, which we refer to as the Preferred Stock, and 4,000 warrants, which we refer to as the Warrants. Each share of Preferred Stock is convertible into a number of shares of our common stock equal to the quotient of the stated value of the Preferred Stock (\$1,000) divided by the Conversion Price (initially, \$0.25). Each Warrant will be exercisable for one share of our common stock at an exercise price of \$0.25 per share from the date of issuance through its expiration five years from the date of issuance. We refer to the offering that is the subject of this prospectus as the Rights Offering. In the Rights Offering, you will receive one subscription right for every share of common stock and participating warrants and participating options, sometimes referred to herein as participating warrants and options, owned at 5:00 p.m., Eastern Time, on February 14, 2019, the record date of the Rights Offering, or the Record Date. The Preferred Stock and the Warrants comprising the Units will separate upon the closing of the Rights Offering and will be issued separately but may only be purchased as a Unit, and the Units will not trade as a separate security. The subscription rights will not be tradable. Holders of certain of our outstanding warrants and options who are entitled to participate in this offering as of the record date will also receive subscription rights pursuant to the terms of those warrants.

Each subscription right will entitle you to purchase one Unit, which we refer to as the Basic Subscription Right, at a subscription price per Unit of \$1,000, which we refer to as the Subscription Price. If you exercise your Basic Subscription Rights in full, and any portion of the Units remain available under the Rights Offering, you will be entitled to an over-subscription privilege to purchase a portion of the unsubscribed Units at the Subscription Price, subject to proration and ownership limitations, which we refer to as the Over-Subscription Privilege. Each subscription right consists of a Basic Subscription Right and an Over-Subscription Privilege, which we refer to as the Subscription Right.

The Subscription Rights will expire if they are not exercised by 5:00 p.m., Eastern Time, on March 1, 2019, unless the Rights Offering is extended or earlier terminated by the Company. If we elect to extend the Rights Offering, we will issue a press release announcing the extension no later than 9:00 a.m., Eastern Time, on the next business day after the most recently announced expiration date of the Rights Offering. We may extend the Rights Offering for additional periods in our sole discretion. Once made, all exercises of Subscription Rights are irrevocable.

We have not entered into any standby purchase agreement or other similar arrangement in connection with the Rights Offering. The Rights Offering is being conducted on a best-efforts basis and there is no minimum amount of proceeds necessary to be received in order for us to close the Rights Offering.

We have engaged Maxim Group LLC and Ascendant Capital Markets LLC to act as co-dealer-managers in the Rights Offering.

Investing in our securities involves a high degree of risk. See “Risk Factors” beginning on page 10 of this prospectus. You should carefully consider these risk factors, as well as the information contained in this prospectus, before you invest.

American Stock Transfer & Trust Company, LLC will serve as the Subscription Agent and Morrow Sodali LLC will serve as the Information Agent for the Rights Offering. The Subscription Agent will hold the funds we receive from subscribers until we complete, abandon or terminate the Rights Offering. If you want to participate in this Rights Offering and you are the record holder of your shares, we recommend that you submit your subscription documents to the Subscription Agent well before the deadline. If you want to participate in this Rights Offering and you hold shares or participating warrants through your broker, dealer, bank or other nominee, you should promptly contact your broker, dealer, bank or other nominee and submit your subscription documents in accordance with the instructions and within the time period provided by your broker, dealer, bank or other nominee. For a detailed discussion, see “The Rights Offering - The Subscription Rights.”

Our board of directors reserves the right to terminate the Rights Offering for any reason any time before the closing of the Rights Offering. If we terminate the Rights Offering, all subscription payments received will be returned within 10 business days, without interest or deduction. We expect the Rights Offering to expire on or about March 1, 2019, subject to our right to extend the Rights Offering as described above, and that we would close on subscriptions within five business days of such date.

Our common stock is listed on the NYSE American, under the symbol “HEB.” On February 5, 2019, the last reported sale price of our common stock was \$0.2375 per share. There is no public trading market for the Preferred Stock or the Warrants and we do not intend to list them for trading on the NYSE American or any other securities exchange or market. The Subscription Rights are non-transferrable and will not be listed for trading on the NYSE American or any other securities exchange or market. You are urged to obtain a current price quote for our common stock before exercising your Subscription Rights.

	Per Unit	Total ⁽²⁾
Subscription price	\$1,000	\$8,000,000
Dealer-Manager fees and expenses ⁽¹⁾	\$70	\$560,000
Proceeds to us, before expenses	\$930	\$7,440,000

(1) In connection with this Rights Offering, we have agreed to pay to Maxim Group LLC and Ascendant Capital Markets LLC as the co-dealer-managers an aggregate cash fee equal to 7.0% of the gross proceeds received by us directly from exercises of the Subscription Rights. We have also agreed to pay to Maxim Group LLC a non-accountable expense allowance up to \$60,000 (less a \$20,000 advance previously paid). See “Plan of Distribution.”

(2) Assumes the Rights Offering is fully subscribed, but excludes proceeds from the exercise of Warrants included within the Units.

Our board of directors is making no recommendation regarding your exercise of the Subscription Rights. You should carefully consider whether to exercise your Subscription Rights before the expiration date. You may not revoke or revise any exercises of Subscription Rights once made.

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.

Co-Dealer-Managers

Maxim Group LLC

**Ascendant Capital
Markets LLC**

The date of this Prospectus is February __, 2019

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ABOUT THIS PROSPECTUS

The registration statement of which this prospectus forms a part that we have filed with the Securities and Exchange Commission, or SEC, includes exhibits that provide more detail of the matters discussed in this prospectus. You should read this prospectus and the related exhibits filed with the SEC, together with the additional information described under the headings “Where You Can Find More Information” and “Incorporation by Reference” before making your investment decision.

You should rely only on the information provided in this prospectus or in a prospectus supplement or any free writing prospectuses or amendments thereto. Neither we nor the dealer-managers have authorized anyone else to provide you with different information. We do not, and the dealer-managers and their affiliates do not, take any responsibility for, and can provide no assurance as to the reliability of, any information that others may provide to you. If anyone provides you with different or inconsistent information, you should not rely on it. You should assume that the information in this prospectus is accurate only as of the date hereof, regardless of the time of delivery of this prospectus or any sale of securities. Our business, financial condition, results of operations and prospects may have changed since that date.

We are not, and the dealer-managers are not, offering to sell or seeking offers to purchase these securities in any jurisdiction where the offer or sale is not permitted. We and the dealer-managers have not done anything that would permit this offering or possession or distribution of this prospectus in any jurisdiction where action for that purpose is required, other than in the United States. 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 securities as to distribution of the prospectus outside of the United States.

Unless the context otherwise requires, references in this prospectus to “Hemispherx,” “the Company,” “we,” “us” and “our” refer to Hemispherx Biopharma, Inc. and our subsidiaries.

PROSPECTUS SUMMARY

This summary contains basic information about us and this offering. Because it is a summary, it does not contain all of the information that you should consider before investing. Before you decide to invest in our Units, you should read this entire prospectus carefully, including the section entitled “Risk Factors” and any information incorporated by reference herein.

Our Business

Hemispherx Biopharma, Inc. is an immuno-pharma research and development and commercial growth company focused on unmet medical needs in immunology, especially immuno-oncology and ME/CFS. We have also established a strong foundation of laboratory, pre-clinical and clinical data with respect to the development of both natural interferon and nucleic acids. Enhancing the natural defense systems of the human body to aid the development of therapeutic products for the treatment of cancers, viral infections, and chronic diseases is our focus.

Our products include Argentinean-approved Ampligen® and Argentinean- and FDA-approved Alferon N Injection®. Ampligen represents an experimental Ribonucleic Acid (“RNA”) in the U.S. being developed for globally important cancers, viral diseases and disorders of the immune system. Hemispherx’ platform technology includes components for the potential treatment of various severely debilitating and life-threatening diseases. Alferon N Injection is approved for a category of Sexually Transmitted Disease (“STD”) infection in the US and Argentina, and for the treatment of refractory patients that failed or were intolerant to treatment with recombinant interferons in Argentina.

We operate a 30,000 sq. ft. facility in New Brunswick, N.J. with the objective of producing Ampligen polymers and Alferon base product.

We are committed to a focused business plan oriented toward finding senior co-development partners with the capital and expertise needed to commercialize the many potential therapeutic aspects of Ampligen and Alferon N Injection.

In addition we will continue to search for additional Sales, Marketing and Distribution partners, similar to our relationship with GP Pharm in Latin America. We expect that the current ANMAT approval in Argentina for Ampligen and/or other potential regulatory approvals may allow the drug to be utilized in four medical arenas: physicians’ offices, clinics, hospitals, and the home treatment setting. Similarly, we continued to consider distribution scenarios for the Specialty Pharmacy/Infusion channel which could provide market access, offer 3PL (third party logistics) capabilities and provide the requisite risk management control mechanisms. It is our intent to utilize third party service providers to execute elements of both the marketing/sales and distribution plans. Management believes that any approach considered should enable us to retain multiple options for future marketing strategies.

Summary of the Rights Offering

Securities to be Offered	We are distributing to you, at no charge, one non-transferable Subscription Right to purchase one Unit for every share of our common stock (or share of common stock issuable upon exercise of participating warrants and options) that you owned on the Record Date. Each Unit consists of one share of our Preferred Stock and 4,000 Warrants. The Units will separate upon the closing of the Rights Offering and the Preferred Stock and Warrants will be issued separately, however, they may only be purchased as a Unit, and the Unit will not trade as a separate security.
Size of Offering	8,000 Units.
Subscription Price	\$1,000 per Unit.
Series B Convertible Preferred Stock	Each share of Preferred Stock will be convertible, at our option at any time on or after the first anniversary of the closing of the Rights Offering, subject to certain conditions, or at the option of the holder at any time, into the number of shares of our common stock determined by dividing the \$1,000 stated value per share of the Preferred Stock by a conversion price of \$0.25 per share, subject to adjustment. The Preferred Stock has certain conversion rights and dividend rights. There is no public trading market for the Preferred Stock and we do not intend to list the Preferred Stock for trading on the NYSE American or any other securities exchange or market.
Warrants	Each Warrant entitles the holder to purchase one share of our common stock at an exercise price of \$0.25 per share, subject to adjustment, from the date of issuance through its expiration five years from the date of issuance. The Warrants will be exercisable for cash, or, solely during any period when a registration statement for the exercise of the Warrants is not in effect, on a cashless basis, at any time and from time to time after the date of issuance. There is no public trading market for the Warrants and we do not intend to list them for trading on the NYSE American or any other securities exchange or market. We may redeem the Warrants for \$ 0.01 per Warrant if the Volume Weighted Average Price (as defined in the Warrant) for our common stock is above \$0.75 per share for ten consecutive trading days, provided that we may not do so prior to the first anniversary of closing of the Rights Offering.
Record Date	5:00 p.m., Eastern Time, February 14 , 2019.
Basic Subscription Rights	Your Basic Subscription Right will entitle you to purchase one Unit at the Subscription Price. You may exercise your basic subscription privilege for some or all of your rights, or you may choose not to exercise your rights. If you choose to exercise your rights, there is no minimum number of Units you must purchase. We are distributing Basic Subscription Rights to purchase an aggregate of <u>69,175,760</u> Units, but are only selling 8,000 Units in the Rights Offering. In the event that the Rights Offering is over-subscribed, rights holders will be entitled to their pro rata portion of the Units.
Over-Subscription Privilege	If you exercise your Basic Subscription Rights in full, you may also choose to exercise an over-subscription privilege to purchase a portion of any Units that are not purchased by our other stockholders or warrant holders through the exercise of their Basic Subscription Rights,

subject to proration and stock ownership limitations described elsewhere in this prospectus. The subscription agent will return any excess payments by mail without interest or deduction promptly after expiration of the subscription period.

Expiration Date The Subscription Rights will expire at 5:00 p.m., Eastern Time, on March 1 , 2019.

Procedure for Exercising To exercise your Subscription Rights, you must take the following steps:

Subscription Rights If you are a record holder of our common stock or participating warrants or options as of the Record Date, you must deliver payment and a properly completed Rights Certificate to the Subscription Agent to be received before 5:00 p.m., Eastern Time, on March 1, 2019. You may deliver the documents and payments by first class mail or courier service. If you use first class mail for this purpose, we recommend using registered mail, properly insured, with return receipt requested.

If as of the Record Date you are a beneficial owner of shares or participating warrants that are registered in the name of a broker, dealer, bank or other nominee, you should instruct your broker, dealer, bank or other nominee to exercise your Subscription Rights on your behalf. Please follow the instructions of your nominee, who may require that you meet a deadline earlier than 5:00 p.m., Eastern Time, on March 1, 2019.

Payment Adjustments

If you send a payment that is insufficient to purchase the number of Units requested, or if the number of Units requested is not specified in the rights certificate, the payment received will be applied to exercise subscription rights to the extent of the payment. If the payment exceeds the amount necessary for the full exercise of your subscription rights, including any over-subscription privilege exercised and permitted, the excess will be returned to you promptly in cash. You will not receive interest or a deduction on any payments refunded to you under the Rights Offering.

Delivery of Shares and Warrants

As soon as practicable after the expiration of the Rights Offering, and within five business days thereof, we expect to close on subscriptions and for the Subscription Agent to arrange for the issuance of the shares of Preferred Stock and Warrants purchased pursuant to the Rights Offering. All shares and Warrants that are purchased in the Rights Offering will be issued in book-entry, or uncertificated, form meaning that you will receive a direct registration, or DRS, account statement from our transfer agent reflecting ownership of these securities if you are a holder of record. If you hold your shares or participating warrants in the name of a bank, broker, dealer, or other nominee, DTC will credit your account with your nominee with the securities you purchased in the Rights Offering.

Non-transferability of Subscription Rights

The Subscription Rights may not be sold, transferred, assigned or given away to anyone. The Subscription Rights will not be listed for trading on any stock exchange or market.

Transferability of Warrants

The Warrants will be separately transferable following their issuance and through their expiration five years from the date of issuance.

No Board Recommendation

Our board of directors is not making a recommendation regarding your exercise of the Subscription Rights. You are urged to make your decision to invest based on your own assessment of our business and financial condition, our prospects for the future, the terms of the Rights Offering, the information in this prospectus and other information relevant to your circumstances. Please see "Risk Factors" for a discussion of some of the risks involved in investing in our securities.

No Revocation

All exercises of Subscription Rights are irrevocable, even if you later learn of information that you consider to be unfavorable to the exercise of your Subscription Rights.

Use of Proceeds

Assuming the exercise of Subscription Rights to purchase all Units of the Rights Offering, after deducting fees and expenses and excluding any proceeds received upon exercise of any Warrants, we estimate the net proceeds of the Rights Offering will be approximately \$7.19 million. We intend to use the net proceeds from the exercise of Subscription Rights to repay a convertible promissory note, for advancing upcoming clinical trials, for general corporate purposes and to fund ongoing operations and expansion of our business. See "Use of Proceeds."

**Material U.S. Federal
Income Tax
Consequences**

For U.S. federal income tax purposes, we do not believe you should recognize income or loss upon receipt or exercise of a Subscription Right. You should consult your own tax advisor as to the tax consequences of the Rights Offering in light of your particular circumstances. See “Material U.S. Federal Income Tax Consequences.”

Extension, Termination and Amendment	<p>Although we do not presently intend to do so, we may extend the Rights Offering for additional time in our sole discretion for any reason for up to an additional 45 days. For example, we may decide that changes in the market price of our common stock warrant an extension, or we may decide that the degree of stockholder participation in the Rights Offering is less than the level we desire. In the event that we decide to extend the Rights Offering and you have already exercised your Subscription Rights, your subscription payment will remain with the Subscription Agent until such time as the Rights Offering closes or is terminated. Our board of directors may for any reason terminate the Rights Offering at any time before the completion of the Rights Offering. In the event the Rights Offering is cancelled, all subscription payments received by the subscription agent will be returned, without interest or deduction, as soon as practicable. We also reserve the right to amend or modify the terms of the Rights Offering, as appropriate.</p>
Subscription and Information Agents	<p>American Stock Transfer & Trust Company, LLC will serve as the Subscription Agent and Morrow Sodali LLC will serve as the Information Agent.</p>
Questions	<p>If you have any questions about the Rights Offering, please contact the Subscription Agent.</p>
Market for Common Stock	<p>Our common stock is listed on the NYSE American under the symbol “HEB.”</p>
Dealer-Managers	<p>Maxim Group LLC and Ascendant Capital Markets LLC will act as co-dealer-managers for the Rights Offering.</p>

QUESTIONS AND ANSWERS RELATING TO THE RIGHTS OFFERING

The following are examples of what we anticipate will be common questions about this Rights Offering. The answers are based on selected information included elsewhere in this prospectus. The following questions and answers do not contain all of the information that may be important to you and may not address all of the questions that you may have about the Rights Offering. This prospectus and the documents incorporated by reference into this prospectus contain more detailed descriptions of the terms and conditions of the Rights Offering and provides additional information about us and our business, including potential risks related to the Rights Offering, the Units offered hereby, and our business. We urge you to read this entire prospectus and the documents incorporated by reference into this prospectus.

Why are we conducting the Rights Offering?

We are conducting the Rights Offering to raise additional capital to advance important clinical trials, to repay a convertible promissory note, and to fund ongoing operations of our business.

What is the Rights Offering?

We are distributing, at no charge, to holders of our common stock and holders of participating warrants or options as of the Record Date, non-transferable Subscription Rights to purchase Units at a price of \$1,000 per Unit. The Subscription Rights will not be tradable. Each Unit consists of one share of our Preferred Stock and 4,000 Warrants. See “Are there risks in exercising my Subscription Rights?” below. Each Warrant will be exercisable for one share of our common stock. Upon closing of the Rights Offering, the Preferred Stock and Warrants will immediately separate. There is no public trading market for the Preferred Stock or the Warrants and we do not intend to list them for trading on the NYSE American or any other securities exchange or market. The common stock to be issued upon conversion of the Preferred Stock or exercise of the Warrants, like our existing shares of common stock, will be traded on the NYSE American under the symbol “HEB.” You will receive one Subscription Right for every share of common stock (including each share of common stock issuable upon exercise of participating warrants and options) that you owned as of 5:00 p.m., Eastern Time, on the Record Date. Each Subscription Right entitles the record holder to a Basic Subscription Right and an Over-Subscription Privilege. The Subscription Rights will expire if they are not exercised by 5:00 p.m., Eastern Time, on March 1, 2019, unless we extend or earlier terminate the Rights Offering.

What is a Unit?

Each Unit consists of one share of Series B Convertible Preferred Stock and a warrant, at a subscription price of \$1,000 per Unit. No fractional Units will be issued. Each warrant entitles you to purchase 4,000 shares of common stock at an exercise price of \$0.25 per share, from the date of issuance through its expiration five years after the date of issuance. Each share of Preferred Stock will have a stated value of \$1,000 and will be convertible into shares of our common stock at the conversion price \$0.25. The Preferred Stock do not generally have any voting rights and will not be certificated. The shares of Preferred Stock and warrants that comprise each Unit are immediately separable and will be issued separately in this Rights Offering, however, they may only be purchased as a Unit, and the Units will not trade as a separate security.

What are the Basic Subscription Rights?

For every share you owned (including each share of common stock issuable upon exercise of participating warrants and options) as of the Record Date, you will receive one Basic Subscription Right, which gives you the opportunity to purchase one Unit, consisting of one share of our Preferred Stock and 4,000 Warrants, for a price of \$1,000 per Unit. For example, if you owned 100 shares of common stock as of the Record Date, you will receive 100 Subscription Rights and will have the right to purchase 100 shares of our Preferred Stock and Warrants to purchase 400,000 shares of our common stock for \$1,000 per Unit (or a total payment of \$100,000). You may exercise all or a portion of your Basic Subscription Rights or you may choose not to exercise any Basic Subscription Rights at all.

If you are a record holder of our common stock or participating warrants or options, the number of shares you may purchase pursuant to your Basic Subscription Rights is indicated on the enclosed Rights Certificate. If you hold your shares or participating warrants or options in the name of a broker, dealer, bank or other nominee who uses the services of the Depository Trust Company, or DTC, you will not receive a Rights Certificate. Instead, DTC will issue one Subscription Right to your nominee record holder for each share of our common stock (including each share of common stock issuable upon exercise of participating warrants and options) that you beneficially own as of the Record Date. If you are not contacted by your nominee, you should contact your nominee as soon as possible.

What is the Over-Subscription Privilege?

If you exercise your Basic Subscription Rights in full, you may also choose to exercise your Over-Subscription Privilege to purchase a portion of any Units that are not purchased by other holders of common stock or participating warrant or option holders and remain available under the Rights Offering. You should indicate on your Rights Certificate, or the form provided by your nominee if your shares are held in the name of a nominee, how many additional Units you would like to purchase pursuant to your Over-Subscription Privilege, which we refer to as your Over-Subscription Request.

Subject to stock ownership limitations, if sufficient Units are available, we will seek to honor your Over-Subscription Request in full. If Over-Subscription Requests exceed the number of Units available, however, we will allocate the available Units pro-rata among the stockholders, warrant holders and option holders exercising the Over-Subscription Privilege in proportion to the number of shares of our common stock (including each share of common stock issuable upon exercise of participating warrants and options) each of those stockholders, warrant holders and option holders owned on the Record Date, relative to the number of shares (including each share of common stock issuable upon exercise of participating warrants and options) owned on the Record Date by all record holders exercising the Over-Subscription Privilege. If this pro-rata allocation results in any stockholders, warrant holders or option holders receiving a greater number of Units than the stockholders, warrant holders or option holders subscribed for pursuant to the exercise of the Over-Subscription Privilege, then such stockholder, warrant holder or option holder will be allocated only that number of Units for which the stockholder warrant holder and option holder oversubscribed, and the remaining Units will be allocated among all other stockholders warrant holders and option holder exercising the Over-Subscription Privilege on the same pro rata basis described above. The proration process will be repeated until all Units have been allocated. See “The Rights Offering-Limitation on the Purchase of Units” for a description of certain stock ownership limitations.

To properly exercise your Over-Subscription Privilege, you must deliver to the Subscription Agent the subscription payment related to your Over-Subscription Privilege before the Rights Offering expires. Because we will not know the total number of unsubscribed Units before the expiration of the Rights Offering, if you wish to maximize the number of Units you purchase pursuant to your over-subscription privilege, you will need to deliver payment in an amount equal to the aggregate Subscription Price for the maximum number of Units available, assuming that no stockholder, warrant holder or option holder other than you has purchased any Units pursuant to such stockholder’s, warrant holder’s or option holder’s basic subscription right and over-subscription privilege. See “The Rights Offering-The Subscription Rights-Over-Subscription Privilege.” To the extent you properly exercise your Over-Subscription Privilege for an amount of Units that exceeds the number of unsubscribed Units available to you, any excess subscription payments will be returned to you within 10 business days after the expiration of the Rights Offering, without interest or deduction.

American Stock Transfer & Trust Company, LLC, our Subscription Agent for the Rights Offering, will determine the allocation of Over-Subscription Requests based on the formula described above.

May the Subscription Rights that I exercise be reduced for any reason?

Yes. While we are distributing to holders of our common stock and holders of participating warrants or options one Subscription Right for every share of common stock (including each share of common stock issuable upon exercise of participating warrants and options) owned on the Record Date, we are only seeking to raise \$8.0 million dollars in gross proceeds in this Rights Offering. As a result, based on 48,911,918 shares of common stock outstanding as of February 5, 2019 and 20,263,842 shares of common stock issuable upon exercise of participating warrants and options, we would grant Subscription Rights to acquire 69,175,760 Units but will only accept subscriptions for 8,000 Units. Accordingly, sufficient Units may not be available to honor your subscription in full. If exercises of Basic Subscription Rights exceed the number of Units available in the Rights Offering, we will allocate the available Units pro-rata among the record holders exercising the Basic Subscription Rights in proportion to the number of shares of our common stock (including each share of common stock issuable upon exercise of participating warrants and options) each of those record holders owned on the Record Date, relative to the number of shares (including each share of common stock issuable upon exercise of participating warrants and options) owned on the Record Date by all record holders exercising the Basic Subscription Right. If this pro-rata allocation results in any record holders receiving a greater number of Units than the record holder subscribed for pursuant to the exercise of the Basic Subscription Rights, then such record holder will be allocated only that number of Units for which the record holder subscribed, and the remaining Units will be allocated among all other record holders exercising their Basic Subscription Rights on the same pro rata basis described above. The proration process will be repeated until all Units have been allocated. Please also see the discussion under “The Rights Offering-The Subscription Rights-Over-Subscription Privilege” and “The Rights Offering- Limitation on the Purchase of Units” for a description potential proration as to the Over-Subscription Privilege and certain stock ownership limitations.

