

HEAT BIOLOGICS, INC.
Form S-1/A
October 10, 2017

As filed with the Securities and Exchange Commission on October 10, 2017

Registration No. 333-220470

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

Heat Biologics, Inc.

(Exact name of Registrant as specified in its charter)

Delaware

*(State or other jurisdiction of
incorporation or organization)*

2836

*(Primary Standard Industrial
Classification Code Number)*

26-2844103

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

801 Capitola Drive

Durham, North Carolina 27713

(919) 240-7133

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

Jeffrey Wolf

Chief Executive Officer and

Chairman of the Board of Directors

Heat Biologics, Inc.

801 Capitola Drive

Durham, North Carolina 27713

(919) 240-7133

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

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

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.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act of 1933, 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 of 1933, 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 of 1933, 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 of 1934.

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

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	Proposed Maximum Amount to be Registered(1)	Proposed Maximum Offering Price Per Share (3)	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee (4)
to be Registered Subscription Rights to purchase common stock, \$0.0002 par value per share				(2)
Common stock, \$0.0002 par value per share, issuable upon exercise of Subscription Rights	15,000,000 \$	0.75 \$	11,250,000 \$	1,340.43
Total	15,000,000 \$	0.75 \$	11,250,000 \$	1,340.43(5)

(1) This registration statement relates to (i) non-transferable subscription rights to purchase common stock \$0.0002 par value per share of Heat Biologics, Inc. (the Registrant), which subscription rights are to be issued to holders of the Registrant's common stock and holders of the Registrant's warrants on a *pro rata* basis without consideration, and (ii) the shares of the Registrant's common stock issuable upon the exercise of such non-transferable subscription rights.

(2) The subscription rights are being issued without consideration. Pursuant to Rule 457(g) under the Securities Act of 1933, as amended (the Securities Act), no separate registration fee is payable with respect to the subscription rights being offered hereby since the subscription rights are being registered in the same registration statement as the securities to be offered pursuant thereto.

(3) Estimated solely for purposes of calculating the registration fee in accordance with Rule 457(c) under the Securities Act based upon the average of the high and low prices of the Registrant's common stock on the Nasdaq Capital Market on October 9, 2017, which was \$0.75 per share.

(4) Calculated under Section 6(b) of the Securities Act.

(5)

A fee of \$811.30 was previously paid. The balance of \$529.13 is being paid with the filing of this registration statement.

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act or until the Registration Statement shall become effective on such date as the Securities and Exchange Commission, acting pursuant to 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 we are not soliciting offers to buy these securities in any jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED OCTOBER 10, 2017

PRELIMINARY PROSPECTUS

Subscription Rights to purchase up to 12,000,000 shares of common stock

Heat Biologics, Inc. is distributing, at no charge, to holders of our common stock and holders of our warrants non-transferable subscription rights to purchase one share of our common stock for each share of common stock owned at, and each share of common stock into which the warrants held by them were exercisable at, 5:00 p.m., New York City time, on October 13, 2017, subject to a pro-rata reduction if the basic subscription rights are exercised for an amount in excess of 12,000,000 shares of common stock, unless the offering size is increased. We refer to this as the rights offering.

Each subscription right will entitle the holder to purchase one share of our common stock at a subscription price equal to \$ per share of our common stock, which we refer to as the basic subscription privilege. If you fully exercise your basic subscription privilege and other holders do not fully exercise their basic subscription privileges, you may also exercise an over-subscription privilege to purchase additional shares of common stock that remain unsubscribed at the expiration of the rights offering, subject to the availability and *pro rata* allocation of shares among holders exercising this over-subscription privilege.

We are conducting the rights offering to raise capital that we intend to use to fund our and our subsidiaries' preclinical and clinical programs and for working capital and general corporate purposes, including to acquire, license or invest in complementary businesses, technologies, product candidates or other intellectual property. See Use of Proceeds.

The rights offering commences on the date of this prospectus and subscription rights will expire if they are not exercised by 5:00 p.m., New York City time, on November 8, 2017, unless we extend the rights offering period. There is no minimum number of subscription rights that must be exercised in this rights offering, no minimum number that any subscription rights holder must exercise, and no minimum number of units that we will issue at the closing of this rights offering. We have the option to extend the rights offering and the period for exercising your subscription rights for a period not to exceed 30 days, although we do not presently intend to do so. All 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 and even if the rights offering is extended by our board of directors.