If for any reason the amount of Units allocated to you is less than you have subscribed for, then the excess funds held by the Subscription Agent on your behalf will be returned to you, without interest, as soon as practicable after the Rights Offering has expired and all prorating calculations and reductions contemplated by the terms of the Rights Offering have been effected, and we will have no further obligations to you.

What are the terms of the Series B Convertible Preferred Stock?

Each share of Preferred Stock will be convertible, at our option at any time on or after the first anniversary of the closing of the Rights Offering or at the option of the holder at any time, into the number of shares of our common stock determined by dividing the \$1,000 stated value per share of the Preferred Stock by a conversion price of \$0.25 per share, subject to adjustment. The Preferred Stock has certain conversion rights and dividend rights as described in more detail herein.

What are the terms of the Warrants?

Each Warrant entitles the holder to purchase one share of our common stock at an exercise price of \$0.25 per share from the date of issuance through its expiration five years from the date of issuance. The Warrants will be exercisable for cash, or, solely during any period when a registration statement for the exercise of the Warrants is not in effect, on a cashless basis. We may redeem the Warrants for \$0.01 per Warrant if the Volume Weighted Average Price (as defined in the Warrant) for our common stock is closes above \$0.75 per share for ten consecutive trading days, provided that we may not do so prior to the first anniversary of closing of the Rights Offering.

Are the Preferred Stock or Warrants listed?

There is no public trading market for the Preferred Stock or Warrants and we do not intend to list them for trading on the NYSE American or any other securities exchange or market. The Warrants will be issued in registered form under a warrant agent agreement with American Stock Transfer & Trust Company, LLC as warrant agent.

Will fractional shares be issued upon exercise of Subscription Rights, the conversion of Preferred Stock, or the exercise of Warrants?

No. We will not issue fractional shares of common stock in the Rights Offering. We will only distribute Subscription Rights to acquire whole Units, rounded down to the nearest whole number of underlying common shares giving rise to such Subscription Rights. Any excess subscription payments received by the Subscription Agent will be returned within 10 business days after expiration of the Rights Offering, without interest or deduction. Additionally, no fractional shares of common stock will be issued as a result of the conversion of shares of Preferred Stock or the exercise of Warrants. Instead, for any such fractional share that would otherwise have been issuable upon conversion of shares of Preferred Stock, the Company may, at its election, pay a cash payment equal to such fraction multiplied

by the conversion price or round up to the next whole share, and for any such fractional share that would have otherwise been issued upon exercise of Warrants, the Company will round up such fraction to the next whole share.

What effect will the Rights Offering have on our outstanding common stock?

Assuming no other transactions by us involving our capital stock prior to the expiration of the Rights Offering, and if the Rights Offering is fully subscribed, upon consummation of the Rights Offering we will have 48,911,918 shares of common stock issued and outstanding, 8,000 shares of Preferred Stock issued and outstanding, and Warrants to purchase an additional 32,000,000 shares of our common stock issued and outstanding, based on 48,911,918 shares of our common stock outstanding as of February 5, 2019 . The exact number of shares of Preferred Stock and Warrants that we will issue in this offering will depend on the number of Units that are subscribed for in the Rights Offering.

How was the Subscription Price determined?

In determining the Subscription Price, the directors considered, among other things, the following factors:

the current and historical trading prices of our common stock;

the price at which stockholders might be willing to participate in the Rights Offering;

the value of the common stock issuable upon conversion of the Preferred Stock being issued as a component of the Unit;

the value of the Warrant being issued as a component of the Unit;

our need for additional capital and liquidity;

the cost of capital from other sources; and

comparable precedent transactions, including the percentage of shares offered, the terms of the subscription rights being offered, the subscription price and the discount that the subscription price represented to the immediately prevailing closing prices for those offerings.

In conjunction with the review of these factors, the board of directors also reviewed our history and prospects, including our past and present earnings and cash requirements, our prospects for the future, the outlook for our industry and our current financial condition. The board of directors also believed that the Subscription Price should be designed to provide an incentive to our current stockholders to participate in the Rights Offering and exercise their Basic Subscription Right and their Over-Subscription Privilege.

The Subscription Price does not necessarily bear any relationship to any established criteria for value. You should not consider the Subscription Price as an indication of actual value of our company or our common stock. The market price of our common stock may decline during or after the Rights Offering. You should obtain a current price quote for our common stock and perform an independent assessment of our Preferred Stock and Warrants before exercising your Subscription Rights and make your own assessment of our business and financial condition, our prospects for the future, the terms of the Rights Offering, the information in this prospectus and the other considerations relevant to your circumstances. Once made, all exercises of Subscription Rights are irrevocable. In addition, there is no established trading market for the Preferred Stock or the Warrants to be issued pursuant to this offering, and the Preferred Stock and the Warrants may not be widely distributed.

Am I required to exercise all of the Basic Subscription Rights I receive in the Rights Offering?

No. You may exercise any number of your Basic Subscription Rights, or you may choose not to exercise any Basic Subscription Rights. If you do not exercise any Basic Subscription Rights, the number of shares of our common stock you own will not change. However, if you choose to not exercise your Basic Subscription Rights in full and other holders of Subscription Rights do exercise, your proportionate ownership interest in our company will decrease. If you do not exercise your Basic Subscription Rights in full, you will not be entitled to exercise your Over-Subscription Privilege.

How soon must I act to exercise my Subscription Rights?

If you received a Rights Certificate and elect to exercise any or all of your Subscription Rights, the Subscription Agent must receive your completed and signed Rights Certificate and payment for both your Basic Subscription Rights and any Over-Subscription Privilege you elect to exercise before the Rights Offering expires on March 1, 2019, at 5:00 p.m., Eastern Time, unless we extend or earlier terminate the Rights Offering. If you hold your shares or

participating warrants or options in the name of a broker, dealer, bank or other nominee, your nominee may establish a deadline before the expiration of the Rights Offering by which you must provide it with your instructions to exercise your Subscription Rights, along with the required subscription payment.

May I transfer my Subscription Rights?

No. The Subscription Rights may be exercised only by the stockholders, warrant holders and option holders to whom they are distributed, and they may not be sold, transferred, assigned or given away to anyone else, other than by operation of law. As a result, Rights Certificates may be completed only by the stockholder, warrant holder or option holder who receives the certificate. We do not intend to apply for the listing of the Subscription Rights on any securities exchange or recognized trading market.

Will our directors and executive officers participate in the Rights Offering?

To the extent they hold common stock or participating warrants or options as of the Record Date, our directors and executive officers will be entitled to participate in the Rights Offering on the same terms and conditions applicable to other Rights holders.

Are we requiring a minimum subscription to complete the Rights Offering ?

There is no aggregate minimum we must receive to complete the Rights Offering .

Has the board of directors made a recommendation to stockholders regarding the Rights Offering?

No. Our board of directors is making no recommendation regarding your exercise of the Subscription Rights. Rights holders who exercise Subscription Rights will incur investment risk on new money invested. We cannot predict the price at which our shares of common stock will trade after the Rights Offering. On February 5, 2019 , the last reported sale price of our common stock on the NYSE American was \$ 0.2375 per share. You should make your decision based on your assessment of our business and financial condition, our prospects for the future, the terms of the Rights Offering, the information contained in this prospectus and other considerations relevant to your circumstances. See “Risk Factors” for discussion of some of the risks involved in investing in our securities.

How do I exercise my Subscription Rights?

If you are a stockholder, warrant holder or option holder of record (meaning you hold your shares of our common stock or participating warrants or options in your name and not through a broker, dealer, bank or other nominee) and you wish to participate in the Rights Offering, you must deliver a properly completed and signed Rights Certificate, together with payment of the Subscription Price for both your Basic Subscription Rights and any Over-Subscription Privilege you elect to exercise, to the Subscription Agent before 5:00 p.m., Eastern Time, on March 1, 2019. If you are exercising your Subscription Rights through your broker, dealer, bank or other nominee, you should promptly contact your broker, dealer, bank or other nominee and submit your subscription documents and payment for the Units subscribed for in accordance with the instructions and within the time period provided by your broker, dealer, bank or other nominee.

What if my shares are held in “street name”?

If you hold your shares of our common stock or participating warrants or options in the name of a broker, dealer, bank or other nominee, then your broker, dealer, bank or other nominee is the record holder of the shares or participating warrants or options you beneficially own. The record holder must exercise the Subscription Rights on your behalf. Therefore, you will need to have your record holder act for you.

If you wish to participate in this Rights Offering and purchase Units, please promptly contact the record holder of your shares or your participating warrants or options. We will ask the record holder of your shares or participating warrants or options, who may be your broker, dealer, bank or other nominee, to notify you of this Rights Offering.

What form of payment is required?

You must timely pay the full Subscription Price for the full number of Units you wish to acquire pursuant to the exercise of Subscription Rights by delivering to the Subscription Agent a:

personal check drawn on a U.S. bank;

certified check drawn on a U.S. bank;

U.S. Postal money order; or

wire transfer.

If you send payment by personal uncertified check, payment will not be deemed to have been delivered to the Subscription Agent until the check has cleared. As such, any payments made by personal check should be delivered to the Subscription Agent no fewer than three business days prior to the expiration date.

If you send a payment that is insufficient to purchase the number of Units you requested, or if the number of Units you requested is not specified in the forms, the payment received will be applied to exercise your Subscription Rights to the fullest extent possible based on the amount of the payment received.

Will I receive interest on any funds I deposit with the subscription agent?

No. You will not be entitled to any interest on any funds that are deposited with the Subscription Agent pending completion or cancellation of the Rights Offering. If the Rights Offering is cancelled for any reason, the Subscription Agent will return this money to subscribers, without interest or penalty, as soon as practicable.

When will I receive my new shares of Preferred Stock and Warrants?

As soon as practicable after the expiration of the Rights Offering, and within five business days thereof, we expect to close on subscriptions and for the Subscription Agent to arrange for the issuance of the shares of Preferred Stock and Warrants purchased in the Rights Offering. At closing, all prorating calculations and reductions contemplated by the terms of the Rights Offering will have been effected and payment to us for the subscribed-for Units will have cleared. All shares and Warrants that you purchase in the Rights Offering will be issued in book-entry, or uncertificated, form meaning that you will receive a direct registration, or DRS, account statement from our transfer agent reflecting ownership of these securities if you are a holder of record. If you hold your shares or participating warrants or options in the name of a broker, dealer, bank or other nominee, DTC will credit your account with your nominee with the securities you purchase in the Rights Offering. American Stock Transfer & Trust Company, LLC is acting as the warrant agent in this offering.

After I send in my payment and Rights Certificate to the Subscription Agent, may I cancel my exercise of Subscription Rights?

No. Exercises of Subscription Rights are irrevocable, even if you later learn information that you consider to be unfavorable to the exercise of your Subscription Rights. You should not exercise your Subscription Rights unless you are certain that you wish to purchase Units at the Subscription Price.

How much will our company receive from the Rights Offering?

Assuming that all Units are sold in the Rights Offering, we estimate that the net proceeds from the Rights Offering will be approximately \$7.19 million, based on the Subscription Price of \$1,000 per Unit, after deducting fees and expenses payable to the dealer-managers, and after deducting other estimated expenses payable by us and excluding any proceeds received upon exercise of any Warrants. If all Warrants included in the Units are exercised for cash at the exercise price of \$0.25 per share, we will receive an additional \$8.0 million. We intend to use the net proceeds to repay a convertible promissory note, for general corporate purposes and to fund ongoing operations and expansion of our business. See "Use of Proceeds."

Are there risks in exercising my Subscription Rights?

Yes. The exercise of your Subscription Rights involves risks. Exercising your Subscription Rights involves the purchase of shares of our common stock and Warrants to purchase common stock and you should consider this investment as carefully as you would consider any other investment. In addition, our Warrants will not be listed on the NYSE American and a market for the Warrants does not exist. See "Risk Factors" for discussion of additional risks involved in investing in our securities.

Can the board of directors terminate , extend or amend the Rights Offering?

Yes. Our board of directors may decide to terminate the Rights Offering at any time and for any reason before the expiration of the Rights Offering. We also have the right to extend the Rights Offering for additional periods in our sole discretion for up to an additional 45 days. We do not presently intend to extend the Rights Offering. We will notify stockholders and the public if the Rights Offering is terminated or extended by issuing a press release announcing the extension no later than 9:00 a.m., Eastern Time, on the next business day after the most recently announced expiration date of the Rights Offering. In the event that we decide to extend the Rights Offering and you have already exercised your Subscription Rights, your subscription payment will remain with the Subscription Agent

until such time as the Rights Offering closes or is terminated.

Our board of directors also reserves the right to amend or modify the terms of the Rights Offering in its sole discretion. If we should make any fundamental changes to the terms of the Rights Offering set forth in this prospectus, we will file a post-effective amendment to the registration statement in which this prospectus is included, offer potential purchasers who have subscribed for rights the opportunity to cancel such subscriptions and issue a refund of any money advanced by such stockholder and recirculate an updated prospectus after the post-effective amendment is declared effective by the SEC. In addition, upon such event, we may extend the Expiration Date of the Rights Offering to allow holders of rights ample time to make new investment decisions and for us to recirculate updated documentation. Promptly following any such occurrence, we will issue a press release announcing any changes with respect to the Rights Offering and the new expiration date. The terms of the Rights Offering cannot be modified or amended after the Expiration Date of the Rights Offering. Although we do not presently intend to do so, we may choose to amend or modify the terms of the Rights Offering for any reason, including, without limitation, in order to increase participation in the Rights Offering. Such amendments or modifications may include a change in the subscription price, although no such change is presently contemplated.

If the Rights Offering is not completed or is terminated, will my subscription payment be refunded to me?

Yes. The Subscription Agent will hold all funds it receives in a segregated bank account until completion of the Rights Offering. If we do not complete the Rights Offering, all subscription payments received by the Subscription Agent will be returned within 10 business days after the termination or expiration of the Rights Offering, without interest or deduction. If you own shares in “street name,” it may take longer for you to receive your subscription payment because the Subscription Agent will return payments through the record holder of your shares.

How do I exercise my Rights if I live outside the United States?

The Subscription Agent will hold Rights Certificates for stockholders having addresses outside the United States. To exercise Subscription Rights, foreign stockholders must notify the Subscription Agent and timely follow other procedures described in the section entitled “The Rights Offering - Foreign Stockholders.”

What fees or charges apply if I purchase shares in the Rights Offering?

We are not charging any fee or sales commission to issue Subscription Rights to you or to issue shares of Preferred Stock or Warrants to you if you exercise your Subscription Rights. If you exercise your Subscription Rights through a broker, dealer, bank or other nominee, you are responsible for paying any fees your broker, dealer, bank or other nominee may charge you.

What are the U.S. federal income tax consequences of receiving and/or exercising my Subscription Rights?

For U.S. federal income tax purposes, we do not believe you should recognize income or loss in connection with the receipt or exercise of Subscription Rights in the Rights Offering, but the receipt and exercise of the Subscription Rights is unclear in certain respects. You should consult your tax advisor as to your particular tax consequences resulting from the receipt and exercise of Subscription Rights, including the receipt, ownership and disposition of our Preferred Stock, Warrants, and common stock received upon the conversion of Preferred Stock or the exercise of Warrants. For further information, see “Material U.S. Federal Income Tax Consequences.”

To whom should I send my forms and payment?

If your shares or participating warrants or options are held in the name of a broker, dealer, bank or other nominee, then you should send your subscription documents and subscription payment to that broker, dealer, bank or other nominee. If you are the record holder, then you should send your subscription documents, Rights Certificate, and subscription payment to the Subscription Agent by hand delivery, first class mail or courier service to:

By mail, hand or overnight courier

American Stock Transfer & Trust Company, LLC

Attn: Reorg Department

6201 15th Avenue

Brooklyn, NY 11219

You or, if applicable, your nominee are solely responsible for completing delivery to the Subscription Agent of your subscription documents, Rights Certificate and payment. You should allow sufficient time for delivery of your subscription materials to the Subscription Agent and clearance of payment before the expiration of the Rights Offering at 5:00 p.m. Eastern Time on March 1, 2019.

Whom should I contact if I have other questions?

If you have other questions or need assistance, please contact the Information Agent, Morrow Sodali LLC, at (800) 662-5200, or by email at HEB.Info@morrow sodali.com.

Who are the dealer-managers?

Maxim Group LLC and Ascendant Capital Markets LLC will act as co-dealer-managers for the Rights Offering. Under the terms and subject to the conditions contained in the dealer-manager agreement, the dealer-managers will use their best efforts to solicit the exercise of Subscription Rights. We have agreed to pay the dealer-managers certain fees for acting as dealer-managers and to reimburse the dealer-managers for certain out-of-pocket expenses incurred in connection with this offering. The dealer-managers are not underwriting or placing any of the Subscription Rights or the shares of our Preferred Stock or Warrants being issued in the Rights Offering and are not making any recommendation with respect to such Subscription Rights (including with respect to the exercise or expiration of such Subscription Rights), shares of Preferred Stock or Warrants.

RISK FACTORS

Investing in our securities involves a high degree of risk. Before making an investment decision with respect to our securities, we urge you to carefully consider the risks described in the “Risk Factors” section of our Annual Report on Form 10-K for the year ended December 31, 2017 and our subsequent Quarterly Reports on Form 10-Q, which are incorporated by reference into this prospectus. These risk factors relate to our business, regulatory matters, and ownership of our common stock. In addition, the following risk factors present material risks and uncertainties associated with the Rights Offering. The risks and uncertainties incorporated by reference into this prospectus or described below are not the only ones we face. Additional risks and uncertainties not presently known or which we consider immaterial as of the date hereof may also have an adverse effect on our business. If any of the matters discussed in the following risk factors were to occur, our business, financial condition, results of operations, cash flows or prospects could be materially adversely affected, the market price of our common stock could decline and you could lose all or part of your investment in our securities.

Risks Related to the Rights Offering

Our management will have broad discretion over the use of the net proceeds from this offering, you may not agree with how we use the proceeds and the proceeds may not be invested successfully.

Our management will have broad discretion as to the use of the net proceeds from this offering and could use them for purposes other than those contemplated at the time of commencement of this offering. Accordingly, you will be relying on the judgment of our management with regard to the use of these net proceeds, and you will not have the opportunity, as part of your investment decision, to assess whether the proceeds are being used appropriately. It is possible that, pending their use, we may invest the net proceeds in a way that does not yield a favorable, or any, return for us. The failure of our management to use such funds effectively could have a material adverse effect on our business, financial condition, operating results and cash flows.

Your interest in our company may be diluted as a result of this Rights Offering.

Stockholders, warrant holders and option holders who do not fully exercise their Subscription Rights should expect that they will, at the completion of this offering, own a smaller proportional interest in our company on a fully-diluted basis than would otherwise be the case had they fully exercised their Subscription Rights. Further, the shares issuable upon the exercise of the Warrants to be issued pursuant to the Rights Offering will dilute the ownership interest of stockholders not participating in this offering or holders of Warrants who have not exercised them.

Further, if you purchase Units in this offering at the Subscription Price, you may suffer immediate and substantial dilution in the net tangible book value of our common stock. See “Dilution” in this prospectus for a more detailed discussion of the dilution which may incur in connection with this offering.

Completion of the Rights Offering is not subject to us raising a minimum offering amount.

Completion of the Rights Offering is not subject to us raising a minimum offering amount and, therefore, proceeds may be insufficient to meet our objectives, thereby increasing the risk to investors in this offering, including investing in a company that continues to require capital. See “Use of Proceeds.”

This Rights Offering may cause the trading price of our common stock to decrease. If our trading price decreases or does not increase, there is a risk that our common stock could be delisted from the NYSE American.

The Subscription Price, together with the number of shares of common stock issuable upon conversion of the Preferred Stock and Warrants we propose to issue and ultimately will issue if this Rights Offering is completed, may result in an immediate decrease in the market price of our common stock. This decrease may continue after the completion of this Rights Offering. If that occurs, you may have committed to buy shares of our common stock at a price greater than the prevailing market price. We cannot predict the effect, if any, that the availability of shares for future sale represented by the Warrants issued in connection with the Rights Offering will have on the market price of our common stock from time to time. Further, if a substantial number of Subscription Rights are exercised and the holders of the shares received upon exercise of those Subscription Rights or the related Warrants choose to sell some or all of the shares underlying the Subscription Rights or the related Warrants, the resulting sales could depress the market price of our common stock.

The trading price of our common stock has decreased significantly over the past year. If it decreases further or does not increase, we run the risk of our stock being delisted from the NYSE American. If our stock is so delisted, the market for our common stock most likely will be adversely affected.

Holders of our Warrants will have no rights as a common stockholder until such holders exercise their Warrants and acquire our common stock.

Until holders of Warrants acquire shares of our common stock upon exercise of the Warrants, holders of Warrants will have no rights with respect to the shares of our common stock underlying such Warrants. Upon exercise of the Warrants, the holders thereof will be entitled to exercise the rights of a common stockholder only as to matters for which the record date occurs after the exercise date.

If we terminate this offering for any reason, we will have no obligation other than to return subscription monies within 10 business days.

We may decide, in our sole discretion and for any reason, to cancel or terminate the Rights Offering at any time prior to the expiration date. If this offering is cancelled or terminated, we will have no obligation with respect to Subscription Rights that have been exercised except to return within 10 business days, without interest or deduction, all subscription payments deposited with the Subscription Agent. If we terminate this offering and you have not exercised any Subscription Rights, such Subscription Rights will expire and be worthless.

The Subscription Price determined for this offering is not an indication of the fair value of our common stock.

In determining the Subscription Price, our board of directors considered a number of factors, including, but not limited to, our need to raise capital in the near term to continue our operations, the current and historical trading prices of our common stock, a price that would increase the likelihood of participation in the Rights Offering, the cost of capital from other sources, the value of the Preferred Stock and Warrants being issued as components of the Unit, and comparable precedent transactions. The Subscription Price does not necessarily bear any relationship to any established criteria for value. No valuation consultant or investment banker has opined upon the fairness or adequacy of the Subscription Price. You should not consider the Subscription Price as an indication of the value of our company or our common stock.

If you do not act on a timely basis and follow subscription instructions, your exercise of Subscription Rights may be rejected.

Holders of Subscription Rights who desire to purchase shares of our Preferred Stock and Warrants in this offering must act on a timely basis to ensure that all required forms and payments are actually received by the Subscription Agent prior to 5:00 p.m., New York City time, on the expiration date, unless extended. If you are a beneficial owner of shares of common stock or participating warrants and options and you wish to exercise your Subscription Rights, you must act promptly to ensure that your broker, dealer, bank, trustee or other nominee acts for you and that all required forms and payments are actually received by your broker, dealer, bank, trustee or other nominee in sufficient time to deliver such forms and payments to the Subscription Agent to exercise the Subscription Rights granted in this offering that you beneficially own prior to 5:00 p.m., New York City time on the expiration date, as may be extended. We will not be responsible if your broker, dealer, bank, trustee or other nominee fails to ensure that all required forms and payments are actually received by the Subscription Agent prior to 5:00 p.m., New York City time, on the expiration date.

If you fail to complete and sign the required subscription forms, send an incorrect payment amount, or otherwise fail to follow the subscription procedures that apply to your exercise in this Rights Offering, the Subscription Agent may, depending on the circumstances, reject your subscription or accept it only to the extent of the payment received. Neither we nor the Subscription Agent undertakes to contact you concerning an incomplete or incorrect subscription form or payment, nor are we under any obligation to correct such forms or payment. We have the sole discretion to determine whether a subscription exercise properly follows the subscription procedures.

You may not receive all of the Units for which you subscribe.

While we are distributing to holders of our common stock and participating warrants and options one Subscription Rights for every share of common stock (including each share of common stock issuable upon exercise of participating warrants and options) owned on the Record Date, we are only seeking to raise \$8.0 million dollars in gross proceeds in this Rights Offering. As a result, based on 48,911,918 shares of common stock outstanding as of February 5, 2019 and 20,263,842 shares of common stock issuable upon exercise of participating warrants and options, we would grant Subscription Rights to acquire 69,175,760 Units but will only accept subscriptions for 8,000 Units. Accordingly, sufficient Units may not be available to honor your subscription in full. If excess Units are available after the exercise of Basic Subscription Rights, holders who fully exercise their Basic Subscription Rights will be entitled to subscribe for an additional number of Units. Over-Subscription Privileges will be allocated pro rata among Rights holders who over-subscribed, based on the number of over-subscription Units to which they have subscribed. We cannot guarantee that you will receive any or the entire amount of Units for which you subscribed. If for any reason the amount of Units allocated to you is less than you have subscribed for, then the excess funds held by the Subscription Agent on your behalf will be returned to you, without interest, as soon as practicable after the Rights Offering has expired and all prorating calculations and reductions contemplated by the terms of the Rights Offering have been effected, and we will have no further obligations to you.