Our common stock is listed on the Nasdaq Capital Market under the symbol "HTBX." The last reported sale price of our common stock on October 9, 2017 was \$0.75 per share. The subscription rights will not be listed for trading on the NASDAQ Capital Market or any stock exchange or market. The shares of common stock issued in the rights offering will also be traded on the NASDAQ Capital Market under the same symbol.

Our board of directors may cancel the rights offering at any time prior to the expiration of the rights offering for any reason. In the event the rights offering is cancelled, all subscription payments received by the subscription agent for the rights offering will be promptly returned, without interest.

We have engaged Advisory Group Equity Services, Ltd. doing business as RHK Capital (RHK Capital) as dealer-manager for this offering and placement agent for any unsubscribed shares. See Plan of Distribution.

	Subscription Price	Dealer Manager Fees and Expenses(1)	Proceeds, Before Expenses, to us
Per share (2)	\$	\$	\$
Total (2)	\$	\$	\$

(1)

In connection with the rights offering, we have agreed to pay RHK Capital, the dealer-manager for this offering, a cash fee of 6.0% of the gross proceeds of this offering, a non-accountable expense allowance of 1.8% of the gross proceeds of this offering, and an out-of-pocket accountable expense allowance of 0.2% of the gross proceeds of this offering. For any unsubscribed shares of common stock placed by RHK Capital during the 45-day placement period following the expiration of the rights offering, we have agreed to pay RHK Capital a placement fee equal to 6.0% of such sales, in lieu of the dealer-manager fee, together with a continuing 1.8% non-accountable expense fee and out-of-pocket accountable expense allowance of 0.2% of the gross proceeds of the offering.

(2)

Assumes that the rights offering is fully subscribed and that subscription rights are exercised for 12,000,000 shares. If the aggregate number of shares of common stock for which subscription rights are exercised exceeds 12,000,000 shares, our board of directors, in its sole discretion, will have the right, but no obligation, to increase the size of the offering to subscription rights to purchase up to an aggregate 15,000,000 shares.

The exercise of your subscription rights for shares of our common stock involves risks. See Risk Factors beginning on page 15 of this prospectus to read about important factors you should consider before exercising your subscription rights.

We are an emerging growth company as defined under the federal securities laws and are subject to reduced public company reporting requirements. Please read the disclosures in this prospectus for more information.

Neither the Securities and Exchange Commission (the SEC) 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.

If you have any questions or need further information about the rights offering, please call D.F. King & Co., Inc., our information agent for the rights offering, at (866) 796-1290, or by email at htbx@dfking.com.

Dealer-Manager

The date of this prospectus is _____, 2017

TABLE OF CONTENTS

Description	Page
<u>PROSPECTUS SUMMARY</u>	1
<u>THE RIGHTS OFFERING</u>	3
<u>QUESTIONS AND ANSWERS ABOUT THE RIGHTS OFFERING</u>	9
<u>RISK FACTORS</u>	15
<u>SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS</u>	44
<u>USE OF PROCEEDS</u>	45
<u>CAPITALIZATION</u>	46
<u>DILUTION</u>	47
<u>THE RIGHTS OFFERING</u>	48
<u>MARKET FOR COMMON EQUITY AND RELATED STOCKHOLDER MATTERS</u>	59
<u>DIVIDEND POLICY</u>	60
<u>DESCRIPTION OF OUR SECURITIES</u>	61
<u>DESCRIPTION OF SUBSCRIPTION RIGHTS</u>	64
<u>MATERIAL U.S. FEDERAL INCOME TAX CONSIDERATIONS</u>	67
<u>PLAN OF DISTRIBUTION</u>	73
<u>LEGAL MATTERS</u>	75
<u>EXPERTS</u>	75
<u>WHERE YOU CAN FIND ADDITIONAL INFORMATION</u>	75
<u>INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE</u>	76

You should rely only on the information contained in this prospectus and any free writing prospectus that we have authorized for use in connection with this offering. Neither we nor the dealer-manager has authorized anyone to provide you with information that is different. We are offering to sell, and seeking offers to buy, the securities covered hereby only in jurisdictions where offers and sales are permitted. The information in this prospectus is accurate only as of the date of this prospectus, regardless of the time of delivery of this prospectus or any sale of the securities covered hereby. Our business, financial condition, results of operations and prospects may have changed since that date. We are not, and the dealer-manager is not, making an offer of these securities in any jurisdiction where the offer is not permitted.