Unless we otherwise agree in writing, a person or entity, together with related persons or entities, may not exercise Subscription Rights (including Over-Subscription Privileges) to purchase Units that, when aggregated with their existing ownership, would result in such person or entity, together with any related persons or entities, owning in excess of 9.99% of our issued and outstanding shares of common stock following the closing of the transactions contemplated by this Rights Offering. If the amount of shares allocated to you is less than your subscription request, then the excess funds held by the Subscription Agent on your behalf will be returned to you, without interest, as soon as practicable after the Rights Offering has expired and all prorating calculations and reductions contemplated by the terms of the Rights Offering have been effected, and we will have no further obligations to you.

If you make payment of the Subscription Price by personal check, your check may not clear in sufficient time to enable you to purchase shares in this Rights Offering.

Any personal check used to pay for shares and Warrants to be issued in this Rights Offering must clear prior to the expiration date of this Rights Offering, and the clearing process may require five or more business days. If you choose to exercise your Subscription Rights, in whole or in part, and to pay for shares and Warrants by personal check and your check has not cleared prior to the expiration date of this Rights Offering, you will not have satisfied the conditions to exercise your Subscription Rights and will not receive the shares and Warrants you wish to purchase.

The receipt of Subscription Rights may be treated as a taxable distribution to you.

We believe the distribution of the Subscription Rights in this Rights Offering should be a non-taxable distribution to holders of shares of common stock and holders of participating warrants and options under Section 305(a) of the Internal Revenue Code of 1986, as amended, or the Code because the Company is not expected to have current or accumulated earnings and profits in 2019. Please see the discussion on the “Material U.S. Federal Income Tax Consequences” below. This position is not binding on the IRS, or the courts, however. To the extent this Rights Offering is deemed to be part of a “disproportionate distribution” under Section 305 of the Code, for example because of interest payments to be made upon repayment of the September 28, 2018 Secured Convertible Promissory Note owed by the Company to Iliad Research and Trading, L.P., your receipt of Subscription Rights in this offering may be treated as the receipt of a taxable distribution to you equal to the fair market value of the Subscription Rights. Any such distribution would be treated as dividend income to the extent of our current or accumulated earnings and profits, if any, with any excess being treated as a return of capital to the extent thereof and then as capital gain. Each holder of shares of common stock and each holder of participating warrants and options is urged to consult his, her or its tax advisor with respect to the particular tax consequences of this Rights Offering.

Exercising the Subscription Rights limits your ability to engage in certain hedging transactions that could provide you with financial benefits.

By exercising the Subscription rights, you are representing to us that you have not entered into any short sale or similar transaction with respect to our common stock since the record date for the Rights Offering. In addition, the Subscription Rights provide that, upon exercise of the Subscription Right, you agree not to enter into any short sale or similar transaction with respect to our common stock for so long as you continue to hold Warrants issued in connection with the exercise of the Subscription Right. These requirements prevent you from pursuing certain investment strategies that could provide you greater financial benefits than you might have realized if the Subscription Rights did not contain these requirements.

The Subscription Rights are not transferable, and there is no market for the Subscription Rights.

You may not sell, transfer, assign or give away your Subscription Rights. Because the Subscription Rights are non-transferable, there is no market or other means for you to directly realize any value associated with the Subscription Rights. You must exercise the Subscription Rights to realize any potential value from your Subscription Rights.

There is no public market for the Preferred Stock in this offering.

There is no established public trading market for the Preferred Stock, and we do not expect a market to develop. In addition, we do not currently intend to apply for listing of the Preferred Stock on any securities exchange or recognized trading system.

Absence of a public trading market for the Warrants may limit your ability to resell the Warrants.

There is no established trading market for the Warrants to be issued pursuant to this offering, and we do not intend to list them for trading on the NYSE American or any other securities exchange or market, and the Warrants may not be widely distributed. Purchasers of the Warrants may be unable to resell the Warrants or sell them only at an unfavorable price for an extended period of time, if at all.

The market price of our common stock may never exceed the exercise price of the Warrants issued in connection with this offering.

The Warrants being issued in connection with this offering become exercisable upon issuance and will expire five years from the date of issuance. The market price of our common stock may never exceed the exercise price of the Warrants prior to their date of expiration. Any Warrants not exercised by their date of expiration will expire worthless and we will be under no further obligation to the warrant holder.

The Warrants contain features that may reduce your economic benefit from owning them.

The Warrants contain features that allow us to redeem the Warrants and that prohibit you from engaging in certain investment strategies. We may redeem the Warrants for \$0.01 per Warrant if the Volume Weighted Average Price (as defined in the Warrant) for our common stock is closes above \$0.75 per share , subject to adjustment, for ten consecutive trading days, provided that we may not do so prior to the first anniversary of closing of the Rights Offering, and only upon not less than 30 days' prior written notice of redemption. If we give notice of redemption, you will be forced to sell or exercise your Warrants or accept the redemption price. The notice of redemption could come at a time when it is not advisable or possible for you to exercise the Warrants. As a result, you may be unable to benefit from owning the Warrants being redeemed. In addition, for so long as you continue to hold Warrants, you will not be permitted to enter into any short sale or similar transaction with respect to our common stock. This could prevent you from pursuing investment strategies that could provide you greater financial benefits from owning the Warrant.

The dealer-managers are not underwriting, nor acting as placement agents of, the Subscription Rights or the securities underlying the Subscription Rights.

Maxim Group LLC and Ascendant Capital Markets LLC will act as co-dealer-managers for the Rights Offering. As provided in the dealer-manager agreement, the dealer-managers will provide marketing assistance in connection with this offering. The dealer-managers are not underwriting or placing any of the Subscription Rights or the shares of our Preferred Stock or Warrants being issued in this offering and are not making any recommendation with respect to such Subscription Rights (including with respect to the exercise or expiration of such Subscription Rights), shares or Warrants. The dealer-managers will not be subject to any liability to us in rendering the services contemplated by the dealer-manager agreement except for any act of bad faith, gross negligence or willful misconduct by the dealer-managers. The Rights Offering may not be successful despite the services of the dealer-managers to us in this offering.

Since the Warrants are executory contracts, they may have no value in a bankruptcy or reorganization proceeding.

In the event a bankruptcy or reorganization proceeding is commenced by or against us, a bankruptcy court may hold that any unexercised Warrants are executory contracts that are subject to rejection by us with the approval of the bankruptcy court. As a result, holders of the Warrants may, even if we have sufficient funds, not be entitled to receive any consideration for their Warrants or may receive an amount less than they would be entitled to if they had exercised their Warrants prior to the commencement of any such bankruptcy or reorganization proceeding.

We may amend or modify the terms of the Rights Offering at any time prior to the expiration of the Rights Offering in our sole discretion.

Our board of directors reserves the right to amend or modify the terms of the Rights Offering in its sole discretion. If we should make any fundamental changes to the terms of the Rights Offering set forth in this prospectus, we will file a post-effective amendment to the registration statement in which this prospectus is included, offer potential purchasers who have subscribed for rights the opportunity to cancel such subscriptions and issue a refund of any money advanced by such stockholder and recirculate an updated prospectus after the post-effective amendment is declared effective by the SEC. In addition, upon such event, we may extend the Expiration Date of the Rights Offering to allow holders of rights ample time to make new investment decisions and for us to recirculate updated documentation. Promptly following any such occurrence, we will issue a press release announcing any changes with respect to the Rights Offering and the new expiration date. The terms of the Rights Offering cannot be modified or amended after the Expiration Date of the Rights Offering. Although we do not presently intend to do so, we may choose to amend or modify the terms of the Rights Offering for any reason, including, without limitation, in order to increase participation in the Rights Offering. Such amendments or modifications may include a change in the subscription price, although no such change is presently contemplated.

Risks Related to our Common Stock

The market price of our stock may be adversely affected by market volatility, both before and after the subscription rights expire.

The market price of our common stock has been and is likely to be volatile. This is especially true given the current significant instability in the financial markets. In addition to general economic, political and market conditions, the price and trading volume of our stock could fluctuate widely in response to many factors, including:

announcements of the results of clinical trials by us or our competitors;
announcements of availability or projections of our products for commercial sale;
announcements of legal actions against us and/or settlements or verdicts adverse to us;
adverse reactions to products;
governmental approvals, delays in expected governmental approvals or withdrawals of any prior governmental approvals or public or regulatory agency comments regarding the safety or effectiveness of our products, or the adequacy of the procedures, facilities or controls employed in the manufacture of our products;
changes in U.S. or foreign regulatory policy during the period of product development;
developments in patent or other proprietary rights, including any third party challenges of our intellectual property rights;
announcements of technological innovations by us or our competitors;
announcements of new products or new contracts by us or our competitors;
actual or anticipated variations in our operating results due to the level of development expenses and other factors;
changes in financial estimates by securities analysts and whether our earnings meet or exceed the estimates;
conditions and trends in the pharmaceutical and other industries;
new accounting standards;
overall investment market fluctuation;
restatement of prior financial results;
notice of NYSE American non-compliance with requirements; and
occurrence of any of the risks described in these “Risk Factors”.

Accordingly, we cannot assure you that the market price of our common stock will not decline after you elect to exercise your subscription rights. If that occurs, you may have committed to buy Units in the Rights Offering at a price greater than the prevailing market price of the underlying common stock, and you could have an immediate unrealized loss.

Moreover, we cannot assure you that following the exercise of your subscription rights that you will be able to sell your common stock at a price equal to or greater than the subscription price. Until warrants are delivered upon expiration of the Rights Offering and they are exercised for shares of common stock (and shares of Preferred Stock are delivered and converted into shares of common stock, as applicable), you will not be able to sell the underlying shares of our common stock that you purchase in the Rights Offering. Certificates (physical, electronic or book-entry form) representing shares and warrants purchased will be delivered as soon as practicable after expiration of the Rights Offering. We will not pay you interest on funds delivered to the subscription agent pursuant to the exercise of subscription rights.

Our stockholders may be diluted by conversions of outstanding convertible promissory notes.

On September 28, 2018 we entered into a Securities Purchase Agreement (the “Purchase Agreement”) with Iliad Research and Trading, L.P. (the “Lender”), pursuant to which the Company issued a Secured Convertible Promissory Note (the “Convertible Note”) to the Lender dated as of the September 28, 2018. The Convertible Note has an original principal amount of \$3,170,000, bears interest at a rate of 10% per annum and will mature on September 28, 2019, unless earlier paid, redeemed or converted in accordance with its terms. The Convertible Note provides the Lender with the right to convert, at any time, all or any part of the outstanding principal and accrued but unpaid interest into shares of the Company’s Common Stock at a conversion price of \$0.30 per share (“Lender Conversion Price”). Further,

beginning on March 28, 2019, the Convertible Note also provides the Lender with the right to redeem all or any portion of the Convertible Note (“Redemption Amount”). The payments of each Redemption Amount may be made, at the option of the Company, in cash, by converting such Redemption Amount into shares of Common Stock (“Redemption Conversion Shares”), or a combination thereof. The number of Redemption Conversion Shares equals the portion of the applicable Redemption Amount being converted divided by the lesser of \$0.30 or the Market Price. The Market Price is defined as 80% of lowest daily VWAP during the ten (10) Trading Days immediately preceding the applicable measurement date. If, after March 28, 2019, we elect to issue Redemption Conversion Share in lieu of the cash payment of the Redemption Amount, we may be required to issue a substantial number of Redemption Conversion Shares depending on the then prevailing market price. The issuance of such Redemption conversion Shares and the sale of such shares in the public market, or the perception that such sales might occur, could result in substantial dilution to our existing stockholders and adversely affect the market price of our common stock, and the market value of our other securities.

Risks Related to Our Business

Investors should carefully consider the risks and uncertainties and all other information contained or incorporated by reference in this prospectus, including the risks and uncertainties discussed under “*Risk Factors*” in our most recent Annual Report on Form 10-K, as may be amended from time to time, and in subsequent filings that are incorporated herein by reference. All of these risk factors are incorporated by reference herein in their entirety. These risks and uncertainties are not the only ones facing us. Our business, financial condition or results of operations could be materially adversely affected by any of these risks. The trading price of our common stock could decline due to any of these risks, and you may lose all or part of your investment. This prospectus and the incorporated documents also contain forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including the risks mentioned in this prospectus.

FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated herein by reference contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. These statements are based on our management’s current beliefs, expectations and assumptions about future events, conditions and results and on information currently available to us. Discussions containing these forward-looking statements may be found, among other places, in the Sections entitled “Business,” “Risk Factors” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” incorporated by reference from our most recent Annual Report on Form 10-K and our Quarterly Reports on Form 10-Q, as well as any amendments thereto, filed with the SEC.

All statements, other than statements of historical fact, included or incorporated herein regarding our strategy, future operations, financial position, future revenues, projected costs, plans, prospects and objectives are forward-looking statements. Words such as “expect,” “anticipate,” “intend,” “plan,” “believe,” “seek,” “estimate,” “think,” “may,” “could,” “will,” “should,” “continue,” “potential,” “likely,” “opportunity” and similar expressions or variations of such words are intended to identify forward-looking statements but are not the exclusive means of identifying forward-looking statements.

Among the factors that could cause actual results to differ materially from those indicated in the forward-looking statements are risks and uncertainties inherent in our business including, without limitation: our ability to adequately fund our projects as we will need additional funding to proceed with our objectives, the potential therapeutic effect of our products, the possibility of obtaining regulatory approval, our ability to find senior co-development partners with the capital and expertise needed to commercialize our products and to enter into arrangements with them on commercially reasonable terms, our ability to manufacture and sell any products, our ability to enter into arrangements with third party vendors, market acceptance of our products, our ability to earn a profit from sales or licenses of any drugs, our ability to discover new drugs in the future, changing market conditions, changes in laws and regulations affecting our industry, and issues related to our New Brunswick, New Jersey facility. In February 2013, we received a

Complete Response Letter from the Food and Drug Administration, or FDA, for our Ampligen New Drug Application, or NDA, for the treatment of CFS. The FDA communicated that we should conduct at least one additional clinical trial, complete various nonclinical studies and perform a number of data analysis. Accordingly, the remaining steps to potentially gain FDA approval of the Ampligen NDA, the final results of these and other ongoing activities could vary materially from our expectations and could adversely affect the chances for approval of the Ampligen NDA. These activities and the ultimate outcomes are subject to a variety of risks and uncertainties, including but not limited to risks that (i) the FDA may ask for additional data, information or studies to be completed or provided; and (ii) the FDA may require additional work related to the commercial manufacturing process to be completed or may, in the course of the inspection of manufacturing facilities, identify issues to be resolved.

In August 2016, we received approval of our NDA from Administracion Nacional de Medicamentos, Alimentos y Tecnologia Medica, or ANMAT, for commercial sale of rintatolimod (U.S. tradename: Ampligen®) in the Argentine Republic for the treatment of severe CFS. The product will be marketed by GP Pharm, our commercial partner in Latin America. We believe, but cannot assure, that this approval provides a platform for potential sales in certain countries within the European Union under regulations that support cross-border pharmaceutical sales of licensed drugs. In Europe, approval in a country with a stringent regulatory process in place, such as Argentina, should add further validation for the product as the Early Access Program, or EAP, as discussed below and underway in Europe in pancreatic cancer. ANMAT approval is only an initial, but important, step in the overall successful commercialization of our product. There are a number of actions that must occur before we could be able to commence commercial sales in Argentina. Commercialization in Argentina will require, among other things, an appropriate reimbursement level, appropriate marketing strategies, completion of manufacturing preparations for launch. Approval of rintatolimod for severe CFS in the Argentine Republic does not in any way suggest that the Ampligen NDA in the United States or any comparable application filed in the European Union or elsewhere will obtain commercial approval.

In May 2016, we entered into a five-year agreement with myTomorrows, a Netherlands based company, for the commencement and management of an EAP in Europe and Turkey related to CFS. Pursuant to the agreement, myTomorrows, as our exclusive service provider and distributor in this territory, is performing EAP activities. In January 2017, the EAP was extended to pancreatic cancer patients beginning in the Netherlands. In February 2018, we signed an amendment to extend the territory to cover Canada to treat pancreatic cancer patients, pending government approval. In March 2018, we signed an amendment to which myTomorrows will be our exclusive service provider for special access activities in Canada for the supply of Ampligen for the treatment of CFS. No assurance can be given that we can sufficiently supply product should we experience an unexpected demand for Ampligen in our clinical studies, the commercial launch in Argentina or pursuant to the EAPs. No assurance can be given that Ampligen will prove effective in the treatment of pancreatic cancer.

Currently, two Ampligen clinical trials are underway with a number of subjects enrolled at university cancer centers testing whether tumor microenvironments can be reprogrammed to increase the effectiveness of cancer immunotherapy, including checkpoint blockade. One is at Roswell Park Comprehensive Cancer Center and the other is at the University of Pittsburgh Medical Center. Two additional studies have been approved for enrollment and subjects are being recruited at Roswell Park Comprehensive Cancer Center and the University of Pittsburgh Medical Center using Ampligen in conjunction with Merck's Ketruda. No assurance can be given as to the results of these underway trials. Six additional cancer trials in collaboration with University Medical/Cancer Research Centers using Ampligen plus checkpoint blockade are in various pre-enrollment stages. No assurance can be given as to whether some or all of the planned additional six oncology clinical trials will occur and they are subject to many factors including lack of regulatory approval(s), lack of study drug, or a change in priorities at the sponsoring Universities or Cancer Centers. Even if these additional clinical trials are initiated, we cannot assure that these clinical studies or the two studies underway will be successful or yield any useful data.

Our overall objectives include plans to continue seeking approval for commercialization of Ampligen in the United States and abroad as well as seeking to broaden commercial therapeutic indications for Alferon N Injection presently approved in the United States and Argentina. We continue to pursue senior co-development partners with the capital and expertise needed to commercialize our products and to enter into arrangements with them on commercially reasonable terms. Our ability to commercialize our products, widen commercial therapeutic indications of Alferon N Injection and/or capitalize on our collaborations with research laboratories to examine our products are subject to a number of significant risks and uncertainties including, but not limited to our ability to enter into more definitive agreements with some of the research laboratories and others that we are collaborating with, to fund and conduct additional testing and studies, whether or not such testing is successful or requires additional testing and meets the requirements of the FDA and comparable foreign regulatory agencies. We do not know when, if ever, our products will be generally available for commercial sale for any indication.

We outsource certain components of our manufacturing, quality control, marketing and distribution while maintaining control over the entire process through our quality assurance and regulatory groups. We cannot provide any guarantee that the facility or our contract manufacturer will necessarily pass an FDA pre-approval inspection for Alferon manufacture.

The production of new Alferon Active Pharmaceutical Ingredient, or API, inventory will begin once the validation phase is complete. While the facility has already been approved by the FDA under the Biological License Application, or BLA, for Alferon, this status will need to be reaffirmed by a successful Pre-Approval Inspection by the FDA prior to commercial sale of newly produced inventory product. If and when the Company obtains a reaffirmation of FDA BLA status and has begun production of new Alferon API, it will need FDA approval as to the quality and stability of the final product before commercial sales can resume. We will need additional funds to finance the revalidation process in our facility to initiate commercial manufacturing, thereby readying ourselves for an FDA Pre-Approval Inspection. If we are unable to gain the necessary FDA approvals related to the manufacturing process and/or final product of new Alferon inventory, our operations most likely will be materially and/or adversely affected. In light of these contingencies, there can be no assurances that the approved Alferon N Injection product will be returned to production on a timely basis, if at all, or that if and when it is again made commercially available, it will return to prior sales levels. In addition, we are currently readying the New Brunswick facility to start manufacturing polymers used for the production of Ampligen to satisfy our future needs. While we anticipate that we will be able to commence manufacturing polymers at the New Brunswick facility, we may need additional funding to continue manufacturing. There cannot be any guarantee that we will obtain adequate funds to sustain manufacturing at the New Brunswick facility or that the facility will be able to manufacture sufficient lots for the commercial launch of Ampligen.

We believe, and are investigating, Ampligen's potential role in enhancing the activity of influenza vaccines. While certain studies involving rodents, non-human primates (monkeys) and healthy human subjects indicate that Ampligen may enhance the activity of influenza vaccines by conferring increased cross-reactivity or cross-protection, further studies will be required and no assurance can be given that Ampligen will assist in the development of a universal vaccine for influenza or other viruses.

Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified and some of which are beyond our control, you should not rely on these forward-looking statements as predictions of future events. The events and circumstances reflected in our forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward-looking statements. Moreover, we operate in an evolving environment. New risk factors and uncertainties may emerge from time to time, and it is not possible for management to predict all risk factors and uncertainties. Except as required by applicable law, we do not plan to publicly update or revise any forward-looking statements contained herein, whether as a result of any new information, future events, changed circumstances or otherwise.

This prospectus and the documents incorporated herein by reference also refer to estimates and other statistical data made by independent parties and by us relating to market size and growth and other data about our industry. This data involves 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 markets in which we operate are necessarily subject to a high degree of uncertainty and risk.

USE OF PROCEEDS

Assuming that all Units are subscribed for in the Rights Offering, we estimate that the net proceeds from the Rights Offering will be approximately \$7.19 million, after deducting expenses relating to this offering payable by us estimated at approximately \$ 810,000 , including dealer-manager fees and expenses and excluding any proceeds received upon exercise of any Warrants.

We intend to use the net proceeds from the exercise of Subscription Rights to repay a convertible promissory note, for general corporate purposes and to fund ongoing operations and expansion of our business. We expect to use any proceeds we receive from the exercise of Warrants for substantially the same purposes and in substantially the same manner. Pending these uses, we intend to invest the funds in short-term, investment grade, interest-bearing securities. It is possible that, pending their use, we may invest the net proceeds in a way that does not yield a favorable, or any, return for us.

As noted above, we intend to use a portion of the net proceeds from the exercise of Subscription Rights to repay a Secured Convertible Promissory Note (the “Convertible Note”) that we issued to Iliad Research and Trading, L.P. (the “Lender”) in September 2018. The Convertible Note has an original principal amount of \$3,170,000, bears interest at a rate of 10% per annum and will mature on September 28, 2019, unless earlier paid, redeemed or converted in accordance with its terms. We received proceeds of \$3,000,000 after an original issue discount and payment of Lender’s legal fees. We used the net proceeds for product manufacturing, working capital and general and administrative expenses.

Our management will have broad discretion as to the allocation of the net proceeds from this offering and could use them for purposes other than those contemplated at the time of commencement of this offering.

DILUTION

Purchasers of our common stock, which is issuable upon conversion of the Series B Convertible Preferred Stock and upon exercise of the warrants contained in the units, will experience an immediate dilution of the net tangible book value per share of our common stock. Our net tangible book value as of September 30, 2018 was approximately \$5.56 million, or \$0.12 per share of our common stock (based upon 47,957,884 shares of our common stock outstanding). Net tangible book value per share is equal to our total tangible assets less our total liabilities, divided by the number of shares of our outstanding common stock.

Dilution per share of common stock equals the difference between the subscription price per unit paid by purchasers in the rights offering (ascribing no value to the warrants contained in the units) and the net tangible book value per share of our common stock immediately after the rights offering.

Based on the sale by us in this rights offering of a maximum of 8,000 units (consisting of 8,000 shares of Series B Convertible Preferred Stock, convertible into the number of shares of our common stock determined by dividing the \$1,000 stated value per share of the Series B Convertible Preferred Stock by a conversion price of \$0.25 per share, and warrants to purchase an aggregate of 32,000,000 shares of common stock upon exercise), at the subscription price of \$1,000 per unit, and after deducting estimated offering expenses and dealer-manager fees and expenses payable by us and assuming no exercise of the warrants, our pro forma net tangible book value as of September 30, 2018 would have been approximately \$12.75 million, or \$0.27 per share. This represents an immediate increase in pro forma net tangible book value to existing stockholders of \$0.15 per share and an immediate dilution to purchasers in the rights offering of \$0.11 per share. The following table illustrates this per-share dilution:

Subscription Price	\$ 1,000
Net tangible book value per share as of September 30, 2018	\$ 0.12
Increase in net tangible book value per share attributable to Rights Offering	\$ 0.15
Pro forma net tangible book value per share as of September 30, 2018, after giving effect to rights offering	\$ 0.27

Dilution in net tangible book value per share to purchasers in the rights offering

\$ 0.11

The information above is as of September 30, 2018 and excludes:

6,530,328 shares of our common stock issuable upon the exercise of stock options, with a weighted-average exercise price of \$0.82 per share;

14,335,298 shares of our common stock issuable upon the exercise of outstanding warrants, with a weighted-average exercise price of \$0.49 per share;

10,566,667 shares of our common stock issuable upon conversion or redemption of a \$3.17 million principle amount convertible note, with a conversion price, subject to adjustment, of \$0.30 per share;

5,810,716 other shares of our common stock reserved for future issuance under our 2018 Equity Incentive Plan.