For investors outside the United States: Neither we nor the dealer-manager has taken any action 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 covered hereby and the distribution of this prospectus outside of the United States.

This prospectus includes statistical and other industry and market data that we obtained from industry publications and research, surveys and studies conducted by third parties. Industry publications and third-party research, surveys and studies generally indicate that their information has been obtained from sources believed to be reliable, although they do not guarantee the accuracy or completeness of such information. We believe that the data obtained from these industry publications and third-party research, surveys and studies are reliable. We are ultimately responsible for all disclosure included in this prospectus.

Except where the context requires otherwise, in this prospectus the Company, Heat Biologics, Heat, we, our refer to Heat Biologics, Inc., a Delaware corporation formed in June 2008, and, where appropriate, its subsidiaries, Heat Biologics I, Inc., Heat Biologics III, Inc., Heat Biologics IV, Inc., Heat Biologics GmbH, Heat Biologics Australia Pty LTD and Pelican Therapeutics, Inc.

PROSPECTUS SUMMARY

This summary highlights selected information contained elsewhere in this prospectus. This summary is not intended to be complete and does not contain all of the information that you should consider before deciding to invest in our securities. You should read this entire prospectus carefully, especially the Risk Factors section beginning on page 15 and our financial statements and the notes thereto contained in the prospectus, before making an investment decision.

Overview

Heat Biologics is a biopharmaceutical company developing immunotherapies designed to activate a patient's CD8+ Killer T-cells against cancer. Our T-Cell Activation Platform (TCAP) produces therapies designed to turn "cold" tumors "hot" and be administered in combination with checkpoint inhibitor therapies and other immuno-modulators to increase their effectiveness. We can also utilize our TCAP approach to combine with existing T-cell checkpoint inhibitors and co-stimulators in a single treatment. This offers the potential benefit of combination immunotherapy without the need for multiple, independent biologic products. We are currently enrolling patients in our Phase 2 clinical trial for non-small cell lung cancer, in combination with Bristol-Myers Squibb's nivolumab (Opdivo®). We also have numerous pre-clinical programs at various stages of development.

Through our *ImPACT*® platform technology, we have developed product candidates that consist of live, allogeneic *off-the-shelf* genetically-modified, irradiated human cancer cells. These cells are intended to secrete a broad spectrum of Cancer Testis Antigens (CTA), classified as tumor antigens, together with the gp96 protein. Our *ImPACT*® technology achieves this by reprogramming live tumor cells to secrete gp96, along with their chaperoned tumor antigens; thereby, transforming the allogeneic cells into machines that activate a robust killer CD8+ T cell immune attack against a patient's cancer. Unlike autologous or personalized therapeutic, monotherapy approaches that either require the extraction of blood or tumor tissue from each patient or the creation of an individualized treatment, our product candidates are fully allogeneic, and do not require extraction of individual patient's material or custom manufacturing. As a result, our product candidates can be mass-produced and readily available for immediate patient use. Because each patient receives the same treatment, we believe that our immunotherapy approach offers logistical, manufacturing and other cost benefits, compared to patient-specific or precision medicine approaches.

Our lead *ImPACT*[®] program, HS-110, is in a Phase 2 clinical trial focused on non-small cell lung cancer in combination with Bristol-Myers Squibb's nivolumab (Opdivo[®]). HS-110 is made of a cancer cell line that has been genetically modified using our *ImPACT* technology system. It is designed to secrete a wide range of lung cancer-associated antigens bound to gp96 proteins, while activating a broad, T cell mediated immune response against the patient's cancer.

Our *ComPACT* platform technology, currently in preclinical development, is a dual-acting immunotherapy, combining a pan-antigen T-cell activator and a T-cell co-stimulator in a single product, offering the potential benefits of combination immunotherapy without the need for multiple, independent biologic products. The platform offers broad versatility and has been engineered to incorporate into the gp96-Ig expression vector and various fusion proteins targeting co-stimulatory receptors, including but not limited to, OX40, ICOS, GITR and TLIA.

In May, we acquired two T cell co-stimulators through our acquisition of 80% of the outstanding equity of Pelican Therapeutics, Inc. (Pelican), broadening our pipeline and strengthening our portfolio in the emerging T-cell activation space. We believe the use of these therapeutic agents, in combination with other immunotherapies, have the potential dramatically improve patient outcomes.

Pelican is the only company with a disclosed preclinical pipeline targeting the T-cell co-stimulator, TNFRSF25. We believe PTX-35 can activate memory CD8+ cytotoxic T-cells and eliminate tumor cells in patients. This solution is designed to harness the body's natural tolerance mechanisms to reprogram the immune system and provide a long-term, durable effect after a short course of therapy. Combined with other immunotherapies, including *ImPACT* and *ComPACT*, PTX-35 could boost anti-cancer responses due to its potential to improve the durability of antigen-specific immune responses and a preferential specificity for stimulating the production of memory CD8+ t cells. In May 2016, a \$15.2 million grant was awarded to Pelican from the Cancer Prevention and Research Institute of Texas (CPRIT) to support further development of PTX-35 and examine the benefits it may provide to patients with several types of cancers, such as lung, lymphoma, prostate, pancreatic and ovarian.

PTX-15, Pelican's second product candidate, is a human TL1A-Ig fusion protein designed to trigger regulatory T-cell proliferation. We believe it can provide precise control of the regulatory arm of our immune system, and can be used in immuno-oncology or to prevent inflammation in autoimmune diseases and transplantation. As both Pelican therapies are based on natural, existing components of the immune system, we expect they will be safer, longer-lasting, and more effective than traditional medicines after only a short course of therapy.

Our wholly-owned subsidiary, Zolovax, Inc. (Zolovax), is in preclinical studies to develop therapeutic and preventative medicines to treat infectious diseases based on our gp96 therapeutic technology, with a current focus on the development of a Zika vaccine in collaboration with the University of Miami. Other infectious diseases of interest include HIV, West Nile virus, and Dengue and yellow fever.

General Corporate Information

We were incorporated under the laws of the State of Delaware on June 10, 2008. Our principal offices are located at 801 Capitola Drive, Bay 12, Durham, North Carolina 27713. Our website address is www.heatbio.com. We make our periodic and current reports that are filed with the Securities and Exchange Commission (the SEC) available, free of charge, on our website as soon as reasonably practicable after such material is electronically filed with, or furnished to, the SEC. The information contained in, and that can be accessed through, our website is not incorporated into and is not a part of this prospectus.

Implications of Being an Emerging Growth Company

We qualify as an emerging growth company as defined in the Jumpstart Our Business Startups Act of 2012 (the JOBS Act). As an emerging growth company, we intend to take advantage of specified reduced disclosure and other requirements that are otherwise applicable generally to public companies. These provisions include:

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allowance to provide only two years of audited financial statements in addition to any required unaudited interim financial statements with correspondingly reduced "Management's Discussion and Analysis of Financial Condition and Results of Operations" disclosure;

reduced disclosure about our executive compensation arrangements;

no non-binding advisory votes on executive compensation or golden parachute arrangements; and

exemption from the auditor attestation requirement in the assessment of our internal control over financial reporting.

We may take advantage of these provisions for up to five years or such earlier time that we are no longer an emerging growth company. We would cease to be an emerging growth company on the date that is the earliest of: (i) the last day of the fiscal year in which we have total annual gross revenues of \$1 billion or more; (ii) the last day of our fiscal year following the fifth anniversary of the date of the completion of our initial public offering; (iii) the date on which we have issued more than \$1 billion in nonconvertible debt during the previous three years; or (iv) the date on which we are deemed to be a large accelerated filer under the rules of the SEC. We have taken advantage of reduced reporting requirements in this prospectus. Accordingly, the information contained herein may be different than the information you receive from other public companies in which you have beneficial ownership.

THE RIGHTS OFFERING

*The following summary describes the principal terms of the rights offering, but is not intended to be complete. See the information under the heading *The Rights Offering* in this prospectus for a more detailed description of the terms and conditions of the rights offering.*

Securities Offered

We are distributing, at no charge, to holders of our common stock and holders of our warrants on the record date non-transferrable subscription rights to purchase up to an aggregate of 12,000,000 shares of our common stock. Subject to proration as described below, holders of our common stock will receive one subscription right for each share of common stock owned at, and our warrant holders will receive one subscription right for each share of common stock into which the warrants held by them were exercisable at, 5:00 p.m., New York City time, on October 13, 2017. If the aggregate number of shares of common stock for which subscription rights are exercised exceeds 12,000,000 shares, our board of directors, in its sole discretion, will have the right, but no obligation, to increase the size of the offering to subscription rights to purchase up to an aggregate 15,000,000 shares. The subscription rights may be exercised at any time beginning on the date of this prospectus.