MARKET PRICE OF OUR COMMON STOCK AND RELATED STOCKHOLDER MATTERS

On February 5, 2019, the closing price for our common stock as reported on the NYSE AMERICAN was \$0.2375 per share. The following table sets forth the ranges of high and low sales prices per share of our common stock as reported on The NYSE American for the periods indicated. Such quotations represent inter-dealer prices without retail markup, markdown or commission and may not necessarily represent actual transactions.

	High	Low
COMMON STOCK		
Time Period:		
January 1, 2019 through February 5, 2019	\$ 0.27	\$ 0.18
January 1, 2018 through March 31, 2018	\$ 0.65	\$ 0.34
April 1, 2018 through June 30, 2018	\$ 0.50	\$ 0.28
July 1, 2018 through September 30, 2018	\$ 0.32	\$ 0.21
October 1, 2018 through December 31, 2018	\$ 0.26	\$ 0.18
January 1, 2017 through March 31, 2017	\$ 0.93	\$ 0.39
April 1, 2017 through June 30, 2017	\$ 0.84	\$ 0.45
July 1, 2017 through September 30, 2017	\$ 0.74	\$ 0.30
October 1, 2017 through December 31, 2017	\$ 0.39	\$ 0.30
January 1, 2016 through March 31, 2016	\$ 2.40	\$ 0.78
April 1, 2016 through June 30, 2016	\$ 1.92	\$ 1.24
July 1, 2016 through September 30, 2016	\$ 2.64	\$ 1.24
October 1, 2016 through December 31, 2016	\$ 1.26	\$ 0.65

As of February 5, 2019 , we had 166 record holders of our common stock. Because many of our shares are held by brokers and other institutions on behalf of stockholders, we are unable to estimate the total number of individual stockholders represented by these record holders.

DIVIDEND POLICY

We have never declared or paid any dividends on our common stock and do not anticipate paying any in the foreseeable future. Any future determination relating to our dividend policy will be made at the discretion of our board of directors and will depend on a number of factors, including future earnings, capital requirements, financial conditions, future prospects, contractual restrictions and covenants and other factors that our board of directors may deem relevant.

THE RIGHTS OFFERING

The Subscription Rights

We are distributing to the record holders of our common stock and participating warrants and options, at no charge, non-transferable Subscription Rights to purchase one Unit at a subscription price of \$1,000 per Unit. Each Basic Subscription Right will entitle you to purchase one share of our Preferred Stock and 4,000 Warrants. Each Warrant will be exercisable for one share of our common stock at an exercise price of \$ 0.25 per share from the date of issuance through the expiration five years from the date of issuance. Each record holders of our common stock and holder of participating warrants and options will receive one Subscription Right for every share of our common stock (including each share of common stock issuable upon exercise of participating warrants and options) owned by such record holder as of the Record Date. Each Subscription Right entitles the record holder to a Basic Subscription Right and an Over-Subscription Privilege.

Basic Subscription Rights

Your Basic Subscription Rights will entitle you to purchase one share of our Preferred Stock and 4,000 Warrants. For example, if you owned 100 shares of common stock as of the Record Date, you will receive 100 Subscription Rights and will have the right to purchase 100 shares of our Preferred Stock and Warrants to purchase 400,000 shares of our common stock for \$1,000 per Unit, or a total payment of \$100,000 . You may exercise all or a portion of your Basic Subscription Rights, or you may choose not to exercise any of your Basic Subscription Rights. If you do not exercise your Basic Subscription Rights in full, you will not be entitled to exercise your Over-Subscription Privilege.

Additionally, sufficient Units may not be available to honor your Basic Subscription Right in full. While we are distributing one subscription right for every share of common stock owned or deemed owned on the record date, we are only seeking to raise \$8 million dollars in gross proceeds in this Rights Offering. As a result, based on (1) 48,911,918 shares of common stock outstanding and (2) 20,263,842 shares of common stock deemed to be owned by holders of our warrants and options and deemed to be outstanding as of February 14, 2019, we would grant subscription rights to acquire 69,175,760 Units but will only accept subscriptions for 8,000 Units.

If exercises of Basic Subscription Rights exceed the number of Units available in the Rights Offering, we will allocate the available Units pro-rata among the record holders exercising the Basic Subscription Rights in proportion to the number of shares of our common stock each of those record holders owned or were deemed to own on the record date, relative to the number of shares owned or deemed owned on the record date by all record holders exercising the basic subscription right. If this pro-rata allocation results in any record holders receiving a greater number of Units than the record holder subscribed for pursuant to the exercise of the basic subscription rights, then such record holder will be

allocated only that number of Units for which the record holder subscribed, and the remaining Units will be allocated among all other record holders exercising their Basic Subscription Rights on the same pro rata basis described above. The proration process will be repeated until all shares have been allocated.

If for any reason the amount of Units allocated to you is less than you have subscribed for, then the excess funds held by the Subscription Agent on your behalf will be returned to you, without interest, as soon as practicable after the Rights Offering has expired and all prorating calculations and reductions contemplated by the terms of the Rights Offering have been effected, and we will have no further obligations to you.

Over-Subscription Privilege

If you exercise your Basic Subscription Rights in full, you may also choose to exercise your Over-Subscription Privilege. Subject to proration and the limitations described in this prospectus, we will seek to honor the Over-Subscription Requests in full. If Over-Subscription Requests exceed the number of Units available, however, we will allocate the available Units pro rata among the stockholders as of the record date exercising the Over-Subscription Privilege in proportion to the number of shares of our common stock (including each share of common stock issuable upon exercise of participating warrants and options) each of those stockholders owned on the Record Date, relative to the number of shares owned on the Record Date by all stockholders, warrant holders and option holders as of the record date exercising the Over-Subscription Privilege. If this pro rata allocation results in any stockholder receiving a greater number of Units than the record holder subscribed for pursuant to the exercise of the Over-Subscription Privilege, then such record holder will be allocated only that number of Units for which the record holder oversubscribed, and the remaining Units will be allocated among all other stockholders, warrant holders or option holders exercising the Over-Subscription Privilege on the same pro rata basis described above. The proration process will be repeated until all Units have been allocated.

American Stock Transfer & Trust Company, LLC, the Subscription Agent for the Rights Offering, will determine the over-subscription allocation based on the formula described above.

To the extent the aggregate subscription payment of the actual number of unsubscribed Units available to you pursuant to the Over-Subscription Privilege is less than the amount you actually paid in connection with the exercise of the Over-Subscription Privilege, you will be allocated only the number of unsubscribed Units available to you, and any excess subscription payments will be returned to you, without interest or deduction, with 10 business days after expiration of the Rights Offering.

We can provide no assurances that you will actually be entitled to purchase the number of Units issuable upon the exercise of your Over-Subscription Privilege in full at the expiration of the Rights Offering. We will not be able to satisfy any requests for Units pursuant to the Over-Subscription Privilege if all of our stockholders exercise their Basic Subscription Rights in full, and we will only honor an Over-Subscription Privilege to the extent sufficient Units are available following the exercise of Basic Subscription Rights.

Limitation on the Purchase of Units

You may only purchase the number of Units purchasable upon exercise of the number of Basic Subscription Rights distributed to you in the Rights Offering, plus the Over-Subscription Privilege, if any. Accordingly, the number of Units that you may purchase in the Rights Offering is limited by the number of shares of our common stock (including each share of common stock issuable upon exercise of participating warrants and options) you held on the Record Date and by the extent to which other stockholders, warrant holders or option holders exercise their Basic Subscription Rights and Over-Subscription Privileges, which we cannot determine prior to completion of the Rights Offering. However, due to stock exchange restrictions, we will not issue Units in the Rights Offering to the extent that a holder would beneficially own, together with any other person with whom such holder's securities may be aggregated under applicable law, more than 9.99% of our outstanding shares of common stock.

Subscription Price

The Subscription Price is \$1,000 per Unit. The Subscription Price does not necessarily bear any relationship to our past or expected future results of operations, cash flows, current financial condition, or any other established criteria for value. No change will be made to the Subscription Price by reason of changes in the trading price of our common stock or other factor prior to the expiration of this Rights Offering.

Determination of Subscription Price

In the determining the Subscription Price, the board of directors considered a variety of factors including those listed below:

our need to raise capital in the near term to continue our operations;

the current and historical trading prices of our common stock;

a price that would increase the likelihood of participation in the Rights Offering;

the cost of capital from other sources;

the value of the common stock being issued as a component of the Unit;

the value of the Warrant being issued as a component of the Unit; and

comparable precedent transactions, including the percentage of shares offered, the terms of the subscription rights being offered, the subscription price and the discount that the subscription price represents to the immediately prevailing closing prices for these offerings.

The Subscription Price does not necessarily bear any relationship to any established criteria for value. No valuation consultant or investment banker has opined upon the fairness or adequacy of the Subscription Price. You should not consider the Subscription Price as an indication of actual value of our company or our common stock. The market price of our common stock may decline during or after the Rights Offering. We cannot predict the price at which our shares of common stock will trade after the Rights Offering. You should obtain a current price quote for our common stock and perform an independent assessment of our Warrants before exercising your Subscription Rights and make your own assessment of our business and financial condition, our prospects for the future, and the terms of this Rights Offering. Once made, all exercises of Subscription Rights are irrevocable.

No Short-Sales

By exercising the Subscription rights, you are representing to us that you have not entered into any short sale or similar transaction with respect to our common stock since the record date for the Rights Offering. In addition, the Subscription Rights provide that, upon exercise of the Subscription Right, you represent that you have not since the Record Date and, for so long as you continue to hold Preferred Stock or Warrants issued in connection with the exercise of the Subscription Right, agree to not enter into any short sale or similar transaction with respect to our common stock. These requirements prevent you from pursuing certain investment strategies that could provide you greater financial benefits than you might have realized if the Subscription Rights did not contain these requirements.

No Recombination

The Preferred Stock and Warrants comprising the Units will separate upon the exercise of the Subscription Rights, and the Units will not trade as a separate security. Holders may not recombine shares of Preferred Stock and Warrants to receive a Unit.

Non-Transferability of Subscription Rights

The Subscription Rights are non-transferable (other than by operation of law) and, therefore, you may not sell, transfer, assign or give away your Subscription Rights to anyone. The Subscription Rights will not be listed for trading on any stock exchange or market.

Expiration Date; Extension

The subscription period, during which you may exercise your Subscription Rights, expires at 5:00 p.m., Eastern Time, on March 1, 2019, which is the expiration of the Rights Offering. If you do not exercise your Subscription Rights before that time, your Subscription Rights will expire and will no longer be exercisable. We will not be required to issue shares to you if the Subscription Agent receives your Rights Certificate or your subscription payment after that time. We have the option to extend the Rights Offering in our sole discretion, although we do not presently intend to do so. We may extend the Rights Offering by giving oral or written notice to the Subscription Agent before the Rights Offering expires. If we elect to extend the Rights Offering, we will issue a press release announcing the extension no later than 9:00 a.m., Eastern Time, on the next business day after the most recently announced expiration date of the Rights Offering.

If you hold your shares of common stock or participating warrants or options in the name of a broker, dealer, bank or other nominee, the nominee will exercise the Subscription Rights on your behalf in accordance with your instructions. Please note that the nominee may establish a deadline that may be before 5:00 p.m., Eastern Time, on March 1, 2019, which is the expiration date that we have established for the Rights Offering.

Termination

We may terminate the Rights Offering at any time and for any reason prior to the completion of the Rights Offering. If we terminate the Rights Offering, we will issue a press release notifying stockholders and the public of the termination.

Return of Funds upon Completion or Termination

The Subscription Agent will hold funds received in payment for shares in a segregated account pending completion of the Rights Offering. The Subscription Agent will hold this money until the Rights Offering is completed or is terminated. To the extent you properly exercise your Over-Subscription Privilege for an amount of Units that exceeds the number of unsubscribed Units available to you, any excess subscription payments will be returned to you within 10 business days after the expiration of the Rights Offering, without interest or deduction. If the Rights Offering is terminated for any reason, all subscription payments received by the Subscription Agent will be returned within 10 business days, without interest or deduction.

Shares of Our Capital Stock and Warrants Outstanding After the Rights Offering

Assuming no other transactions by us involving our capital stock prior to the expiration of the Rights Offering, and if the Rights Offering is fully subscribed, upon consummation of the Rights Offering we will have 47,957,884 shares of common stock issued and outstanding, 8,000 shares of Preferred Stock issued and outstanding, and 32,000,000 Warrants to purchase an additional shares of our common stock issued and outstanding, based on 47,957,884 shares of our common stock outstanding as of September 30, 2018. The exact number of shares of Preferred Stock and Warrants that we will issue in this offering will depend on the number of Units that are subscribed for in the Rights Offering.

Methods for Exercising Subscription Rights

The exercise of Subscription Rights is irrevocable and may not be cancelled or modified. You may exercise your Subscription Rights as follows:

Subscription by Record Holders

If you are a stockholder, or participating warrant holder or option holder of record as of the Record Date, the number of Units you may purchase pursuant to your Subscription Rights is indicated on the enclosed Rights Certificate. You may exercise your Subscription Rights by properly completing and executing the Rights Certificate and forwarding it, together with your full payment, to the Subscription Agent at the address given below under "Subscription Agent," to be received before 5:00 p.m., Eastern Time, on March 1, 2019.

Subscription by Beneficial Owners

If as of the Record Date you are a beneficial owner of shares of our common stock or participating warrants or options that are registered in the name of a broker, dealer, bank or other nominee, you will not receive a Rights Certificate. Instead, we will issue one Subscription Right to such nominee record holder for all shares of our common stock or participating warrants or options held by such nominee at the Record Date. If you are not contacted by your nominee, you should promptly contact your nominee in order to subscribe for shares in the Rights Offering and follow the instructions provided by your nominee.

To properly exercise your Over-Subscription Privilege, you must deliver the subscription payment related to your Over-Subscription Privilege before the Rights Offering expires. Because we will not know the total number of unsubscribed Units before the Rights Offering expires, if you wish to maximize the number of shares you purchase pursuant to your Over-Subscription Privilege, you will need to deliver payment in an amount equal to the aggregate subscription payment for the maximum number of Units that you wish to purchase.

Payment Method

Payments must be made in full in U.S. currency by personal check, certified check or bank draft, or by wire transfer, and payable to “ American Stock Transfer & Trust Company, LLC , as Subscription Agent for Hemispherx Biopharma, Inc.” You must timely pay the full subscription payment, including payment for the Over-Subscription Privilege, for the full number of shares of our common stock you wish to acquire pursuant to the exercise of Subscription Rights by delivering a:

certified or personal check drawn against a U.S. bank payable to “ American Stock Transfer & Trust Company, LLC , as Subscription Agent for Hemispherx Biopharma, Inc.”;

U.S. Postal money order payable to “ American Stock Transfer & Trust Company, LLC , as Subscription Agent for Hemispherx Biopharma, Inc.”; or

wire transfer of immediately available funds directly to the account maintained by American Stock Transfer & Trust Company, LLC , as Subscription Agent, for purposes of accepting subscriptions in this Rights Offering at JPMorgan Chase Bank, 55 Water Street, New York, New York 10005, ABA #021000021, Account # 530-354616 American Stock Transfer FBO Hemispherx Biopharma, Inc., with reference to the rights holder's name.

If you elect to exercise your Subscription Rights, you should consider using a wire transfer or certified check drawn on a U.S. bank to ensure that the Subscription Agent receives your funds before the Rights Offering expires. If you send a personal check, payment will not be deemed to have been received by the Subscription Agent until the check has cleared. The clearinghouse may require five or more business days to clear a personal check. Accordingly, holders who wish to pay the Subscription Price by means of a personal check should make payment sufficiently in advance of the expiration of the Rights Offering to ensure that the payment is received and clears by that date. If you send a certified check, payment will be deemed to have been received by the Subscription Agent immediately upon receipt of such instrument.

You should read the instruction letter accompanying the Rights Certificate carefully and strictly follow it. **DO NOT SEND RIGHTS CERTIFICATES OR PAYMENTS DIRECTLY TO US.** We will not consider your subscription received until the Subscription Agent has received delivery of a properly completed and duly executed Rights Certificate and payment of the full subscription payment.

The method of delivery of Rights Certificates and payment of the subscription payment to the Subscription Agent will be at the risk of the holders of Subscription Rights. If sent by mail, we recommend that you send those certificates and payments by registered mail, properly insured, with return receipt requested, or by overnight courier, and that you allow a sufficient number of days to ensure delivery to the Subscription Agent and clearance of payment before the Rights Offering expires.

Missing or Incomplete Subscription Forms or Payment

If you fail to complete and sign the Rights Certificate or otherwise fail to follow the subscription procedures that apply to the exercise of your Subscription Rights before the Rights Offering expires, the Subscription Agent will reject your subscription or accept it to the extent of the payment received. Neither we nor our Subscription Agent undertakes any responsibility or action to contact you concerning an incomplete or incorrect subscription form, nor are we under any obligation to correct such forms. We have the sole discretion to determine whether a subscription exercise properly complies with the subscription procedures.

If you send a payment that is insufficient to purchase the number of shares you requested, or if the number of shares you requested is not specified in the forms, the payment received will be applied to exercise your Subscription Rights to the fullest extent possible based on the amount of the payment received. Any excess subscription payments received by the Subscription Agent will be returned, without interest or deduction, within 10 business days following the expiration of the Rights Offering.

Issuance of Preferred Stock and Warrants

The shares of Preferred Stock and Warrants that are purchased in the Rights Offering as part of the Units will be issued in book-entry, or uncertificated, form meaning that you will receive a DRS account statement from our transfer agent reflecting ownership of these securities if you are a holder of record. If you hold your shares of common stock or participating warrants or options in the name of a bank, broker, dealer, or other nominee, DTC will credit your account with your nominee with the securities you purchased in the Rights Offering.

Subscription and Information Agent

The Subscription Agent is American Stock Transfer & Trust Company, LLC and the Information Agent is Morrow Sodali LLC . The address to which Rights Certificates and payments should be mailed or delivered by overnight courier is provided below. If sent by mail, we recommend that you send documents and payments by registered mail, properly insured, with return receipt requested, and that you allow a sufficient number of days to ensure delivery to the Subscription Agent and clearance or payment before the Rights Offering expires. Do not send or deliver these materials to us.

By mail, hand or overnight courier:
American Stock Transfer & Trust Company, LLC
Attn: Reorg Department

6201 15th Avenue
Brooklyn, NY 11219

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If you deliver the Rights Certificates in a manner different than that described in this prospectus, we may not honor the exercise of your Subscription Rights.

You should direct any questions or requests for assistance concerning the method of subscribing for the shares of our common stock or for additional copies of this prospectus to the Subscription Agent as follows:

American Stock Transfer & Trust Company, LLC

Attn: Reorg Department

6201 15th Avenue

Brooklyn, NY 11219

Warrant Agent

The warrant agent for the Warrants is American Stock Transfer & Trust Company, LLC.

No Fractional Shares

We will not issue fractional shares of common stock in the Rights Offering. We will only distribute Subscription Rights to acquire whole Units, rounded down to the nearest whole number of underlying common shares giving rise to such Subscription Rights. Any excess subscription payments received by the Subscription Agent will be returned within 10 business days after expiration of the Rights Offering, without interest or deduction. Similarly, no fractional shares of common stock will be issued in connection with the conversion of the Preferred Stock or the exercise of a Warrant. Instead, for any such fractional share that would otherwise have been issuable upon conversion of shares of Preferred Stock, the Company may, at its election, pay a cash payment equal to such fraction multiplied by the conversion price or round up to the next whole share, and for any such fractional share that would have otherwise been issued upon exercise of Warrants, the Company will round up such fraction to the next whole share.

Notice to Brokers and Nominees

If you are a broker, dealer, bank or other nominee holder that holds shares of our common stock or participating warrants or options for the account of others on the Record Date, you should notify the beneficial owners for whom you are the nominee of the Rights Offering as soon as possible to learn their intentions with respect to exercising their Subscription Rights. If a beneficial owner of our common stock or participating warrants or options so instructs, you should complete the Rights Certificate and submit it to the Subscription Agent with the proper subscription payment by the expiration date. You may exercise the number of Subscription Rights to which all beneficial owners in the aggregate otherwise would have been entitled had they been direct holders of our common stock on the Record Date, provided that you, as a nominee record holder, make a proper showing to the Subscription Agent by submitting the form entitled "Nominee Holder Certification," which is provided with your Rights Offering materials. If you did not receive this form, you should contact our Subscription Agent to request a copy.

Validity of Subscriptions

We will resolve all questions regarding the validity and form of the exercise of your Subscription Rights, including time of receipt and eligibility to participate in the Rights Offering. Our determination will be final and binding. Once made, subscriptions are irrevocable; we will not accept any alternative, conditional, or contingent subscriptions. We reserve the absolute right to reject any subscriptions not properly submitted or the acceptance of which would be unlawful. You must resolve any irregularities in connection with your subscriptions before the expiration date of the Rights Offering, unless we waive them in our sole discretion. Neither we nor the Subscription Agent is under any duty to notify you or your representative of defects in your subscriptions. A subscription will be considered accepted, subject to our right to withdraw or terminate the Rights Offering, only when the Subscription Agent receives a properly completed and duly executed Rights Certificate and any other required documents and the full subscription payment including final clearance of any personal check. Our interpretations of the terms and conditions of the Rights Offering will be final and binding.

Stockholder Rights

You will have no rights as a holder of the shares of our common stock issuable upon conversion of the Preferred Stock issued in the Rights Offering until such Preferred Stock is converted into common stock and issued in book-entry form or your account at your broker, dealer, bank or other nominee is credited with the shares of our common stock. Holders of Warrants issued in connection with the Rights Offering will not have rights as holders of our common stock until such Warrants are exercised and the shares of common stock underlying the Warrants are issued to the holder.

Foreign Stockholders

We will not mail this prospectus or Rights Certificates to stockholders with addresses that are outside the United States or that have an army post office or foreign post office address. The Subscription Agent will hold these Rights Certificates for their account. To exercise Subscription Rights, our foreign stockholders must notify the Subscription Agent prior to 5:00 p.m., Eastern Time, on February 26, 2019, the third business day prior to the expiration date, of your exercise of Subscription Rights and provide evidence satisfactory to us, such as a legal opinion from local counsel, that the exercise of such Subscription Rights does not violate the laws of the jurisdiction in which such stockholder resides and payment by a U.S. bank in U.S. dollars before the expiration of the offer. If no notice is received by such time or the evidence presented is not satisfactory to us, the Subscription Rights represented thereby will expire.

No Revocation or Change

Once you submit the Rights Certificate or have instructed your nominee of your subscription request, you are not allowed to revoke or change the exercise or request a refund of monies paid. All exercises of Subscription Rights are irrevocable, even if you learn information about us that you consider to be unfavorable. You should not exercise your Subscription Rights unless you are certain that you wish to purchase shares at the Subscription Price.

U.S. Federal Income Tax Treatment of Rights Distribution

For U.S. federal income tax purposes, we do not believe holders of shares of our common stock or participating warrants or options should recognize income or loss upon receipt or exercise of a Subscription Right. See “Material U.S. Federal Income Tax Consequences.”

No Recommendation to Rights Holders

Our board of directors is not making a recommendation regarding your exercise of the Subscription Rights. Stockholders who exercise Subscription Rights risk investment loss on money invested. We cannot predict the price at which our shares of common stock will trade after the Rights Offering. You should make your investment decision based on your assessment of our business and financial condition, our prospects for the future and the terms of this Rights Offering. Please see “Risk Factors” for a discussion of some of the risks involved in investing in our common stock.

Fees and Expenses

We will pay all fees charged by the Subscription Agent and the Information Agent, and by the dealer-managers. You are responsible for paying any other commissions, fees, taxes or other expenses incurred in connection with the exercise of your Subscription Rights.

Listing

The Subscription Rights may not be sold, transferred, assigned or given away to anyone, and will not be listed for trading on any stock exchange or market. There is no public trading market for the Preferred Stock or the Warrants and we do not intend to list them for trading on the NYSE American or any other securities exchange or market. The shares of our common stock issuable upon the conversion of the Preferred Stock and the exercise of the Warrants to be issued in the Rights Offering are traded on the NYSE American under the symbol "HEB."

Important

Do not send Rights Certificates directly to us. You are responsible for choosing the payment and delivery method for your Rights Certificate and you bear the risks associated with such delivery. If you choose to deliver your Rights Certificate and payment by mail, we recommend that you use registered mail, properly insured, with return receipt requested. We also recommend that you allow a sufficient number of days to ensure delivery to the Subscription Agent and clearance of payment prior to the expiration time.

Distribution Arrangements

Maxim Group LLC and Ascendant Capital Markets LLC will act as co-dealer-managers for the Rights Offering. The dealer-managers will provide marketing assistance and advice to us in connection with the Rights Offering and will use its best efforts to solicit the exercise of Subscription Rights and participation in the Over-Subscription Privilege. The dealer-managers are not underwriting or placing any of the Subscription Rights or the shares of our Preferred Stock or Warrants to be issued in the Rights Offering and do not make any recommendation with respect to such Subscription Rights (including with respect to the exercise or expiration of such Subscription Rights), shares or Warrants. We have agreed to pay the dealer-managers certain fees and to reimburse the dealer-managers for certain out-of-pocket expenses incurred in connection with this offering. See "Plan of Distribution."