Basic Subscription Privilege

Subject to proration, the basic subscription privilege of each subscription right will entitle you to purchase one share of our common stock at a subscription price equal to between 88%-92% of the volume weighted average price per share of our common stock on the NASDAQ Capital Market for the five trading days immediately preceding and including October 13, 2017, rounded down to the nearest penny. The exact subscription price per share of our common stock will be determined by our pricing committee after the record date.

Proration

All subscriptions, including subscriptions pursuant to the basic subscription privilege, are subject to proration. If the basic subscription rights are exercised for an amount in excess of 12,000,000 shares of common stock (or in excess of 15,000,000 shares of common stock if our board of directors, in its sole discretion, determines to increase the offering size), the basic subscription rights that have been exercised will be reduced on a pro-rata basis based on the number of shares each rights holder subscribed for under the basic subscription right, subject to adjustment to eliminate fractional shares, so that the total number of shares issued upon exercise of subscription rights shall equal 12,000,000 shares (or 15,000,000 shares of common stock if our board of directors, in its sole discretion, determines to increase the offering size), and any excess subscription amount received by the subscription agent will be returned, 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.

Over-Subscription Privilege

If you fully exercise your basic subscription privilege and other stockholders do not fully exercise their basic subscription privileges, you may also exercise an over-subscription privilege to purchase additional shares of common stock that remain unsubscribed at the expiration of the rights offering, subject to the availability and pro rata allocation of shares among stockholders exercising this over-subscription privilege. To the extent the number of the unsubscribed shares are not sufficient to satisfy all of the properly exercised over-subscription privileges requests, then the available shares will be prorated among those who properly exercised over-subscription privileges based on the number of shares each rights holder subscribed for under the basic subscription right. If this pro rata allocation results in any stockholder receiving a greater number of shares of common stock than the stockholder subscribed for pursuant to the exercise of the over-subscription privilege, then such stockholder will be allocated only that number of shares for which the stockholder oversubscribed, and the remaining shares of common stock will be allocated among all other stockholders exercising the over-subscription privilege on the same pro rata basis described above. The proration process will be repeated until all shares of common stock have been allocated or all over-subscription exercises have been fulfilled, whichever occurs earlier.

Limitations on Exercise

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 shares of our common stock 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 twenty percent (20%) of our issued and outstanding shares of common stock following the closing of the transactions contemplated by this rights offering.

In the event that the exercise by a stockholder of the basic subscription privilege or the over-subscription privilege could, as determined by the Company in its sole discretion, potentially result in a limitation on the Company's ability to use the Tax Attributes under the Code and rules promulgated by the IRS, the Company may, but is under no obligation to, reduce the exercise by such stockholder of the basic subscription privilege or the over-subscription privilege to such number of shares of common stock as the Company, in its sole discretion, shall determine to be advisable in order to preserve the Company's ability to use the Tax Attributes.

Record Date

5:00 p.m., New York City time, on October 13, 2017

Expiration Date of the Rights Offering

5:00 p.m., New York City time, on November 8, 2017

Subscription Price

The per share subscription price will be equal to a range of 88%-92% of the volume weighted average price per share of our common stock on the NASDAQ Capital Market for the five trading days immediately preceding and including October 13, 2017, rounded down to the nearest penny. To be effective, any payment related to the exercise of a right must clear prior to the expiration of the rights offering.

Use of Proceeds

We are conducting the rights offering to raise capital that we intend to use to fund our and our subsidiaries' preclinical and clinical programs and for working capital and general corporate purposes, including to acquire, license or invest in complementary businesses, technologies, product candidates or other intellectual property. See Use of Proceeds.

Non-Transferability of Rights

The subscription rights may not be sold, transferred or assigned and will not be listed for trading on the NASDAQ Capital Market or any stock exchange or market.

No Board Recommendation

Although members of our board of directors may invest their own money in the rights offering, our board of directors is making no recommendation regarding your exercise of the subscription rights. You are urged to make your decision based on your own assessment of our business and the rights offering. Please see Risk Factors for a discussion of some of the risks involved in investing in our common stock.