Other Matters

We are not making the Rights Offering in any state or other jurisdiction in which it is unlawful to do so, nor are we distributing or accepting any offers to purchase any units from subscription rights holders who are residents of those states or other jurisdictions or who are otherwise prohibited by federal or state laws or regulations from accepting or exercising the subscription rights. We may delay the commencement of the Rights Offering in those states or other jurisdictions, or change the terms of the Rights Offering, in whole or in part, in order to comply with the securities laws or other legal requirements of those states or other jurisdictions. Subject to state securities laws and regulations, we also have the discretion to delay allocation and distribution of any shares you may elect to purchase by exercise of your subscription privileges in order to comply with state securities laws. We may decline to make modifications to the terms of the Rights Offering requested by those states or other jurisdictions, in which case, if you are a resident in those states or jurisdictions or if you are otherwise prohibited by federal or state laws or regulations from accepting or exercising the subscription rights, you will not be eligible to participate in the Rights Offering. However, we are not currently aware of any states or jurisdictions that would preclude participation in the Rights Offering.

MATERIAL U.S. FEDERAL INCOME TAX CONSEQUENCES

The following discussion describes the material U.S. federal income tax consequences of the receipt and exercise (or expiration) of the Subscription Rights acquired through the Rights Offering, the ownership and disposition of shares of our Preferred Stock and Warrants received upon exercise of the Subscription Rights and the ownership and disposition of the shares of common stock received upon the conversion of our Preferred Stock or the exercise of the Warrants and, insofar as it describes matters of federal income tax law or legal conclusions with respect thereto, constitutes the opinion of our tax counsel, Morrison Cohen, LLP. This discussion does not purport to be a complete analysis of all potential tax effects. The effects of other U.S. federal tax laws, such as estate and gift tax laws, and any applicable state, local or non-U.S. tax laws are not discussed. This discussion is based on the U.S. Internal Revenue Code of 1986, as amended, or the Code, U.S. Treasury Regulations promulgated thereunder, judicial decisions, and published rulings and administrative pronouncements of the U.S. Internal Revenue Service, or the IRS, in each case in effect as of the date hereof. These authorities may change or be subject to differing interpretations. Any such change or differing interpretation may be applied retroactively in a manner that could adversely affect a holder of the Subscription Rights, shares of our Preferred Stock, Warrants or shares of our common stock. We have not sought and will not seek any rulings from the IRS regarding the matters discussed below. There can be no assurance the IRS or a court will not take a contrary position to that discussed below regarding the tax consequences of the receipt of Subscription Rights through the Rights Offering by persons holding shares of our common stock or warrants or options entitled to receive Subscription Rights pursuant to this Rights Offering (which we refer to as participating warrants and options), the exercise (or expiration) of the Subscription Rights, the acquisition, ownership and disposition of shares of our Preferred Stock, the acquisition, ownership and disposition (or expiration) of Warrants acquired upon exercise of the Subscription Rights, and the acquisition, ownership and disposition of shares of our common stock acquired upon conversion of our Preferred Stock or exercise of the Warrants.

This discussion is limited to the Subscription Rights acquired through the Rights Offering, shares of our Preferred Stock and Warrants acquired upon exercise of Subscription Rights and shares of our common stock acquired upon conversion of our Preferred Stock or exercise of the Warrants, in each case, that are held as a “capital asset” within the meaning of Section 1221 of the Code (generally, property held for investment). This discussion does not address all U.S. federal income tax consequences relevant to a holder’s particular circumstances, including the impact of the alternative minimum tax or the unearned income Medicare contribution tax. In addition, it does not address consequences relevant to holders subject to particular rules, including, without limitation:

U.S. expatriates and former citizens or long-term residents of the United States;

persons holding our common stock, participating warrants or options, the Subscription Rights, shares of our Preferred Stock, Warrants or shares of our common stock as part of a hedge, straddle or other risk reduction strategy or as part of a conversion transaction or other integrated investment;

banks, insurance companies, and other financial institutions;

brokers, dealers or traders in securities or currencies or traders that elect to mark-to-market their securities;

“controlled foreign corporations,” “passive foreign investment companies,” and corporations that accumulate earnings to avoid U.S. federal income tax;

partnerships or other entities or arrangements treated as partnerships or other pass-through entities for U.S. federal income tax purposes (and investors therein);

real estate investment trusts, regulated investment companies, grantor trusts, tax-exempt organizations or governmental organizations;

persons deemed to sell the Subscription Rights, shares of Preferred Stock, or Warrants or shares of our common stock under the constructive sale provisions of the Code;

persons subject to special tax accounting rules as a result of any item of gross income being taken into account in an applicable financial statement (as defined in the Code);

persons for whom our stock constitutes “qualified small business stock” within the meaning of Section 1202 of the Code;

persons who received, hold or will receive shares of our common stock, participating warrants or options, the Subscription Rights, shares of our Preferred Stock or Warrants pursuant to the exercise of any employee stock option or otherwise as compensation and persons who hold restricted common stock;

tax-qualified retirement plans; and

U.S. holders (as defined below) that have a functional currency other than the U.S. dollar.

If an entity treated as a partnership for U.S. federal income tax purposes holds shares of our common stock, participating warrants or options, the Subscription Rights, shares of our Preferred Stock and Warrants acquired upon exercise of Subscription Rights or shares of our common stock acquired upon conversion of our Preferred Stock or exercise of the Warrants, as the case may be, the tax treatment of a partner in the partnership will depend on the status of the partner, the activities of the partnership and certain determinations made at the partner level. Accordingly, partnerships and the partners in such partnerships should consult their tax advisors regarding the U.S. federal income tax consequences to them.

THIS DISCUSSION IS FOR INFORMATION PURPOSES ONLY AND IS NOT TAX ADVICE. INVESTORS SHOULD CONSULT THEIR TAX ADVISORS WITH RESPECT TO THE APPLICATION OF THE U.S. FEDERAL INCOME TAX LAWS TO THEIR PARTICULAR SITUATIONS AS WELL AS ANY TAX CONSEQUENCES OF THE RECEIPT, OWNERSHIP AND EXERCISE OF SUBSCRIPTION RIGHTS, THE ACQUISITION, OWNERSHIP, AND DISPOSITION OF SHARES OF OUR PREFERRED STOCK AND WARRANTS ACQUIRED UPON EXERCISE OF SUBSCRIPTION RIGHTS, AND SHARES OF OUR COMMON STOCK ACQUIRED UPON CONVERSION OF PREFERRED STOCK OR EXERCISE OF WARRANTS ARISING UNDER THE U.S. FEDERAL ESTATE OR GIFT TAX LAWS OR UNDER THE LAWS OF ANY STATE, LOCAL OR NON-U.S. TAXING JURISDICTION OR UNDER ANY APPLICABLE INCOME TAX TREATY.

Tax Considerations Applicable to U.S. Holders

Definition of a U.S. Holder

For purposes of this discussion, a “U.S. holder” is any beneficial owner of shares of our common stock, participating warrants or options, our Subscription Rights, shares of our Preferred Stock and Warrants acquired upon exercise of Subscription Rights or shares of our common stock acquired upon conversion of our Preferred Stock or exercise of Warrants, as the case may be, that, for U.S. federal income tax purposes, is:

an individual who is a citizen or resident of the United States;

a corporation (or other entity treated as a corporation for U.S. federal income tax purposes) created or organized under the laws of the United States, any state thereof, or the District of Columbia;

an estate, the income of which is subject to U.S. federal income tax regardless of its source; or

a trust that (1) is subject to the primary supervision of a U.S. court and the control of one or more United States persons (within the meaning of Section 7701(a)(30) of the Code), or (2) has made a valid election under applicable U.S. Treasury Regulations to continue to be treated as a United States person.

Receipt of Subscription Rights

Although the authorities governing transactions such as this Rights Offering are complex and do not speak directly to the consequences of certain aspects of this Rights Offering, including the inclusion of the right to purchase Warrants in the Subscription Rights (rather than the right to purchase only shares of our Preferred Stock), the distribution of Subscription Rights to holders of participating warrants and options and the effects of the Over-Subscription Privilege, we do not believe a U.S. holder's receipt of Subscription Rights pursuant to the Rights Offering should be treated as a taxable distribution with respect to its existing shares of common stock or participating warrants or options, as applicable, for U.S. federal income tax purposes. Section 305(a) of the Code generally provides that the receipt by a stockholder, or a holder of rights to acquire stock, of a right to acquire stock or warrants is not included in the taxable income of the stockholder; however, the general non-recognition rule in Section 305(a) of the Code is subject to exceptions described in Section 305(b) of the Code, which include "disproportionate distributions." A disproportionate distribution is generally a distribution or a series of distributions, including deemed distributions, that has the effect of the receipt of cash or other property by some stockholders (including holders of rights to acquire stock and holders of debt instruments convertible into stock) and an increase in the proportionate interest of other stockholders (including holders of rights to acquire stock and holders of debt instruments convertible into stock) in a corporation's assets or earnings and profits. During the last 36 months, the Company has not made any distributions of cash or property (other than stock or rights to acquire stock) with respect to: (i) its common stock, (ii) options or warrants to acquire its common stock, or (iii) its convertible debt or any other convertible instrument, including the September 28, 2018 Secured Convertible Promissory Note from the Company to Iliad Research and Trading, L.P. (the "2018 Convertible Promissory Note"). Currently the Company does not intend to make any future distributions of cash or property (other than stock or rights to acquire stock) with respect to: (i) its common stock, (ii) options or warrants to acquire its common stock, or (iii) its convertible debt or any other convertible instrument, other than to repay the 2018 Convertible Promissory Note; however, there is no guarantee that the Company will not make such distributions in the future. In addition, the Company does not intend to issue any convertible debt in the future.

The position regarding the tax-free treatment of the Subscription Right distribution is not binding on the IRS, or the courts. If this position is finally determined by the IRS or a court to be incorrect, because, contrary to our expectations, distributions of cash or property (other than stock or rights to acquire stock) are made with respect to our stock, options or warrants, or because of the payment of interest on the 2018 Convertible Promissory Note, in conjunction with the issuance of the Subscription Rights, results in a "disproportionate distribution" during a taxable year of the Company in which it has current or accumulated earnings and profits, the fair market value of the Subscription Rights would be taxable to U.S. holders of our common stock as a dividend to the extent of the U.S. holder's pro rata share of our current and accumulated earnings and profits, if any, with any excess being treated as a return of capital to the extent thereof and then as capital gain. Although no assurance can be given, the Company anticipates that it will not have current or accumulated earnings and profits through the end of 2018. Further, if the position regarding the tax-free treatment of the Subscription Rights distribution is incorrect, the treatment of holders of participating warrants, options and convertible debt is not clear, and it may differ from, and may be more adverse than, the treatment of the Subscription Rights distribution to the holders of common stock.

The following discussion is based upon the treatment of the Subscription Right issuance as a non-taxable distribution with respect to a U.S. holder's existing shares of common stock or participating warrants or options for U.S. federal income tax purposes.

Tax Basis in the Subscription Rights

If the fair market value of the Subscription Rights a U.S. holder receives is less than 15% of the fair market value of the U.S. holder's existing shares of common stock or participating warrants or options (in each case, with respect to which the Subscription Rights are distributed) on the date the U.S. holder receives the Subscription Rights, Section 307(b) of the Code provides that the Subscription Rights will be allocated a zero tax basis for U.S. federal income tax purposes, unless the U.S. holder elects to allocate the tax basis in the holder's existing shares of common stock or participating warrants or options between the existing shares of common stock or participating warrants or options and the Subscription Rights in proportion to the relative fair market values of the existing shares of common stock or participating warrants or options and the Subscription Rights determined on the date of receipt of the Subscription Rights. If a U.S. holder chooses to allocate tax basis between the holder's existing common shares or participating warrants or options and the Subscription Rights, the U.S. holder must make this election on a statement included with the holder's timely filed tax return (including extensions) for the taxable year in which the U.S. holder receives the Subscription Rights. Such an election is irrevocable.

However, if the fair market value of the Subscription Rights a U.S. holder receives is 15% or more of the fair market value of the holder's existing shares of common stock or participating warrants or options on the date the U.S. holder receives the Subscription Rights, then the U.S. holder must allocate tax basis in the existing shares of common stock or participating warrants or options between those shares or warrants or options and the Subscription Rights the U.S. holder receives in proportion to their fair market values determined on the date the U.S. holder receives the Subscription Rights. Please refer to the discussion below regarding the U.S. tax treatment of a U.S. holder that, at the time of the receipt of the Subscription Right, no longer holds the common stock or participating warrants or options with respect to which the Subscription Right was distributed.

The fair market value of the Subscription Rights on the date that the Subscription Rights are distributed is uncertain and the fair market value of the participating warrants and options is uncertain, and we have not obtained, and do not intend to obtain, an appraisal of the fair market value of the Subscription Rights or the participating warrants or options, on that date. In determining the fair market value of the Subscription Rights, U.S. holders should consider all relevant facts and circumstances, including without limitation any difference between the Subscription Price of the Subscription Rights and the trading price of our shares of common stock on the date that the Subscription Rights are distributed, the fair market value and the conversion terms of the Preferred Stock, the exercise price of the Warrants, the length of the period during which the Subscription Rights may be exercised and the fact that the Subscription Rights are non-transferable. In determining the fair market value of the participating warrants and options, U.S. holders should consider all relevant facts and circumstances, including without limitation the difference between the exercise price of the participating warrants and options and the trading price of our common stock on the date that the Subscription Rights are distributed, the length of the period during which the participating warrants and options may be exercised, the nature of the adjustment provisions in the participating warrants and options that may affect the economics of the exercise of such participating warrants and options and any limitations of the transferability of the participating warrants and options.

Exercise of Subscription Rights

A U.S. holder will not recognize gain or loss upon the exercise of a Subscription Right received in the Rights Offering. A U.S. holder's adjusted tax basis, if any, in the Subscription Right plus the Subscription Price should be allocated between the share of Preferred Stock and the Warrant acquired upon exercise of the Subscription Right. The basis in the stock or participating warrants or options upon which the Subscription Rights were issued which is allocated to the Subscription Rights under the prior section entitled "—Tax Basis in the Subscription Rights" should be further allocated between the shares of Preferred Stock and the Warrant acquired upon exercise of the Subscription Right in proportion to their relative fair market values on the date the Subscription Rights were distributed. The Subscription Price should be allocated between the shares of Preferred Stock and the Warrant acquired upon exercise of the Subscription Right in proportion to their relative fair market values on the exercise date. These allocations will establish the U.S. holder's initial tax basis for U.S. federal income tax purposes in the shares of Preferred Stock and Warrants received upon exercise. The holding period of a share of Preferred Stock or a Warrant acquired upon exercise of a Subscription Right in the Rights Offering will begin on the date of exercise.

If, at the time of the receipt or exercise of the Subscription Right, the U.S. holder no longer holds the common stock or participating warrants or options with respect to which the Subscription Right was distributed, then certain aspects of the tax treatment of the receipt and exercise of the Subscription Right are unclear, including (1) the allocation of the tax basis between the shares of our common stock or participating warrants or options previously sold and the Subscription Right, (2) the impact of such allocation on the amount and timing of gain or loss recognized with respect to the shares of our common stock or participating warrants or options previously sold or disposed of, and (3) the impact of such allocation on the tax basis of the shares of our Preferred Stock and Warrants acquired upon exercise of the Subscription Right. If a U.S. holder exercises a Subscription Right received in the Rights Offering after disposing of shares of our common stock or participating warrants or options with respect to which the Subscription Right is received, the U.S. holder should consult such holder's tax advisor.

Expiration of Subscription Rights

If a U.S. holder allows Subscription Rights received in the Rights Offering to expire, the U.S. holder should not recognize any gain or loss for U.S. federal income tax purposes, and the U.S. holder should re-allocate any portion of the tax basis in its existing common shares or participating warrants or options previously allocated to the Subscription Rights that have expired to the existing common shares or participating warrants or options.

Sale or Other Disposition, Exercise or Expiration of Warrants

Upon the sale or other taxable disposition of a Warrant (other than by exercise) received upon exercise of a Subscription Right, a U.S. holder will generally recognize capital gain or loss equal to the difference between the amount realized on the sale or other taxable disposition and the U.S. holder's adjusted tax basis in the Warrant. A U.S. Holder's adjusted tax basis in a Warrant will generally equal its initial tax basis (discussed above under "—Exercise of Subscription Rights"), as adjusted for any constructive dividends on the Warrant described below. This capital gain or loss will be long-term capital gain or loss if the U.S. holder's holding period in such Warrant is more than one year at the time of the sale or other taxable disposition. The deductibility of capital losses is subject to certain limitations.

A U.S. holder will not be required to recognize income, gain or loss upon exercise of a Warrant received upon exercise of a Subscription Right (except to the extent the U.S. holder receives a cash payment for any fractional share that would otherwise have been issuable upon exercise of the Warrant). A U.S. holder's tax basis in a share of our common stock received upon exercise of the Warrants for cash will be equal to the sum of (1) the U.S. holder's tax basis in the Warrants exchanged therefor and (2) the exercise price of such Warrants, decreased by the adjusted tax basis allocable to any fractional share that would otherwise have been issued upon exercise of the Warrant. A U.S. holder's holding period in the shares of our common stock received upon exercise will commence on the day after such U.S. holder exercises the Warrants.

In certain circumstances, the Warrants will be exercisable on a cashless basis. The U.S. federal income tax treatment of an exercise of a Warrant on a cashless basis is not clear, and could differ from the consequences described above. It is possible that a cashless exercise could be a taxable event. U.S. holders are urged to consult their tax advisors as to the consequences of an exercise of a Warrant on a cashless basis, including with respect to whether the exercise is a taxable event, and their holding period and tax basis in the common stock received upon exercise .

If a Warrant expires without being exercised, a U.S. holder will recognize a capital loss in an amount equal to such holder's adjusted tax basis in the Warrant , if any . Such loss will be long-term capital loss if, at the time of the expiration, the U.S. holder's holding period in such Warrant is more than one year. The deductibility of capital losses is subject to certain limitations.

Constructive Dividends on Warrants

As described in the section entitled "Dividend Policy," we do not anticipate declaring or paying dividends to holders of our common stock or our Preferred Stock in the foreseeable future. However, if at any time during the period in which a U.S. holder holds Warrants received upon exercise of a Subscription Right, we were to pay a taxable dividend to our stockholders and, in accordance with the anti-dilution provisions of the Warrants, the exercise price of the Warrants were decreased, that decrease would be deemed to be the payment of a taxable dividend to a U.S. holder of the Warrants to the extent of our earnings and profits, notwithstanding the fact that such holder will not receive a cash payment. If the exercise price is adjusted in certain other circumstances (or in certain circumstances, there is a failure to make appropriate adjustments), or there is an adjustment to the number of common shares that will be issued on exercise of the Warrants, such adjustments may also result in the deemed payment of a taxable dividend to a U.S. holder. U.S. holders should consult their tax advisors regarding the proper treatment of any adjustments to the exercise price of the Warrants. We are currently required to report the amount of any deemed distributions to the IRS, as well as either on our website or to holders not exempt from reporting.

Distributions on Preferred Stock and Common Stock

As described in the section entitled "Dividend Policy," we do not anticipate declaring or paying dividends to holders of our Preferred Stock or common stock in the foreseeable future. However, if we do make distributions of cash or property on our Preferred Stock or common stock, such distributions will constitute dividends to the extent paid out of our current or accumulated earnings and profits, as determined for U.S. federal income tax purposes. Dividends received by a corporate U.S. holder may be eligible for a dividends received deduction, subject to applicable limitations. Dividends received by certain non-corporate U.S. holders, including individuals, are generally taxed at the lower applicable capital gains rate provided certain holding period and other requirements are satisfied. Distributions in excess of our current and accumulated earnings and profits will constitute a return of capital and first be applied against and reduce a U.S. holder's adjusted tax basis in its Preferred Stock or common stock, as the case may be, but

not below zero. Any excess will be treated as capital gain and will be treated as described below in the section relating to the sale or disposition of our common stock.

Sale, Exchange or Other Disposition of Preferred Stock and Common Stock

Upon a sale, exchange, or other taxable disposition of our Preferred Stock (other than by conversion) or our common stock, a U.S. holder generally will recognize capital gain or loss equal to the difference between the amount realized (not including any amount attributable to declared and unpaid dividends, which will be taxable as described above to U.S. holders of record who have not previously included such dividends in income) and the U.S. holder's adjusted tax basis in our Preferred Stock or our common stock. The U.S. holder's adjusted tax basis in our Preferred Stock generally will equal the holder's initial tax basis (discussed above under "—Exercise of Subscription Rights"), as adjusted for applicable distributions (including constructive dividends described below). A U.S. holder's adjusted tax basis in our common stock generally will equal the holder's initial tax basis in our common stock (discussed below under "—Conversion of the Preferred Stock into Our Common Stock"), as adjusted for applicable distributions (including constructive dividends described below). Such capital gain or loss generally will be long-term capital gain or loss if the U.S. holder's holding period for our Preferred Stock or our common stock exceeded one year at the time of disposition (see the discussion below under "—Conversion of Our Preferred Stock into Our Common Stock" regarding a U.S. holder's holding period for our common stock). Long-term capital gains recognized by certain non-corporate U.S. holders, including individuals, generally are subject to reduced rates of taxation. The deductibility of capital losses is subject to limitations.

Conversion of Our Preferred Stock into Our Common Stock

A U.S. holder will not recognize any gain or loss in respect of the receipt of our common stock upon the conversion of our Preferred Stock (except to the extent the U.S. holder receives a cash payment for any fractional share that would otherwise have been issuable upon conversion of the Preferred Stock). The adjusted tax basis of our common stock that a U.S. holder receives on conversion will equal the adjusted tax basis of the Preferred Stock converted (decreased by the adjusted tax basis allocable to any fractional share that would otherwise have been issuance upon conversion of the Preferred Stock), and the holding period of such common stock received on conversion will include the period during which the U.S. holder held the Preferred Stock prior to conversion.

In the event a U.S. holder's Preferred Stock is converted pursuant to an election by such U.S. holder in the case of certain acquisitions or fundamental changes or pursuant to certain other transactions (including our consolidation or merger into another person), the tax treatment of such a conversion will depend upon the facts underlying the particular transaction triggering such a conversion. In this regard, it is possible that any related adjustments of the conversion rate would be treated as a constructive distribution to the U.S. holder as described below under "—Constructive Dividends on Preferred Stock." U.S. holders should consult their own tax advisors to determine the specific tax treatment of a conversion under such circumstances.

Constructive Dividends on Preferred Stock

The conversion rate of our Preferred Stock is subject to adjustment under certain circumstances, as described above under "Description of Securities— Preferred Stock Included in Units Issuable in the Rights Offering." Section 305(c) of the Code and U.S. Treasury Regulations thereunder may treat a U.S. holder of our Preferred Stock as having received a constructive distribution includable in such U.S. holder's income in the manner as described above under "—Distributions on Preferred Stock and Common Stock," if and to the extent that certain adjustments in the conversion rate (or failures to make such an adjustment) increase the proportionate interest of such U.S. holder in our earnings and profits. In certain other circumstances, an adjustment to the conversion rate of our Preferred Stock or a failure to make such an adjustment could potentially give rise to constructive distributions to U.S. holders of our common stock. Thus, under certain circumstances, U.S. holders may recognize income in the event of a constructive distribution even though they may not receive any cash or property. We are currently required to report the amount of any deemed distributions to the IRS, as well as either on our website or to holders not exempt from reporting.

Information Reporting and Backup Withholding

A U.S. holder may be subject to information reporting and backup withholding when such holder receives dividend payments (including constructive dividends) or receives proceeds from the sale or other taxable disposition of the Warrants, shares of our Preferred Stock acquired through the exercise of Subscription Rights or shares of our common stock acquired through conversion of our Preferred Stock or exercise of the Warrants. Certain U.S. holders are exempt from backup withholding, including certain corporations and certain tax-exempt organizations. A U.S. holder will be subject to backup withholding if such holder is not otherwise exempt (or fails to properly establish an exemption) and such holder:

fails to furnish the holder's taxpayer identification number, which for an individual is ordinarily his or her social security number;

furnishes an incorrect taxpayer identification number;

is notified by the IRS that the holder previously failed to properly report payments of interest or dividends; or

fails to certify under penalties of perjury that the holder has furnished a correct taxpayer identification number and that the IRS has not notified the holder that the holder is subject to backup withholding.

Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules may be allowed as a refund or a credit against a U.S. holder's U.S. federal income tax liability, provided the required information is timely furnished to the IRS. U.S. holders should consult their tax advisors regarding their qualification for an exemption from backup withholding and the procedures for obtaining such an exemption.

Tax Considerations Applicable to Non-U.S. Holders

For purposes of this discussion, a "non-U.S. holder" is a beneficial owner of shares of our common stock, our Subscription Rights, shares of our Preferred Stock and Warrants acquired upon exercise of Subscription Rights or shares of our common stock acquired upon conversion of our Preferred Stock or exercise of Warrants, as the case may be, that is neither a U.S. holder nor an entity treated as a partnership for U.S. federal income tax purposes.

Receipt, Exercise and Expiration of the Subscription Rights

The discussion assumes that the receipt of Subscription Rights will be treated as a nontaxable distribution. See

“—Tax Considerations Applicable to U.S. Holders—Receipt of Subscription Rights” above. In such case, non-U.S. holders will not be subject to U.S. federal income tax (or any withholding thereof) on the receipt, exercise or expiration of the Subscription Rights.

Exercise of Warrants

A non-U.S. holder will not be subject to U.S. federal income tax on the cash exercise of Warrants into shares of our common stock (except to the extent the non- U.S. holder receives a cash payment for any fractional share that would otherwise have been issuable upon exercise of the Warrant, which will be treated as a sale subject the rules described under “—Tax Considerations Applicable to Non-U.S. Holders—Sale or Other Disposition of Preferred Stock, Warrants or Common Stock”). As discussed above in “—Tax Considerations Applicable to U.S. Holders—Sale or Other Disposition, Exercise or Expiration of Warrants,” the U.S. federal income tax treatment of an exercise of a Warrant on a cashless basis is not clear. Non-U.S. holders are urged to consult their tax advisors as to the consequences of an exercise of a Warrant on a cashless basis, including with respect to whether the exercise is a taxable event, and their holding period and tax basis in the common stock received.

Constructive Dividends on Warrants

As described in the section entitled “Dividend Policy,” we do not anticipate declaring or paying dividends to holders of our Preferred Stock or common stock in the foreseeable future. However, if at any time during the period in which a non-U.S. holder holds Warrants we were to pay a taxable dividend to our stockholders and, in accordance with the anti-dilution provisions of the Warrants, the exercise price of the Warrants were decreased, that decrease would be deemed to be the payment of a taxable dividend to a non-U.S. holder to the extent of our earnings and profits, notwithstanding the fact that such holder will not receive a cash payment. If the exercise price is adjusted in certain other circumstances (or in certain circumstances, there is a failure to make appropriate adjustments), or there is an adjustment to the number of common shares that will be issued on exercise of the Warrants, such adjustments may also result in the deemed payment of a taxable dividend to a non-U.S. holder. Any resulting withholding tax attributable to deemed dividends may be collected from other amounts payable or distributable to the non-U.S. holder. Non-U.S. holders should consult their tax advisors regarding the proper treatment of any adjustments to the Warrants.

Distributions on Preferred Stock and Common Stock

As described in the section entitled “Dividend Policy,” we do not anticipate declaring or paying dividends to holders of our Preferred Stock or common stock in the foreseeable future. However, if we do make distributions of cash or property on our Preferred Stock or common stock, such distributions will constitute dividends for U.S. federal income tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. Amounts not treated as dividends for U.S. federal income tax purposes will constitute a return of capital and first be applied against and reduce a non-U.S. holder’s adjusted tax basis in its Preferred Stock or common stock, as the case may be, but not below zero. Any excess will be treated as capital gain and will be treated as described below in the section relating to the sale or disposition of our Preferred Stock, Warrants, or common stock. Because we may not know the extent to which a distribution constitutes a dividend for U.S. federal income tax purposes at the time it is made, for purposes of the withholding rules discussed below we or the applicable withholding agent may treat the entire distribution as a dividend.

Subject to the discussion below on backup withholding and foreign accounts, dividends paid to a non-U.S. holder of our Preferred Stock or common stock that are not effectively connected with the non-U.S. holder’s conduct of a trade or business within the United States will be subject to U.S. federal withholding tax at a rate of 30% of the gross amount of the dividends (or such lower rate specified by an applicable income tax treaty).

Non-U.S. holders may be entitled to a reduction in or an exemption from withholding on dividends as a result of either (1) an applicable income tax treaty or (2) the non-U.S. holder holding our Preferred Stock or common stock in connection with the conduct of a trade or business within the United States and dividends being effectively connected with that trade or business. To claim such a reduction in or exemption from withholding, the non-U.S. holder must provide the applicable withholding agent with a properly executed (a) IRS Form W-8BEN or W-8BEN-E (or other applicable documentation) claiming an exemption from or reduction of the withholding tax under the benefit of an income tax treaty between the United States and the country in which the non-U.S. holder resides or is established, or (b) IRS Form W-8ECI stating that the dividends are not subject to withholding tax because they are effectively connected with the conduct by the non-U.S. holder of a trade or business within the United States, as may be applicable. These certifications must be provided to the applicable withholding agent prior to the payment of dividends and must be updated periodically. Non-U.S. holders that do not timely provide the applicable withholding agent with the required certification, but that qualify for a reduced rate under an applicable income tax treaty, may obtain a refund of any excess amounts withheld by timely filing an appropriate claim for refund with the IRS.

If dividends paid to a non-U.S. holder are effectively connected with the non-U.S. holder's conduct of a trade or business within the United States (and, if required by an applicable income tax treaty, the non-U.S. holder maintains a permanent establishment in the United States to which such dividends are attributable), then, although exempt from U.S. federal withholding tax (provided the non-U.S. holder provides appropriate certification, as described above, and subject to the discussion below on backup withholding and foreign accounts), the non-U.S. holder will be subject to U.S. federal income tax on such dividends on a net income basis at the regular graduated U.S. federal income tax rates. In addition, a non-U.S. holder that is a corporation may be subject to a branch profits tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty) on its effectively connected earnings and profits for the taxable year that are attributable to such dividends, as adjusted for certain items. Non-U.S. holders should consult their tax advisors regarding their entitlement to benefits under any applicable income tax treaty.

Sale or Other Disposition of Preferred Stock, Warrants or Common Stock

Subject to the discussions below on backup withholding and foreign accounts, a non-U.S. holder will not be subject to U.S. federal income tax on any gain realized upon the sale or other taxable disposition of our Preferred Stock, Warrants or common stock unless:

- the gain is effectively connected with the non-U.S. holder's conduct of a trade or business within the United States (and, if required by an applicable income tax treaty, the non-U.S. holder maintains a permanent establishment in the United States to which such gain is attributable);

- the non-U.S. holder is a nonresident alien individual present in the United States for 183 days or more during the taxable year of the disposition and certain other requirements are met; or

- our Preferred Stock, Warrants or common stock constitutes a U.S. real property interest, or USRPI, by reason of our status as a U.S. real property holding corporation, or USRPHC, for U.S. federal income tax purposes.

Gain described in the first bullet point above generally will be subject to U.S. federal income tax on a net income basis at the regular graduated rates. A Non-U.S. holder that is a corporation also may be subject to a branch profits tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty) on such effectively connected gain, as adjusted for certain items.

Gain described in the second bullet point above will be subject to U.S. federal income tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty) on any gain derived from the disposition, which may be offset by U.S. source capital losses of the non-U.S. holder (even though the individual is not considered a resident of the United States), provided the non-U.S. holder has timely filed U.S. federal income tax returns with respect to such losses.

With respect to the third bullet point above, we believe we are not currently and do not anticipate becoming a USRPHC. Because the determination of whether we are a USRPHC depends on the fair market value of our USRPIs relative to the fair market value of our other business assets and our non-U.S. real property interests, however, there can be no assurance we are not a USRPHC or will not become one in the future.

Non-U.S. holders should consult their tax advisors regarding potentially applicable income tax treaties that may provide for different rules.

Conversion of Our Preferred Stock into Our Common Stock

A non-U.S. holder will not recognize any gain or loss in respect of the receipt of our common stock upon the conversion of our Preferred Stock (except to the extent the non-U.S. holder receives a cash payment for any fractional share that would otherwise have been issuable upon conversion of the Preferred Stock).

Constructive Dividends on Preferred Stock

As described above under “—Tax Considerations Applicable to U.S. Holders—Constructive Dividends on Preferred Stock,” in certain circumstances, a non-U.S. holder will be deemed to receive a constructive distribution from us. Adjustments in the conversion rate (or failures to adjust the conversion rate) that increase the proportionate interest of a non-U.S. holder in our earnings and profits could result in deemed distributions to the non-U.S. holder that are treated as dividends for U.S. federal income tax purposes. Any constructive dividend deemed paid to a non-U.S. holder will be subject to U.S. federal income tax or withholding tax in the manner described above under “—Tax Considerations Applicable to Non-U.S. Holders—Distributions on Preferred Stock and Common Stock.” It is possible that U.S. federal tax on the constructive dividend would be withheld, if applicable, from subsequent payments on the Preferred Stock or our common stock.

Information Reporting and Backup Withholding

Subject to the discussion below on foreign accounts, a non-U.S. holder will not be subject to backup withholding with respect to distributions on our Preferred Stock, Warrants or common stock we make to the non-U.S. holder, provided the applicable withholding agent does not have actual knowledge or reason to know such holder is a United States person and the holder timely certifies its non-U.S. status, such as by providing a valid IRS Form W-8BEN, W-8BEN-E or W-8ECI, or other applicable certification. However, information returns generally will be filed with the IRS in connection with any distributions (including deemed distributions) made on our Preferred Stock, Warrants and common stock to the non-U.S. holder, regardless of whether any tax was actually withheld. Copies of these information returns may also be made available under the provisions of a specific treaty or agreement to the tax authorities of the country in which the non-U.S. holder resides or is established.

Information reporting and backup withholding may apply to the proceeds of a sale or other taxable disposition of our Preferred Stock, Warrants or common stock within the United States, and information reporting may (although backup withholding generally will not) apply to the proceeds of a sale or other taxable disposition of our Preferred Stock, Warrants or common stock outside the United States conducted through certain U.S.-related financial intermediaries, in each case, unless the beneficial owner timely certifies under penalty of perjury that it is a non-U.S. holder on IRS Form W-8BEN or W-8BEN-E, or other applicable form (and the payor does not have actual knowledge or reason to know that the beneficial owner is a U.S. person) or such owner otherwise timely establishes an exemption. Proceeds of a disposition of our Preferred Stock, Warrants or common stock conducted through a non-U.S. office of a non-U.S. broker generally will not be subject to backup withholding or information reporting.

Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules may be allowed as a refund or a credit against a non-U.S. holder’s U.S. federal income tax liability, provided the required information is timely furnished to the IRS.

Additional Withholding Tax on Payments Made to Foreign Accounts

Withholding taxes may be imposed under the Foreign Account Tax Compliance Act, or FATCA, on certain types of payments made to non-U.S. financial institutions and certain other non-U.S. entities. Specifically, a 30% withholding tax may be imposed on dividends (including deemed dividends) paid on our Preferred Stock, Warrants or common stock to a “foreign financial institution” or a “non-financial foreign entity” (each as defined in the Code), unless (1) the foreign financial institution undertakes certain diligence and reporting obligations, (2) the non-financial foreign entity either certifies it does not have any “substantial United States owners” (as defined in the Code) or furnishes identifying information regarding each substantial United States owner, or (3) the foreign financial institution or non-financial foreign entity otherwise qualifies for an exemption from these rules. If the payee is a foreign financial institution and is subject to the diligence and reporting requirements in (1) above, it must enter into an agreement with the U.S. Department of the Treasury requiring, among other things, that it undertake to identify accounts held by certain “specified United States persons” or “United States-owned foreign entities” (each as defined in the Code), annually report certain information about such accounts, and withhold 30% on certain payments to non-compliant foreign financial institutions and certain other account holders. Foreign financial institutions located in jurisdictions that have an intergovernmental agreement with the United States governing FATCA may be subject to different rules.

Under the applicable U.S. Treasury Regulations and administrative guidance, withholding under FATCA generally applies to payments of dividends (including deemed dividends). Because we may not know the extent to which a distribution is a dividend for U.S. federal income tax purposes at the time it is made, for purposes of these withholding rules we or the applicable withholding agent may treat the entire distribution as a dividend. Prospective investors should consult their tax advisors regarding the potential application of these withholding provisions.

DESCRIPTION OF SECURITIES

In this offering, we are offering for sale Units, with each Unit consisting of one share of our Preferred Stock and Warrants to purchase up to 4,000 shares of common stock. The shares of Preferred Stock and Warrants comprising the Units are immediately separable and will be issued separately but will be purchased together in this offering. We are also registering the shares of common stock issuable upon conversion of the Preferred Stock and exercise of the Warrants. You should also review the form of Certificate of Designation, filed as exhibit to the registration statement of which this prospectus is a part, for a complete description of the terms and conditions applicable to the Preferred Stock. You should also review the form of Warrant, filed as exhibit to the registration statement of which this prospectus is a part, for a complete description of the terms and conditions applicable to the Warrants.

Common Stock

This section describes the general terms and provisions of the shares of our common stock, \$0.001 par value. We have 350,000,000 shares of authorized common stock.

As of February 5, 2019 , there were:

48,911,918 shares of common stock issued and outstanding, warrants to purchase 14,294,365 shares of common stock outstanding;

options to purchase 9,434,867 shares of common stock outstanding; and

a \$3.17 million principal amount Note, principal and interest of which is convertible at \$0.30 per share (subject to adjustment) subject to a maximum of 8,986,831 shares being issued thereunder without subsequent stockholder approval.

Voting Rights

Holders of our common stock are entitled to one vote per share in the election of directors and on all other matters on which stockholders are entitled or permitted to vote. Holders of our common stock are not entitled to cumulative voting rights.

Dividend Rights

Subject to the terms of any then outstanding series of preferred stock, the holders of our common stock are entitled to dividends in the amounts and at times as may be declared by the board of directors out of funds legally available therefor.

Liquidation Rights

Upon liquidation or dissolution, holders of our common stock are entitled to share ratably in all net assets available for distribution to stockholders after we have paid, or provided for payment of, all of our debts and liabilities, and after payment of any liquidation preferences to holders of any then outstanding shares of preferred stock.

Other Matters

Holders of our common stock have no redemption, conversion or preemptive rights. There are no sinking fund provisions applicable to our common stock. The rights, preferences and privileges of the holders of our common stock are subject to the rights of the holders of shares of any series of preferred stock that we may issue in the future.

All of our outstanding shares of common stock are fully paid and nonassessable.

Our common stock is listed on the NYSE American under the symbol "HEB."

Preferred Stock Included in Units Issuable in the Rights Offering

We will authorize the Preferred Stock by filing a certificate of designation with the Secretary of State of Delaware. The certificate of designation may be authorized by our Board without approval by our stockholders.

Conversion. Each share of Preferred Stock will be convertible at our option at any time on or after the first anniversary of the closing of the Rights Offering or at the option of the holder at any time, into the number of shares of our common stock determined by dividing the \$1,000 stated value per share of the Preferred Stock by a conversion price of \$0.25 per share. In addition, the conversion price per share is subject to adjustment for stock dividends,

distributions, subdivisions, combinations or reclassifications. Subject to limited exceptions, a holder of the Preferred Stock will not have the right to convert any portion of the Preferred Stock to the extent that, after giving effect to the conversion, the holder, together with its affiliates, would beneficially own in excess of 9.99% of the number of shares of our common stock outstanding immediately after giving effect to its conversion. In the event that a conversion is effected at our option, we will exercise such option to convert shares of Preferred Stock on a pro rata basis among all of the holders based on such holders' shares of Preferred Stock.

Fundamental Transactions. In the event we effect certain mergers, consolidations, sales of substantially all of our assets, tender or exchange offers, reclassifications or share exchanges in which our common stock is effectively converted into or exchanged for other securities, cash or property, we consummate a business combination in which another person acquires 50% of the outstanding shares of our common stock, or any person or group becomes the beneficial owner of 50% of the aggregate ordinary voting power represented by our issued and outstanding common stock, then, upon any subsequent conversion of the Preferred Stock, the holders of the Preferred Stock will have the right to receive any shares of the acquiring corporation or other consideration it would have been entitled to receive if it had been a holder of the number of shares of common stock then issuable upon conversion in full of the Preferred Stock.

Dividends. Holders of Preferred Stock shall be entitled to receive dividends (on an as-if-converted-to-common-stock basis) in the same form as dividends actually paid on shares of the common stock when, as and if such dividends are paid on shares of common stock.

Voting Rights. Except as otherwise provided in the certificate of designation or as otherwise required by law, the Preferred Stock has no voting rights.

Liquidation Preference. Upon our liquidation, dissolution or winding-up, whether voluntary or involuntary, holders of Preferred Stock will be entitled to receive out of our assets, whether capital or surplus, the same amount that a holder of common stock would receive if the Preferred Stock were fully converted (disregarding for such purpose any conversion limitations under the certificate of designation) to common stock, which amounts shall be paid pari passu with all holders of common stock.

Redemption Rights. We are not obligated to redeem or repurchase any shares of Preferred Stock. Shares of Preferred Stock are not otherwise entitled to any redemption rights, or mandatory sinking fund or analogous provisions.

Series A Junior Participating Preferred Stock.

On November 19, 2002, our Board of Directors declared a dividend distribution of one Right (a “Right”) for each outstanding share of Common Stock to stockholders of record at the close of business on November 29, 2002. On November 14, 2017, at the direction of the Board, we amended and restated our Rights Agreement with American Stock Transfer & Trust Company, LLC (as amended and restated, the “Rights Agreement”). Each Right entitles the registered holder to purchase from us a unit consisting of one one-hundredth of a share (a “Unit”) of Series A Junior Participating Preferred Stock, par value \$0.01 per share (the “Series A Preferred Stock”) at a Purchase Price of \$21.00 per Unit, subject to adjustment. The description and terms of the Rights are set forth in the Rights Agreement. The foregoing description of the Rights and the Rights Agreement are qualified in their entire by reference to the

disclosure in our Registration Statement on Form 8-A12B (No. 0-27072) and the Rights Agreement filed therewith, filed with the SEC on November 14, 2017, with such filing and exhibit being herein incorporated by reference.

Warrants Included in Units Issuable in the Rights Offering

The Warrants to be issued as a part of this Rights Offering will be designated as our “Series C ” Warrants. These Warrants will be separately transferable following their issuance and through their expiration five years from the date of issuance. Each Warrant will entitle the holder to purchase one share of our common stock at an exercise price of \$0.25 per share from the date of issuance through its expiration. There is no public trading market for the Warrants and we do not intend to list them for trading on the NYSE American or any other securities exchange or market. The common stock underlying the Warrants, upon issuance, will also be traded on the NYSE American under the symbol “HEB.”

All Warrants that are purchased in the Rights Offering as part of the Units will be issued in book-entry, or uncertificated, form meaning that you will receive a DRS account statement from our transfer agent reflecting ownership of Warrants if you are a holder of record. The Subscription Agent will arrange for the issuance of the Warrants as soon as practicable after the closing, which will occur as soon as practicable after the Rights Offering has expired but which may occur up to five business days thereafter. At closing, all prorating calculations and reductions contemplated by the terms of the Rights Offering will have been effected and payment to us for the subscribed-for Units will have cleared. If you hold your shares of common stock in the name of a bank, broker, dealer, or other nominee, DTC will credit your account with your nominee with the Warrants you purchased in the Rights Offering.

Exercisability

Each Warrant will be exercisable at any time and will expire five years from the date of issuance. The Warrants will be exercisable, at the option of each holder, in whole or in part by delivering to us a duly executed exercise notice and payment in full for the number of shares of our common stock purchased upon such exercise, except in the case of a cashless exercise as discussed below. The number of shares of common stock issuable upon exercise of the Warrants is subject to adjustment in certain circumstances, including a stock split of, stock dividend on, or a subdivision, combination or recapitalization of the common stock. If we effect a merger, consolidation, sale of substantially all of our assets, or other similar transaction, then, upon any subsequent exercise of a Warrants, the warrant holder will have the right to receive any shares of the acquiring corporation or other consideration it would have been entitled to receive if it had been a holder of the number of shares of common stock then issuable upon exercise in full of the Warrant.

Cashless Exercise

If at any time there is no effective registration statement registering, or the prospectus contained therein is not available for issuance of, the shares issuable upon exercise of the Warrant, the holder may exercise the Warrant on a cashless basis. When exercised on a cashless basis, a portion of the Warrant is cancelled in payment of the purchase price payable in respect of the number of shares of our common stock purchasable upon such exercise.

Exercise Price

Each Warrant represents the right to purchase 4,000 share of common stock at an exercise price of \$0.25 per share. In addition, the exercise price per share is subject to adjustment for stock dividends, distributions, subdivisions, combinations, or reclassifications, and for certain dilutive issuances. Subject to limited exceptions, a holder of Warrants will not have the right to exercise any portion of the Warrant to the extent that, after giving effect to the exercise, the holder, together with its affiliates, and any other person acting as a group together with the holder or any of its affiliates, would beneficially own in excess of 4.99% of the number of shares of our common stock outstanding immediately after giving effect to its exercise. The holder, upon notice to the Company, may increase or decrease the beneficial ownership limitation provisions of the Warrant, provided that in no event shall the limitation exceed 9.99% of the number of shares of our common stock outstanding immediately after giving effect to the exercise of the Warrant.

Transferability

Subject to applicable laws and restrictions, a holder may transfer a Warrant upon surrender of the Warrant to us with a completed and signed assignment in the form attached to the Warrant. The transferring holder will be responsible for any tax that liability that may arise as a result of the transfer.

No Market

There is no public trading market for the Warrants and we do not intend to list them for trading on the NYSE American or any other securities exchange or market.

Rights as Stockholder

Except as set forth in the Warrant, the holder of a Warrant, solely in such holder's capacity as a holder of a Warrant, will not be entitled to vote, to receive dividends, or to any of the other rights of our stockholders.

Redemption Rights

We may redeem the Warrants for \$0.01 per Warrant if the Volume Weighted Average Price (as defined in the Warrant) for our common stock is above \$0.75 per share for ten consecutive trading days, provided that we may not do so prior to the first anniversary of closing of the Rights Offering.

Amendments and Waivers

The provisions of each Warrant may be modified or amended or the provisions thereof waived with the written consent of us and the holder.

The Warrants will be issued pursuant to a warrant agent agreement by and between us and American Stock Transfer & Trust Company, LLC, the warrant agent.

Possible Anti-Takeover Effects of Delaware Law, our Certificate of Incorporation and Bylaws, and Stockholder Rights Plan

The provisions of Delaware law, our certificate of incorporation and our bylaws and our Stockholder Rights Plan described below may have the effect of delaying, deferring or discouraging another party from acquiring control of us.

Section 203 of the Delaware General Corporation Law

We are subject to Section 203 of the Delaware General Corporation Law, which prohibits a Delaware corporation from engaging in any business combination with any interested stockholder for a period of three years after the date that such stockholder became an interested stockholder, with the following exceptions:

before such date, the board of directors of the corporation approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder;

upon completion of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction began, excluding for purposes of determining the voting stock outstanding (but not the outstanding voting stock owned by the interested stockholder) those shares owned (i) by persons who are directors and also officers and (ii) employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or

on or after such date, the business combination is approved by the board of directors and authorized at an annual or special meeting of the stockholders, and not by written consent, by the affirmative vote of at least 66 2/3% of the outstanding voting stock that is not owned by the interested stockholder.

In general, Section 203 defines business combination to include the following:

any merger or consolidation involving the corporation and the interested stockholder;

any sale, transfer, pledge or other disposition of 10% or more of the assets of the corporation involving the interested stockholder;

subject to certain exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder;

any transaction involving the corporation that has the effect of increasing the proportionate share of the stock or any class or series of the corporation beneficially owned by the interested stockholder; or the receipt by the interested stockholder of the benefit of any loss, advances, guarantees, pledges or other financial benefits by or through the corporation.

In general, Section 203 defines an “interested stockholder” as an entity or person who, together with the person’s affiliates and associates, beneficially owns, or within three years before the time of determination of interested stockholder status did own, 15% or more of the outstanding voting stock of the corporation.

Certificate of Incorporation and Bylaws

Our certificate of incorporation and/or bylaws provide that:

our bylaws may be amended or repealed by our board of directors or our stockholders;
our board of directors will be authorized to issue, without stockholder approval, preferred stock, the rights of which will be determined at the discretion of the board of directors and that, if issued, could operate as a “poison pill” to dilute the stock ownership of a potential hostile acquirer to prevent an acquisition that our board of directors does not approve;
our stockholders do not have cumulative voting rights, and therefore our stockholders holding a majority of the shares of common stock outstanding will be able to elect all of our directors; and
our stockholders must comply with advance notice provisions to bring business before or nominate directors for election at a stockholder meeting.