No Revocation

All 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 and even if the rights offering is extended by our board of directors. However, if we amend the rights offering to allow for an extension of the rights offering for a period of more than 30 days or make a fundamental change to the terms of the rights offering set forth in this prospectus, you may cancel your subscription and receive a refund of any money you have advanced. You should not exercise your subscription rights unless you are certain that you wish to purchase additional shares of our common stock at a subscription price equal to 88%-92% of the volume weighted average price per share of our common stock on the NASDAQ Capital Market for the five trading days immediately preceding and including October 13, 2017, rounded down to the nearest penny.

No Minimum Requirements

There is no minimum purchase requirement for closing this offering, and no minimum purchase requirement for any subscription rights holder.

U.S. Federal Income Tax Considerations

For U.S. federal income tax purposes holders of shares of our common stock and holders of warrants to acquire our common stock generally should not recognize income or loss in connection with the receipt or exercise of subscription rights unless, by way of example only, the rights offering is part of a disproportionate distribution within the meaning of applicable tax rules (in which case you may recognize taxable income upon receipt of the subscription rights). We believe that the rights offering should not be treated as part of a disproportionate distribution, but that conclusion is unclear and is not binding on the IRS or the courts. You are urged to consult your own tax advisor as to your particular tax

consequences resulting from the receipt and exercise of subscription rights and the receipt, ownership and disposition of our common stock. For further information, please see Material U.S. Federal Income Tax Considerations.

**Extension, Cancellation and
Amendment**

We have the option to extend the expiration of the rights offering for a period not to exceed 30 days by giving oral or written notice to the subscription agent prior to the expiration date of the rights offering, although we do not presently intend to do so. If we elect to extend the expiration of the rights offering, we will issue a press release announcing such extension no later than 9:00 a.m., New York City time, on the next business day after the most recently announced expiration time of the rights offering. We will extend the duration of the rights offering as required by applicable law or regulation and may choose to extend it if we decide to give investors more time to exercise their subscription rights in the rights offering.

Our board of directors may cancel the rights offering at any time prior to the expiration of the rights offering for any reason. In the event the rights offering is cancelled, all subscription payments received by the subscription agent for the rights offering will be promptly returned, without interest.

Our board of directors, in its sole discretion, will have the right, but no obligation, to increase the size of the offering to subscription rights to purchase up to an aggregate 15,000,000 shares if the aggregate number of shares of common stock for which subscription rights are exercised exceeds 12,000,000 shares. An increase in the size of the offering will not constitute a fundamental change to the terms of the offering, and will not give persons who have exercised their subscription rights the opportunity to cancel their subscriptions.

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.

Procedures for Exercise

To exercise your subscription rights, you must complete the rights certificate and deliver it to the subscription agent, Continental Stock Transfer & Trust Company, together with full payment for all the subscription rights you elect to exercise under the basic subscription privilege and over-subscription privilege. You may deliver the documents and payments by regular mail or commercial carrier. If regular mail is used for this purpose, we recommend using registered mail, properly insured, with return receipt requested.

If you cannot deliver your rights certificate to the subscription agent prior to the expiration of the rights offering, you may follow the guaranteed delivery procedures described under [The Rights Offering](#) [Guaranteed Delivery Procedures](#).

Transfer Agent Serving as Subscription Agent Continental Stock Transfer & Trust Company

Information Agent D.F. King & Co., Inc.

Dealer-Manager and Placement Agent We have engaged Advisory Group Equity Services, Ltd. doing business as RHK Capital ([RHK Capital](#)) as the dealer-manager for this rights offering and placement agent for any unsubscribed shares of our common stock.

Shares Outstanding Before the Rights Offering 35,788,912 shares of our common stock⁽¹⁾

Shares Outstanding After the Rights Offering Assuming 12,000,000 shares of our common stock are issued in the rights offering through the exercise of subscription rights, we anticipate that 47,788,912 shares of our common stock will be outstanding following the completion of the rights offering. If our board of directors, in its sole discretion, determines to increase the offering size to subscription rights to purchase up to an aggregate of 15,000,000 shares of our common stock and all 15,000,000 shares are issued in the rights offering through the exercise of subscription rights, we anticipate that 50,788,912 shares of our common stock will be outstanding following the completion of the rights offering. ⁽¹⁾

Risk Factors See [Risk Factors](#) beginning on page 15 to read about factors you should consider before you decide whether to exercise your subscription rights to purchase shares of our common stock.