Stockholder Rights Plan

As discussed above in “Description of Securities-Series A Junior Participating Preferred Stock” we have a Stockholder Rights Plan which could dilute the stock ownership of a potential hostile acquirer to prevent an acquisition that our board of directors does not approve.

Potential Effects of Authorized but Unissued Stock

We have shares of common stock and preferred stock available for future issuance without stockholder approval. We may utilize these additional shares for a variety of corporate purposes, including future public offerings to raise additional capital, to facilitate corporate acquisitions or payment as a dividend on the capital stock.

The existence of unissued and unreserved common stock and preferred stock may enable our board of directors to issue shares to persons friendly to current management or to issue preferred stock with terms that could render more difficult or discourage a third-party attempt to obtain control of us by means of a merger, tender offer, proxy contest or otherwise, thereby protecting the continuity of our management. In addition, the board of directors has the discretion to determine designations, rights, preferences, privileges and restrictions, including voting rights, dividend rights, conversion rights, redemption privileges and liquidation preferences of each series of preferred stock, all to the fullest extent permissible under the Delaware General Corporation Law and subject to any limitations set forth in our certificate of incorporation. The purpose of authorizing the board of directors to issue preferred stock and to determine the rights and preferences applicable to such preferred stock is to eliminate delays associated with a stockholder vote on specific issuances. The issuance of preferred stock, while providing desirable flexibility in connection with possible financings, acquisitions and other corporate purposes, could have the effect of making it more difficult for a third-party to acquire, or could discourage a third-party from acquiring, a majority of our outstanding voting stock.

Transfer Agent and Warrant Agent

The transfer agent and registrar for our common stock and the warrant agent for the Warrants is American Stock Transfer & Trust Company, LLC.

PLAN OF DISTRIBUTION

On or about February 15, 2019, we will distribute the Subscription Rights, Rights Certificates and copies of this prospectus to the holders of our common stock and participating warrants and options on the Record Date. Subscription Rights holders who wish to exercise their Subscription Rights and purchase Units must complete the Subscription Rights Certificate and return it with payment for the shares to the Subscription Agent at the following address:

By mail, hand or overnight courier:

American Stock Transfer & Trust Company, LLC
Attn: Reorg Department
6201 15th Avenue
Brooklyn, NY 11219

If you have any questions, you should contact our Subscription Agent for the Rights Offering:

American Stock Transfer & Trust Company, LLC

Attn: Reorg Department

6201 15th Avenue

Brooklyn, NY 11219

Other than as described in this prospectus, we do not know of any existing agreements between any stockholder, broker, dealer, underwriter or agent relating to the sale or distribution of the underlying securities.

Maxim Group LLC and Ascendant Capital Markets LLC will act as co-dealer-managers for the Rights Offering. In such capacity, the dealer-managers will provide marketing assistance and financial advice (including determining the Subscription Price and the structure of the Rights Offering) to us in connection with this offering and will solicit the exercise of Subscription Rights and participation in the Over-Subscription Privilege. The dealer-managers will provide us with updated investor feedback and recommendations on pricing and structure through to the end of the subscription period. The dealer-managers are not underwriting or placing any of the Subscription Rights or the shares of our Preferred Stock or Warrants being issued in this offering and do not make any recommendation with respect to such Subscription Rights (including with respect to the exercise or expiration of such Subscription Rights), shares or Warrants.

In connection with this Rights Offering, we have agreed to pay fees to Maxim Group LLC and Ascendant Capital Markets LLC as dealer-managers an aggregate cash fee equal to 7.0% of the gross proceeds received by us directly from exercises of the Subscription Rights. Maxim Group will receive (less the advance in the amount of \$20,000 previously paid to Maxim) up to \$60,000 for a non-accountable expense allowance. Any portion of the advance not offset by actual expenses will be returned to us.

Upon the closing of this Rights Offering, for a period of six months from the earlier of the effective date of the registration statement or commencement of solicitation effort, Maxim Group LLC is entitled to a right of first refusal to act as lead managing underwriter and book runner for any and all public and private equity, convertible or debt offerings of the Company's securities.

We have also agreed to indemnify the dealer-managers and their respective affiliates against certain liabilities arising under the Securities Act. The dealer-managers' participation in this offering are subject to customary conditions contained in the dealer-manager agreement, including the receipt by the dealer-managers of an opinion of our counsel. The dealer-managers and their affiliates may provide to us from time to time in the future in the ordinary course of their business certain financial advisory, investment banking and other services for which they will be entitled to receive fees.

EXPERTS

The consolidated financial statements of Hemispherx Biopharma, Inc. and its subsidiaries as of December 31, 2017 and 2016 and for each of the years in the three-year period ended December 31, 2017, incorporated in this Prospectus by reference from the Hemispherx Biopharma, Inc. Annual Report on Form 10-K for the year ended December 31, 2017, have been audited by RSM US LLP, an independent registered public accounting firm, as stated in their report thereon, incorporated herein by reference, and have been incorporated in this Prospectus and Registration Statement in reliance upon such report and upon the authority of such firm as experts in accounting and auditing.

LEGAL MATTERS

The validity of the securities offered hereby will be passed upon for us by Silverman Shin & Byrne PLLC. The dealer-managers are being represented by Ellenoff Grossman & Schole LLP .

WHERE YOU CAN FIND MORE INFORMATION

We have filed a registration statement on Form S-1 with the SEC under the Securities Act of 1933, as amended. This prospectus is part of the registration statement, but the registration statement includes additional information and exhibits. We file annual, quarterly and current reports, proxy statements and other information with the SEC. The SEC maintains a web site that contains reports, proxy and information statements and other information regarding companies, such as ours, that file documents electronically with the SEC. The website address is www.sec.gov. The information on the SEC's website is not part of this prospectus, and any references to this website or any other website are inactive textual references only.

We are subject to the periodic reporting requirements of the Exchange Act, and we will file periodic reports, proxy statements and other information with the SEC. These periodic reports, proxy statements and other information are available for inspection and copying at the public reference room and website of the SEC referred to above. We maintain a website at <http://www.hemispherx.net>. You may access our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act with the SEC free of charge at our website as soon as reasonably practicable after such material is electronically filed with, or furnished to, the SEC. We have not incorporated by reference into this prospectus or any prospectus supplement the information contained in, or that can be accessed through, our website, and you should not consider it to be a part of this document.

INCORPORATION BY REFERENCE

The SEC's rules allow us to "incorporate by reference" information into this prospectus, which means that we can disclose important information to you by referring you to another document filed separately with the SEC. The information incorporated by reference is deemed to be part of this prospectus, and subsequent information that we file with the SEC will automatically update and supersede that information. Any statement contained in a previously filed document incorporated by reference will be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus modifies or replaces that statement. Any statement contained in this prospectus or in a document incorporated or deemed to be incorporated by reference into this prospectus will be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus or any other subsequently filed document that is deemed to be incorporated by reference into this prospectus modifies or supersedes the statement. Any statement so modified or superseded will not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

We incorporate by reference our documents listed below and any future filings made by us 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 of the securities described in this prospectus. We are not, however, 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, including our Compensation Committee report and performance graph 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.

This prospectus and any accompanying prospectus supplement incorporate by reference the documents set forth below that have previously been filed with the SEC:

Our Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed with the SEC on March 30, 2018;

Our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2018, June 30, 2018 and September 30, 2018 filed with the SEC, respectively, on May 15, 2018, August 14, 2018 and November 14, 2018;

Our Current Reports on Form 8-K filed with the SEC on January 12, 2018, January 22, 2018, March 2, 2018, March 22, 2018, April 6, 2018, April 17, 2018, April 20, 2018 and May 2, 2018, August 3, 2018, September 13, 2018, October 4, 2018, October 10, 2018, October 22, 2018 and December 11, 2018; and the amended Current Report on Form 8-K/A filed with the Commission on March 19, 2018;

Our Definitive Proxy Statement on Schedule 14A (other than information furnished) filed with the SEC on August 3, 2018 ;

A description of our common stock contained in our registration statement on Form S-1, SEC File No. 333-117178, filed on July 6, 2004, and any amendment or report filed for the purpose of updating this description; and

A description of the Rights to purchase shares of our Series A Junior Participating Preferred Stock, which are attached to all shares of Common Stock, is contained in our registration statement on Form 8-A12B, SEC File No. 0-27072, filed on November 14, 2017.

All reports and other documents we subsequently file pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act prior to the termination of offerings under this prospectus, including all such documents we may file with the SEC after the date of the initial registration statement of which this prospectus forms a part and prior to the effectiveness of the registration statement, but excluding any information furnished to, rather than filed with, the SEC, will also be incorporated by reference into this prospectus and deemed to be part of this prospectus from the date of the filing of such reports and documents.

We will provide without charge to each person, including any beneficial owner, to whom this prospectus is delivered, upon written or oral request, a copy of any or all documents that are incorporated by reference into this prospectus, but not delivered with the prospectus, other than exhibits to such documents unless such exhibits are specifically incorporated by reference into the documents that this prospectus incorporates. You should direct written requests to: Hemispherx Biopharma, Inc., 2117 SW Highway 484, Ocala, FL 34473 Attn: Secretary, or you may call us at (215) 988-0080 .

Subscription Rights to Purchase Up to 8,000 Units

**Consisting of an Aggregate of Up to 8,000 Shares of Series B Convertible Preferred Stock
and Warrants to Purchase Up to 32,000,000 Shares of Common Stock
at a Subscription Price of \$ 1,000 Per Unit**

HEMISPHERX BIOPHARMA, INC.

PROSPECTUS

Co-Dealer-Managers

Maxim Group LLC

**Ascendant Capital Markets
LLC**

February __, 2019

PART II**INFORMATION NOT REQUIRED IN PROSPECTUS****Item 13. Other Expenses of Issuance and Distribution**

The following is a statement of estimated expenses in connection with the issuance and distribution of the securities being registered, excluding dealer-manager fees. All expenses incurred with respect to the registration of the common stock will be borne by us. All amounts are estimates except the SEC registration fee and the FINRA filing fee.

Item	Amount to be Paid
SEC registration fee	\$ 1,939
FINRA filing fee	2,900
Printing expenses	5,000
Legal fees and expenses	80,000
Accounting fees and expenses	45,000
Subscription Agent, Information Agent and Warrant Agent Fees and Expenses	45,000
Miscellaneous expenses	10,161
Total	\$ 190,000

Item 14. Indemnification of Directors and Officers

Article Eighth of our Amended and Restated Certificate of Incorporation provides that we shall indemnify to the extent permitted by Delaware law any person whom it may indemnify thereunder, including directors, officers, employees and agents. Such indemnification (other than an order by a court) shall be made by us only upon a determination that indemnification is proper in the circumstances because the individual met the applicable standard of conduct. Advances for such indemnification may be made pending such determination. In addition, the Registrant's Amended and Restated Certificate of Incorporation eliminates, to the extent permitted by Delaware law, personal liability of directors to the Registrant and its stockholders for monetary damages for breach of fiduciary duty as directors.

The Registrant's authority to indemnify its directors and officers is governed by the provisions of Section 145 of the Delaware General Corporation Law (the "DGCL"), as follows:

A corporation shall have the power to indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of the corporation) by reason of the fact that he is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and (a) reasonably incurred by the person in connection with such action, suit or proceeding if he acted in good faith and in a manner he reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had no reasonable cause to believe his conduct was unlawful. The termination of any action, suit or proceeding by judgment, order, settlement, conviction, or upon a plea of nolo contendere or its equivalent, shall not, of itself, create a presumption that the person did not act in good faith and in a manner which he reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had reasonable cause to believe that the person's conduct was unlawful.

II- 1

A corporation shall have the power to indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the corporation to procure a judgment in its favor by reason of the fact that he is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise against expenses (including attorneys' fees) actually and reasonably incurred by the person in connection with the defense or settlement of such action or suit if he acted in good faith and in a manner he reasonably believed to be in or not opposed to the best interests of the corporation and except that no indemnification shall be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the Court of Chancery or the court in which such action or suit was brought shall determine upon application that, despite the adjudication of liability but in view of all the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the Court of Chancery or such other court shall deem proper.

To the extent that a present or former director or officer of a corporation has been successful on the merits or otherwise in defense of any action, suit or proceeding referred to in subsections (a) and (b) of this section, or in defense of any claim, issue or matter therein, such person shall be indemnified against expenses (including attorneys' fees) actually and reasonably incurred by such person in connection therewith.

Any indemnification under subsections (a) and (b) of this section (unless ordered by a court) shall be made by the corporation only as authorized in the specific case upon a determination that indemnification of the present or former director, officer, employee or agent is proper in the circumstances because he has met the applicable standard of conduct set forth in subsections (a) and (b) of this section. Such determination shall be made, with respect to a person who is a director or officer at the time of such determination (1) by a majority vote of the directors who are not parties to such action, suit or proceeding, even though less than a quorum, or (2) by a committee of such directors designated by majority vote of such directors, even though less than a quorum, or (3) if there are no such directors, or if such directors so direct, by independent legal counsel in a written opinion, or (4) by the stockholders.

Expenses (including attorneys' fees) incurred by an officer or director in defending any civil, criminal, administrative or investigative action, suit or proceeding may be paid by the corporation in advance of the final disposition or such action, suit or proceeding upon receipt of an undertaking by or on behalf of such director or officer to repay such amount if it shall ultimately be determined that such person is not entitled to be indemnified by the corporation as authorized in this section. Such expenses (including attorneys' fees) incurred by former directors and officers or other employees and agents or by persons serving at the request of the corporation as directors, officers, employees or agents of another corporation, partnership, joint venture, trust or other enterprise may be so paid upon such terms and conditions, if any, as the corporation deems appropriate.

The indemnification and advancement of expenses provided by, or granted pursuant to, the other subsections of this section shall not be deemed exclusive of any other rights to which those seeking indemnification or advancement of expenses may be entitled under any bylaw, agreement, vote of stockholders or disinterested directors or otherwise, both as to action in such person's official capacity and as to action in another capacity while holding such office. A right to indemnification or to advancement of expenses arising under a provision of the certificate of incorporation or a bylaw shall not be eliminated or impaired by an amendment to the certificate of incorporation or the bylaws after the occurrence of the act or omission that is the subject of the civil, criminal, administrative or investigative action, suit or proceeding for which indemnification or advancement of expenses is sought, unless the provision in effect at the time of such act or omission explicitly authorizes such elimination or impairment after such action or omission has occurred.

(g) A corporation shall have power to purchase and maintain insurance on behalf of any person who is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise against any liability asserted against such person and incurred by such person in any such capacity, or arising out of his status as such, whether or not the corporation would have the power to indemnify such person against such liability under this section.

(h) For purposes of this section, references to the “corporation” shall include, in addition to the resulting corporation, any constituent corporation (including any constituent of a constituent) absorbed in a consolidation or merger which, if its separate existence had continued, would have had the power and authority to indemnify its directors, officers, and employees or agents, so that any person who is or was a director, officer, employee or agent of such constituent corporation, or is or was serving at the request of such constituent corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, shall stand in the same position under this section with respect to the resulting or surviving corporation as such person would have with respect to such constituent corporation if its separate existence had continued.

For purposes of this section, references to “other enterprises” shall include employee benefit plans, references to “fines” shall include any excise taxes assessed on a person with respect to any employee benefit plan, and references to “serving at the request of the corporation” shall include any service as a director, officer, employee or agent of the corporation which imposes duties on, or involves services by, such director, officer, employee, or agent with respect to any employee benefit plan, its participants or beneficiaries, and a person who acted in good faith and in a manner such person reasonably believed to be in the interest of the participants and beneficiaries of any employee benefit plan shall be deemed to have acted in a manner “not opposed to the best interests of the corporation” as referred to in this section.

(i) The indemnification and advancement of expenses provided by, or granted pursuant to, this section shall, unless otherwise provided when authorized or ratified, continue as to a person who has ceased to be a director, officer, employee or agent and shall inure to the benefit of the heirs, executors and administrators of such a person.

(j) The Court of Chancery is hereby vested with exclusive jurisdiction to hear and determine all actions for advancement of expenses or indemnification brought under this section, or under any bylaw, agreement, vote of stockholders or disinterested directors, or otherwise. The Court of Chancery may summarily determine a corporation’s obligation to advance expenses (including attorneys’ fees).

Pursuant to Section 102(b)(7) of the DGCL, Article Ninth of our amended and restated certificate of incorporation eliminates the liability of a director to us or our stockholders for monetary damages for such a breach of fiduciary duty as a director, except for liabilities arising:

from any breach of the director’s duty of loyalty to us or our stockholders;

from acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law;

under Section 174 of the DGCL; and

from any transaction from which the director derived an improper personal benefit. If the DGCL is amended to authorize corporate action further limiting or eliminating the personal liability of directors, then the liability of a director shall be eliminated or limited to the fullest extent permitted by the DGCL, as so amended. No amendment to, repeal or adoption of any provision of the certificate of incorporation inconsistent with article Ninth shall apply to or have any effect on the liability of any director for or with respect to any act or omission of such director occurring prior to such amendment, repeal, or adoption of an inconsistent provision.

The foregoing discussion of our amended and restated certificate of incorporation and Delaware law is not intended to be exhaustive and is qualified in its entirety by such certificate of incorporation or law. Insofar as the foregoing provisions permit indemnification of directors, executive officers, or persons controlling us for liability arising under the Securities Act of 1933, as amended, or the Securities Act, we have been informed that, in the opinion of the SEC, such indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

Item 15. Recent Sales of Unregistered Securities

The following sets forth information regarding all unregistered securities sold by us in the three years preceding the date of this registration statement. This information has been retroactively adjusted to reflect the reverse stock split for all periods presented:

On September 6, 2016, we entered into a Securities Purchase Agreement (the “September Purchase Agreement”) with certain investors for the sale by us of 3,333,334 shares of our common stock registered under our S-3 shelf registration statement on at a purchase price of \$1.50 per share. Concurrently with the sale of the common stock, pursuant to the September Purchase Agreement, we also sold unregistered warrants to purchase 2,500,000 shares of common stock for aggregate gross proceeds of \$5,000,000. Subject to certain ownership limitations, the warrants are initially exercisable six-month after issuance at an exercise price equal to \$2.00 per share of common stock, subject to adjustments as provided under the terms of the warrants. The warrants are exercisable for five years from the initial exercise date. Pursuant to an engagement agreement, we paid our placement agent an aggregate fee equal to 7% of the gross proceeds received by us from the sale of the securities in the offering and granted to our placement agent or its designees warrants to purchase up to 5% of the aggregate number of shares sold in the transactions amounting to 166,667 unregistered warrants. The placement agent warrants have substantially the same terms as the investor warrants, except that the placement agent warrants will expire on September 1, 2021 and have an exercise price equal to \$1.875 per share of common stock.

On February 1, 2017, we entered into Securities Purchase Agreements (each, a “February Purchase Agreement”) with certain investors for the sale by us of 1,818,185 shares of our common stock at a purchase price of \$0.55 per share. Concurrently with the sale of the common stock, pursuant to the February Purchase Agreement, we also sold unregistered warrants to purchase 1,363,639 shares of common stock for aggregate gross proceeds of approximately \$1,000,000. The warrants have an exercise price of \$0.75 per share, are exercisable six months after issuance, and will expire five years from the initial exercise date. Pursuant to an engagement agreement, we paid our placement agent an aggregate fee equal to 7% of the gross proceeds received by us from the sale of the securities in the offering and granted to our placement agent or its designees warrants to purchase up to 5% of the aggregate number of shares sold in the transactions amounting to 90,910 unregistered warrants. The placement agent warrants have substantially the same terms as the investor warrants, except that the placement agent warrants will expire on February 1, 2022 and have an exercise price equal to \$0.6875 per share of common stock. The Company subsequently registered the shares issuable upon exercise of the warrants on form S-1.

The Board of Directors approved up to \$500,000 for all directors, officers and employees to buy company shares from the Company at the market price. As of November 5, 2018, the Company issued 980,392 shares of its common stock at prices between \$0.20 and \$0.69 per share directly to executives and employees, for \$ \$373,852 in a series of private transactions pursuant to stock purchase agreements.

On June 1, 2017, the exercise price of Warrants issued in September 2016 was changed to \$0.50. As a result, the warrant holders exercised these Warrants and purchased 2,370,000 shares of Company common stock. The Company realized net proceeds of \$1,055,000 from this exercise. In conjunction with the foregoing, the Company also issued 2,370,000 series A warrants with an exercise price of \$0.60 per share, an initial exercise date of December 1, 2017 and expiring March 6, 2022 (the “Series A Warrants”) and 7,584,000 series B warrants with exercise price of \$0.60, an initial exercise date December 1, 2017 per share and expiring March 1, 2018. The foregoing transactions are hereinafter referred to as the “Exchange Transaction”.

In addition, on July 10, 2017, the warrant holders exercised the remaining 130,000 warrants issued in September 2016 and purchased 130,000 shares of common stock. The Company realized net proceeds of \$65,000 from this exercise. In conjunction with the foregoing the Company issued 130,000 Series A Warrants and 416,000 Series B Warrants (with an exercise price of \$0.60 and an initial exercise date January 10, 2018 on the three-month anniversary of the of the initial exercise date).

Pursuant to an engagement agreement, the Company paid its placement agent an aggregate fee equal to 7% and 10.5%, respectively, of the gross proceeds received by the Company from the sale of the securities in the offerings and granted to its placement agent or its designees warrants to purchase up to 5% of the aggregate number of shares sold in the transactions amounting to 166,667 and 107,759, respectively, unregistered warrants. The placement agent warrants have substantially the same terms as the investor warrants, except that the 166,667 placement agent warrants issued in September 2017 will expire September 1, 2021 and have an exercise price equal to \$1.875 per share of common stock and the 107,759 placement agent warrants issued in June 2017 will expire June 1, 2022 and have an

exercise price of \$0.625.

On August 23, 2017, the Holders of the Series A Warrants and Series B Warrants exchanged all of their Warrants for new warrants (respectively, the “Series A Exchange Warrants” and the “Series B Exchange Warrants” and, collectively, the “Exchange Warrants”) identical to the Warrants except as follows: The exercise price of both Exchange Warrants is \$0.45 per share, subject to adjustment therein, and the number of Series B Exchange Warrants issued was proportionately reduced to an aggregate of 2,800,000 warrants so that all Exchange Warrants in the Exchange Transaction do not exceed 19.9% of the number of the Company’s issued and outstanding shares of Common Stock as of May 31, 2017, the date of the Exchange Transaction offer letters. The issuance of the Exchange Warrants by the Company and the shares of Common Stock issuable upon exercise of the Exchange Warrants is exempt from registration pursuant to Sections 3(a)(9) and 4(a)(2) of the Securities Act of 1933, as amended (the “Securities Act”). The 2,800,000 warrants with an expiration date of March 1, 2018 and an exercise price on \$0.45 were exercised in January and February 2018. The Company realized proceeds of \$1,260,000 from these exercises.

On July 23, 2012, the Company entered into an equity distribution agreement with Maxim (the “EDA”) pursuant to which it could sell up to \$75,000,000 worth of our shares of common stock from time to time through Maxim, as sales agent. Under the EDA, Maxim is entitled to a fixed commission rate of 4.0% of the gross sales price of shares sold under the EDA, up to aggregate gross proceeds of \$10,000,000, and thereafter, at a fixed commission rate of 3.0% of the gross sales price of shares sold under the EDA. The Company has no obligation to sell any of the shares and may at any time suspend offers under the EDA or terminate the EDA.

On November 27, 2017, the Company reactivated the EDA. During the nine months ended September 30, 2018, the Company sold an aggregate of 1,524,802 shares under the EDA for proceeds of \$682,000 net of \$20,000 in commissions. Pursuant to a prospectus supplement dated February 7, 2018, the Company was able to sell up to 6,549,157 of its common stock (inclusive of shares already sold under the prospectus supplement) under the EDA. The actual number of shares, that the Company can sell, and the proceeds to be received there from are dependent upon the market price of its common stock.

Effective with the semi-monthly period ended April 30, 2017, all of the members of the Company's Board of Directors agreed to accept 100% of their directors' fees in the form of options to purchase Company Common Stock. This program was terminated as of August 31, 2017. In this regard, options to purchase 206,082 shares of Company common stock were issued with exercise prices ranging from \$0.36 to \$0.67, a holding period of 10 years and vesting over three years. In addition, commencing with the semi-monthly period ended June 15, 2017, certain officers of the Company and certain other employees of the Company, agreed to accept 20% of their salary in options to purchase Company Common Stock. This program was also terminated as of August 31, 2017. In this regard, options to purchase 214,866 shares of Company common stock were issued with exercise prices ranging from \$0.36 to \$0.67, a holding period of 10 years and vesting over three years.

As part of the cash conservation program adopted on August 28, 2017, starting with the month of September 2017, the directors agreed to defer 100% of their fees until cash is available. In consideration of this deferral, 226,023 options were issued to each of the two independent directors in February 2018 with an exercise price of \$0.37; 152,053 options were issued to each of the two independent directors in May 2018 with an exercise price of \$0.30, and 98,098 options were issued in July 2018 with an exercise price of \$0.31. All of the foregoing options and the options discussed below are exercisable for a period of 10 years with a vesting period of three years. This program was suspended as of July 15, 2018 and all remaining deferred fees were paid in July 2018. This Program was reactivated as of August 16, 2018 with the understanding that options would not be issued on the deferred amounts until the 2018 Equity Incentive Plan was approved by the stockholders and the securities issuable thereunder were registered with the SEC. The 2018 Equity Incentive Plan was approved by the stockholders and the securities issuable thereunder were registered with the SEC and, on October 17, 2018, 172,786 options were issued to each of the two independent directors with an exercise price on \$0.22 for a period of ten years with a vesting period of one year. On January 28, 2019, 207,343 options were issued to each of the two independent directors with an exercise price of \$0.22 for a period of ten years with a vesting period of one year. Also on January 28, 2019, 50,000 options were issued to each of the two independent directors with an exercise price of \$0.22 for a period of ten years with a vesting period of one year for chairing the committees in 2018.

Also as part of the cash conservation program adopted on August 28, 2017, starting with the month of September 2017, certain officers agreed to defer 40% of their salaries until cash is available. In consideration of this deferral, 884,459 options were issued to these officers in February 2018 with an exercise price of \$0.37; 599,168 options were issued to these officers in May 2018 with an exercise price of \$0.30, and 389,249 options were issued to these officers in July 2018 with an exercise price of \$0.31. This program was suspended as of July 15, 2018 and all remaining deferred salaries were paid on July 2018. This Program was reactivated as of August 16, 2018 for 50% of their salaries with the understanding that options would not be issued on the deferred amounts until the 2018 Equity Incentive Plan

was approved by the shareholders and the plan registered with the SEC. The 2018 Equity Incentive Plan has been approved by the shareholders and registered with the SEC and on October 17, 2018, 808,712 options were issued to these officers with an exercise price on \$0.22 for a period of ten years with a vesting period of one year. On January 28, 2019, 1,213,069 options were issued to these officers with an exercise price of \$0.22 for a period of ten years with a vesting period of one year.

Also as part of the cash conservation program adopted on August 28, 2017, all employees agreed to be paid 50% of their salaries in the form of unrestricted common stock of the Company. Starting with the month of September 2017, the salaries of all the employees of the Company were paid 50% in the form of unrestricted common stock of the Company. The total number of shares issued as of June 30, 2018 to the employees under this program was 2,010,534 shares at stock prices ranging from \$0.31 to \$0.55 per share. This program was suspended by the Board of Directors on June 30, 2018.

On March 24, 2018, the Company sold 1,250,000 shares of common stock under its S-3 shelf registration. The Company realized net proceeds of \$475,000 from this stock offering and paid \$25,000 in placement agent fees.

On April 20, 2018, the Company entered into Securities Purchase Agreements (the "Purchase Agreements") with certain investors (the "Investors") for the sale by the Company of an aggregate of 6,600,000 shares (the "Common Shares") of the Company's common stock, par value \$0.001 per share (the "Common Stock"), at a purchase price of \$0.39 per share. Concurrently with the sale of the Common Shares, pursuant to the Purchase Agreements the Company also sold 6,600,000 warrants, 50% of which are Class A Warrants and 50% of which are Class B Warrants (collectively, the "Warrants"). The Company received gross proceeds from the sale of the Warrants solely to the extent such Warrants are exercised for cash. Both classes of Warrants will not be exercisable until six months after issuance and will have an exercise price of \$0.39 per share, subject to adjustments as provided under the terms of the Warrants. The Class A Warrants and Class B Warrants will expire, respectively, two and five years after the date on which they are first exercisable. The closing of the sales of these securities under the Purchase Agreements took place on April 24, 2018. The Company received net proceeds from the transactions of \$2,343,820 after deducting certain fees due to the placement agent and the Company's transaction expenses.

The 2009 Equity Incentive Plan, effective June 24, 2009, as amended, authorizes the grant of non-qualified and incentive stock options, stock appreciation rights, restricted stock and other stock awards. A maximum of 22,000,000 shares of common stock is reserved for potential issuance pursuant to awards under the 2009 Equity Incentive Plan. Unless sooner terminated, the 2009 Equity Incentive Plan will continue in effect for a period of 10 years from its effective date. During 2018, there were 4,676,221 options granted by the Company under this Plan.

The 2018 Equity Incentive Plan, effective September 12, 2018, authorizes the grant of (i) Incentive Stock Options, (ii) Nonstatutory Stock Options, (iii) Stock Appreciation Rights, (iv) Restricted Stock Awards, (v) Restricted Stock Unit Awards, (vi) Performance Stock Awards, (vii) Performance Cash Awards, and (viii) Other Stock Awards. Initially, a maximum of 7,000,000 shares of common stock is reserved for potential issuance pursuant to awards under the 2018 Equity Incentive Plan. Unless sooner terminated, the 2018 Equity Incentive Plan will continue in effect for a period of 10 years from its effective date. On October 17, 2018, the Board of Directors issued 1,154,284 options to the officers and directors at the exercise price of \$0.22 expiring in 10 years, and on November 14, 2018, the Board of Directors issued 1,000 options to each employee, officer and director at the exercise price of \$0.22 expiring in ten years. On January 28, 2019, the board of directors issued 1,727,755 options to the officers and directors at the exercise price of \$0.22 expiring in ten years.

In connection with the foregoing unregistered issuance of securities, except as noted above, we relied upon the exemption from securities registration afforded by Rule 506 of Regulation D as promulgated by the United States Securities and Exchange Commission under the Securities Act and/or Section 4(a)(2) of the Securities Act.

Item 16. Exhibits and Financial Statement Schedules.

(a) Exhibits

The following exhibits are being filed with this Registration Statement:

Exh. No.	Description
1.1 *	<u>Form of Dealer - Manager Agreement.</u>
1.2	<u>July 23, 2012 Equity Distribution Agreement with Maxim Group LLC (1)</u>
1.3	<u>March 21, 2018 Engagement Agreement with Ascendant Capital Markets, LLC (45)</u>
3.1	Amended and Restated Certificate of Incorporation of the Company, as amended, along with Certificates of Designations. (2)
3.2	<u>Amendment to Certificate of Incorporation. (3)</u>
3.3	<u>Amendment to Certificate of Incorporation. (4)</u>
3.4	<u>Amended and Restated By-Laws of Registrant. (35)</u>
3.5 *	<u>Form of Certificate of Designation of Preference, Rights and Limitations of Series B Convertible Preferred Stock.</u>
4.1	Specimen certificate representing our Common Stock. (2)
4.2	<u>Amended and Restated Rights Agreement, dated as of November 14, 2017, between the Company and American Stock Transfer & Trust Company LLC. The Amended and Restated Right Agreement includes the Form of Certificate of Designation, Preferences and Rights of the Series A Junior Participating Preferred Stock, the Form of Rights Certificate and the Summary of the Right to Purchase Preferred Stock. (5)</u>
4.3	<u>Form of Indenture filed with Form S-3 Universal Shelf Registration Statement. (6)</u>
4.4	<u>Form of Warrant pursuant to August 30, 2016 Securities Purchase Agreement. (38)</u>
4.5	<u>Form of Warrant pursuant to February 1, 2017 Securities Purchase Agreement. (40)</u>

- 4.6 Form of Series A Warrant-June 2017. (43)
- 4.7 Form of Series B Warrant-June 2017. (43)
- 4.8 Form of New Series A Warrant-August 2017. (42)
- 4.9 Form of New Series B Warrant-August 2017. (42)
- 4.10 Form of Warrant issued to Purchaser of facility. (23)
- 4.11 Form of Series A Warrant- April 2018. (46)
- 4.12 Form of Series B Warrant- April 2018. (46)
- 4.13 September 28, 2018 Secured Convertible Promissory Note from the Company to Iliad Research and Trading, L.P. (50)
- 4.14* Form of Non-Transferable Subscription Rights Certificate.
- 4.15* Form of Warrant Agreement.
- 4.16* Form of Warrant Certificate.
- 5.1 * Opinion of Silverman Shin & Byrne PLLC, legal counsel.
- 8.1* Tax Opinion of Morrison Cohen LLP.
- 10.1 Form of Confidentiality, Invention and Non-Compete Agreement. (2)

- 10.2 Form of Clinical Research Agreement. (2)
- 10.3 Employee Wage or Hours Reduction Program. (7)
- 10.4 Supply Agreement with Hollister-Stier Laboratories LLC dated December 5, 2005. (9)
- 10.5 Amendment to Supply Agreement with Hollister-Stier Laboratories LLC dated February 25, 2010. (10)
- 10.6 Amended and Restated Employment Agreement of Dr. William A. Carter dated June 11, 2010 (11)
- 10.7 Vendor Agreement with Bio Ridge Pharma, LLC dated August 11, 2011. (33).
- 10.8 Vendor Agreement with Armada Healthcare, LLC dated August 11, 2011. (33).
- 10.9 Amended and restated employment agreement with Wayne Springate dated May 1, 2011. (13)
- 10.10 Amended and restated employment agreement with William A. Carter dated December 6, 2011. (16)
- 10.11 Amended and restated employment agreement with Thomas K. Equels dated December 6, 2011. (16)
- 10.12 Amendment to Supply Agreement with Hollister-Stier Laboratories LLC executed September 9, 2011. (17)
- 10.13 Vendor Agreement extension with Bio Ridge Pharma, LLC dated August 14, 2012. (18)
- 10.14 Vendor Agreement extension with Armada Healthcare, LLC dated August 14, 2012. (18)
- 10.15 Advisor's Agreement with The Sage Group dated June 15, 2013. (20)
- 10.16 Vendor Agreement extension with Armada Healthcare, LLC dated July 19, 2013. (21)
- 10.17 Vendor Agreement extension with Bio Ridge Pharma, LLC dated July 19, 2013. (21)
- 10.18 Vendor Agreement extension with Bio Ridge Pharma, LLC and Armada Healthcare, LLC dated August 8, 2014.(22)
- 10.19 Sales, Marketing, Distribution, and Supply Agreement with Emerge Health Pty Ltd. dated March 9, 2015.(Confidential Treatment granted with respect to portions of the Agreement) (22)
- 10.20 August 4, 2015 Amendment to Equity Distribution Agreement between the registrant and Maxim Group LLC. (24)
- 10.21 Vendor Agreement extension with Armada Healthcare, LLC dated July 29, 2015. (26)
- 10.22 Vendor Agreement extension with Bio Ridge Pharma, LLC dated July 29, 2013. (26)
- 10.23 Early Access Agreement with Impatiens N.V. dated August 3, 2015.(Confidential Treatment granted with respect to portions of the Agreement) (27)

- 10.24 Sales, Marketing, Distribution, and Supply Agreement with Emerge Health Pty Ltd. dated August 6, 2015. (Confidential Treatment granted with respect to portions of the Agreement) (26)
- 10.25 Addendum to Early Access Agreement with Impatiens N.V. dated October 16, 2015.(Confidential Treatment granted with respect to portions of the Agreement) (27)
- 10.26 Letter agreement between Dr. Carter and the Company dated September 28, 2015 extending the period for notice of non-renewal to December 1, 2015 within the June 11, 2010 Amended and Restated Engagement Agreement entered into between the Company and Dr. Carter. (27)

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- 10.27 November 23, 2015 William A. Carter Employment Agreement Waiver. (28)
- 10.28 November 23, 2015 Thomas K. Equels Employment Agreement Waiver. (28)
- 10.29 Equity Distribution Agreement, dated December 15, 2015 with Chardan Capital Markets, LLC. (29)
- 10.30 December 23, 2015 letter to Dr. Carter related to non-renewal of his consulting agreement and continued consulting services. (30)
- 10.31 2016 Senior Executive Deferred Cash Performance Award Plan. (31)
- 10.32 2016 Voluntary Incentive Stock Award Plan. (31)
- 10.33 Amended and Restated 2016 Senior Executive Deferred Cash Performance Award Plan. (32)
- 10.34 Sales, Marketing, Distribution and Supply Agreement (the "Agreement") with Scientific Products Pharmaceutical Co. LTD dated March 3, 2016 (Confidential Treatment granted with respect to portions of the Agreement). (34)
- 10.35 Agreement between Avrio Biopharmaceuticals ("Avrio") and the Company dated July 20, 2016 (Confidential Treatment granted with respect to portions of the Agreement). (36)
- 10.36 Licensing Agreement dated April 13, 2016 with Lonza Sales AG (Confidential Treatment granted with respect to portions of the Agreement). (37)
- 10.37 Form of Securities Purchase Agreement entered into on August 30, 2016. (38)
- 10.38 Amended and Restated Early Access Agreement with Impatiens N.V. dated May 20, 2016. (Confidential Treatment granted with respect to portions of the Agreement) (39)
- 10.39 December 13, 2016 Amendment No. 1 to Amended and Restated Early Access Agreement with Impatiens N.V. (23)
- 10.40 June 28, 2017 Amendment No. 2 to Amended and Restated Early Access Agreement with Impatiens N.V. (23)
- 10.41 February 14, 2018 Amendment No. 3 to Amended and Restated Early Access Agreement with Impatiens N.V. (23)
- 10.42 March 26, 2018 Amendment No. 4 to Amended and Restated Early Access Agreement with Impatiens N.V. (23)
- 10.43 Form of Securities Purchase Agreement entered into on February 1, 2017. (40)
- 10.44 August 2017 Form of Employee Pay Reduction Plan. (41)
- 10.45 August 2017 Form of Executive Compensation Deferral Plan. (41)
- 10.46 August 2017 Form of Directors' Compensation Deferral Plan. (41)

10.47 Form of August 2017 Agreement between the Company and the Warrantholders. (42)

10.48 Form of June 2017 Agreement between the Company and the Warrantholders. (43)

10.49 Mortgage and Security Agreement with SW Partners LLC dated May 12, 2017. (44)

10.50 Promissory Note with SW Partners LLC dated May 12, 2017. (44)

10.51 September 11, 2017 Purchase and Sale Agreement- 5 Jules Lane. (23)

10.52 January 8, 2018 Purchase and Sale Agreement- 783 Jersey Lane. (23)

10.53 Lease Agreement for 783 Jersey Lane. (23)

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- 10.54 Form of Stock Purchase Agreement entered into on March 21, 2018. (45)
- 10.55 Form of Securities Purchase Agreement entered into on May 24, 2018. (46)
- 10.56 October 9, 2018, Clinical Trial Agreement with Roswell Park Comprehensive Cancer Center. (48)
- 10.57 October 8, 2018, Restated First Amendment to Purchase and Sale Agreement. (48)
- 10.58 October 9, 2018, Restated Bill of Sale for the Restated First Amendment and Sale Agreement. (48)
- 16.1 April 5, 2018 Letter from RSM US LLP. (47)
- 21.1 List of Subsidiaries. (49)
- 23.1 * Consent of RSM US LLP.
- 23.3 * Consent of Silverman Shin & Byrne PLLC (included in Exhibit 5.1).
- 24.1 Power of Attorney (included on the signature page hereto).
- 99.1 * Form of Instructions as to Use of Subscription Rights Certificates.
- 99.2 * Form of Letter to Stockholders who are Record Holders.
- 99.3 * Form of Letter to Brokers, Dealers, Banks and Other Nominees.
- 99.4 * Form of Broker Letter to Clients Who are Beneficial Holders.
- 99.5 * Form of Beneficial Owner Election Form.
- 99.6 * Form of Nominee Holder Certification.
- 99.7* Form of Notice of Important Tax Information.

* Filed herewith.

(1) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K (No. 000-27072) filed July 23, 2012 and is hereby incorporated by reference.

(2)

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Filed with the Securities and Exchange Commission as an exhibit to the Company's Registration Statement on Form S-1(No. 33-93314) filed November 2, 1995 and is hereby incorporated by reference.

- (3) Filed with the Securities and Exchange Commission as Appendix A to the Company's Definitive Proxy Statement on Schedule 14A filed on September 16, 2011 and is hereby incorporated by reference.
- (4) Filed with the Securities and Exchange Commission as Appendix A to the Company's Definitive Proxy Statement on Schedule 14A filed on June 27, 2016 and is hereby incorporated by reference.
- (5) Filed with the Securities and Exchange Commission on November 14, 2017 as an exhibit to the Company's Registration Statement on Form 8-A12B (No. 0-27072) and is hereby incorporated by reference.
- (6) Filed with the Securities and Exchange Commission as an exhibit to the Company's Form S-3 Registration Statement (No. 333-205228) on June 25, 2015 and is hereby incorporated by reference.

- (7) Filed with the Securities and Exchange Commission as an exhibit to the Company's annual report on Form 10-K (No. 000-27072) for the year ended December 31, 2008 and is hereby incorporated by reference.
- (8) Filed with the Securities and Exchange Commission as an exhibit to the Company's quarterly report on Form 10-Q (No. 000-27072) for the period ended June 30, 2010 and is hereby incorporated by reference.
- (9) Filed with the Securities and Exchange Commission as an exhibit to the Company's annual report on Form 10-K (No. 000-27072) for the year ended December 31, 2005 and is hereby incorporated by reference.
- (10) Filed with the Securities and Exchange Commission as an exhibit to the Company's Annual Report on Form 10-K (No. 000-27072) for the year ended December 31, 2009 and is hereby incorporated by reference.
- (11) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K (No. 000-27072) dated June 15, 2010 and is hereby incorporated by reference.
- (12) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K (No. 000-27072) dated May 28, 2010 and is hereby incorporated by reference.
- (13) Filed with the Securities and Exchange Commission as an exhibit to the Company's quarterly report on Form 10-Q (No. 000-27072) for the period ended March 31, 2011 and is hereby incorporated by reference.
- (14) Filed with the Securities and Exchange Commission as an exhibit to the Company's quarterly report on Form 10-Q (No. 000-27072) for the period ended September 30, 2011 and is hereby incorporated by reference.
- (15) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K (No. 000-27072) filed September 23, 2011 and is hereby incorporated by reference.
- (16) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K (No. 000-27072) filed December 12, 2011 and is hereby incorporated by reference.
- (17) Filed with the Securities and Exchange Commission as an exhibit to the Company's Annual Report on Form 10-K (No. 000-27072) for the year ended December 31, 2011 and is hereby incorporated by reference.
- (18) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K (No. 000-27072) filed August 15, 2012 and is hereby incorporated by reference.
- (19) Filed with the Securities and Exchange Commission as an exhibit to the Company's quarterly report on Form 10-Q (No. 000-27072) for the period ended September 30, 2015 and is hereby incorporated by reference.
- (20) Filed with the Securities and Exchange Commission as an exhibit to the Company's quarterly report on Form 10-Q (No. 000-27072) for the period ended June 30, 2013 and is hereby incorporated by reference.
- (21) Filed with the Securities and Exchange Commission as an exhibit to the Company's annual report on Form 10-K (No. 000-27072) for the year ended December 31, 2013 and is hereby incorporated by reference.
- (22) Filed with the Securities and Exchange Commission as an exhibit to the Company's annual report on Form 10-K (No. 000-27072) for the year ended December 31, 2014 and is hereby incorporated by reference.

(23) Filed with the Securities and Exchange Commission as an exhibit to the Company's annual report on Form 10-K (No. 000-27072) for the year ended December 31, 2017 and is hereby incorporated by reference left blank.

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- (24) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K (No. 000-27072) filed June 23, 2015 and is hereby incorporated by reference.
- (25) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K (No. 000-27072) filed August 4, 2015 and is hereby incorporated by reference.
- (26) Filed with the Securities and Exchange Commission as an exhibit to the Company's quarterly report on Form 10-Q (No. 000-27072) for the period ended June 30, 2015 and is hereby incorporated by reference.
- (27) Filed with the Securities and Exchange Commission as an exhibit to the Company's quarterly report on Form 10-Q (No. 1-13441) for the period ended September 30, 2015 and is hereby incorporated by reference.
- (28) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K (No. 000-27072) filed November 23, 2015 and is hereby incorporated by reference.
- (29) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K (No. 000-27072) filed December 15, 2015 and is hereby incorporated by reference.
- (30) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K (No. 000-27072) filed January 14, 2016 and is hereby incorporated by reference.
- (31) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K (No. 000-27072) filed February 4, 2016 and is hereby incorporated by reference.
- (32) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K (No. 000-27072) filed March 1, 2016 and is hereby incorporated by reference.
- (33) Filed with the Securities and Exchange Commission as an exhibit to the Company's amended quarterly report on Form 10-Q/A (No. 000-27072) for the period ended September 30, 2011 and is hereby incorporated by reference.
- (34) Filed with the Securities and Exchange Commission as an exhibit to the Company's quarterly report on Form 10-Q for the period ended March 31, 2016 and is hereby incorporated by reference.
- (35) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K filed June 10, 2016 and is hereby incorporated by reference.
- (36) Filed with the Securities and Exchange Commission as an exhibit to the Company's quarterly report on Form 10-Q for the period ended June 30, 2016 and is hereby incorporated by reference.
- (37) Filed with the Securities and Exchange Commission as an exhibit to the Company's quarterly report on Form 10-Q/A for the period ended March 31, 2016 and is hereby incorporated by reference.
- (38) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K filed September 1, 2016 and is hereby incorporated by reference.
- (39) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K/A filed May 8, 2017 and is hereby incorporated by reference.

(40) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K filed February 3, 2017 and is hereby incorporated by reference.

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- (41) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K filed August 29, 2017 and is hereby incorporated by reference.
- (42) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K filed August 23, 2017 and is hereby incorporated by reference.
- (43) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K filed June 1, 2017 and is hereby incorporated by reference.
- (44) Filed with the Securities and Exchange Commission as an exhibit to the Company's quarterly report on Form 10-Q (No. 000-27072) for the period ended March 31, 2017 and is hereby incorporated by reference.
- (45) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K filed March 22, 2018 and is hereby incorporated by reference.
- (46) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K filed May 20, 2018 and is hereby incorporated by reference.
- (47) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K filed May 6, 2018 and is hereby incorporated by reference.
- (48) Filed with the Securities and Exchange Commission as an exhibit to the Company's quarterly report on Form 10-Q (No. 000-27072) for the period ended September 30, 2018 and is hereby incorporated by reference.
- (49) Filed with the Securities and Exchange Commission as an exhibit to the Company's Registration Statement on Form S-1(No. K33-226057) filed July 2, 2018 and is hereby incorporated by reference.
- (50) Filed with the Securities and Exchange Commission as an exhibit to the Company's Current Report on Form 8-K filed October 4, 2018 and is hereby incorporated by reference.

(b) Financial Statement Schedules

All schedules have been omitted because either they are not required, are not applicable or the information is otherwise set forth in the financial statements and related notes thereto.

Item 17. Undertakings

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 Security and Exchange Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 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 (1)(i), (1)(ii) and (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 Securities and Exchange Commission 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 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 filed pursuant to Rule 424(b) as part of a registration statement relating to an offering, other than registration statements relying on Rule 430B or other than prospectuses filed in reliance on Rule 430A, shall be deemed to be part of and included in the registration statement as of the date it is first used after effectiveness. 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 first use, 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 date of first use.

(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 containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and

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

(6) 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 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.

(7) The undersigned registrant hereby undertakes to supplement the prospectus, after the expiration of the subscription period, to set forth the results of the subscription offer, the transactions by the underwriters during the subscription period, the amount of unsubscribed securities to be purchased by the underwriters, and the terms of any subsequent reoffering thereof. If any public offering by the underwriters is to be made on terms differing from those set forth on the cover page of the prospectus, a post-effective amendment will be filed to set forth the terms of such offering.

(8) 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 any charter provision, by law 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 of 1933 and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than 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.

(9) The undersigned registrant hereby undertakes that:

(i) For purposes of determining any liability under the Securities Act of 1933, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective; and

(ii) For the purpose of determining any liability under the Securities Act of 1933, each post-effective amendment that contains a form of prospectus 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.

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SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Registrant has duly caused this Amendment No. 1 to the Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Ocala, State of Florida, on February 6, 2019 .

HEMISPHERX BIOPHARMA, INC.

/s/ Thomas K. Equels

By: Thomas K. Equels
Chief Executive Officer and President

Pursuant to the requirements of the Securities Act of 1933, this Amendment No. 1 to the Registration Statement has been signed by the following persons in the capacities and on the dates indicated on February 6, 2019 .

Signature	Title
<i>/s/ Thomas K. Equels</i> Thomas K. Equels	Chief Executive Officer (Principal Executive) and Director
<i>/s/ Adam Pascale</i> Adam Pascale	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)
* William M. Mitchell, M.D., Ph.D.	Director (Chairman)
* Stewart L. Appelrouth	Director
* By: <i>/s/Thomas K. Equels</i> Thomas K. Equels, Attorney-in-Fact	