Fees and Expenses We will pay all fees charged by the subscription agent and the information agent in connection with this rights offering. We will also pay the fees and expenses charged by RHK Capital, as dealer-manager for this rights offering, as well as placement agent for any unsubscribed shares of common stock. You are responsible for paying any other commissions,

fees, taxes or other expenses incurred in connection with the exercise of the subscription rights.

Distribution Arrangements

RHK Capital will act as dealer-manager for the rights offering. In such capacity, RHK Capital will provide marketing assistance and advice to our company in connection with the rights offering. Under the terms and subject to the conditions contained in the dealer-manager agreement, we have agreed to pay RHK Capital a cash fee of 6.0% of the gross proceeds of this offering, a non-accountable expense allowance up to 1.8% of the gross proceeds of the rights offering, and an out-of-pocket accountable expense allowance of 0.2% of the gross proceeds of this offering. RHK Capital will also act as placement agent for any unsubscribed shares of our common stock during the 45-day placement period following the expiration of the rights offering. We have agreed to pay RHK Capital a placement fee equal to 6.0% of such sales, in lieu of the dealer-manager fee, together with a continuing 1.8% non-accountable expense fee and out-of-pocket accountable expense allowance of 0.2% of the gross proceeds of the offering, with such placement fee and expenses not to exceed the aggregate amounts that would have been otherwise received by RHK Capital if the rights offering were to have been fully subscribed. We have agreed to indemnify RHK Capital and its affiliates against, or contribute to any losses arising out of, certain liabilities arising under the Securities Act of 1933, as amended (the Securities Act). RHK Capital's participation in this offering is subject to customary conditions contained in the dealer-manager agreement. The dealer-manager agreement also provides that the dealer-manager 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 or gross negligence of the dealer-manager. RHK Capital and its 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 customary fees. RHK Capital does not make any recommendation with respect to whether you should exercise the basic subscription or over-subscription privileges or to otherwise invest in our company.

Payments to Broker-Dealers and Other Intermediaries

The dealer-manager, RHK Capital, has informed us that it has entered into or intends to enter into selected dealer agreements with other broker-dealers pursuant to which it will re-allow 4.0% of its dealer-manager fee to each broker-dealer whose clients purchase shares of common stock in this offering pursuant to their subscription rights. See Plan of Distribution.

NASDAQ Capital Market Trading Symbol for Our Common Stock

Shares of our common stock are traded on the NASDAQ Capital Market under the symbol HTBX. The shares of common stock issued in the rights offering will also be traded on the NASDAQ Capital Market under the same symbol.

Questions

If you have any questions or need further information about this rights offering, please call D.F. King & Co., Inc., our information agent for this

rights offering, at (866) 796-1290 (toll free) or htbx@dfking.com.

(1)

Based upon the total number of issued and outstanding shares as of September 13, 2017, but does not include, as of that date:

- 3,103,963 shares of common stock reserved for issuance upon the exercise of outstanding warrants with a weighted average exercise price of \$1.46 per share;
- 2,663,549 shares of common stock reserved for issuance upon the exercise of outstanding stock options with a weighted average exercise price of \$2.04 per share; and
- 5,482,184 shares of common stock available for future grant under our equity incentive plans.

QUESTIONS AND ANSWERS ABOUT THE RIGHTS OFFERING

What is the rights offering?

We are distributing to holders of our common stock and holders of our warrants, at no charge, non-transferable subscription rights to purchase shares of our common stock. Our stockholders will receive one subscription right for each share of common stock owned at, and our warrant holders will receive one subscription right for each share of common stock into which the warrants held by them were exercisable at, 5:00 p.m., New York City time, on October 13, 2017; provided that the rights may only be exercised for a maximum of 12,000,000 shares of common stock, subject to proration. The subscription rights will be evidenced by rights certificates. If the aggregate number of shares of common stock for which subscription rights are exercised exceeds 12,000,000 shares, our board of directors, in its sole discretion, will have the right, but no obligation, to increase the size of the offering to subscription rights to purchase up to an aggregate 15,000,000 shares. Each subscription right will entitle the holder to a basic subscription privilege and an over-subscription privilege.

What is the basic subscription privilege?

Subject to proration, the basic subscription privilege of each subscription right gives holders the opportunity to purchase one share of our common stock at a subscription price equal to 88%-92% of the volume weighted average price per share of our common stock on the NASDAQ Capital Market for the five trading days immediately preceding and including October 13, 2017, rounded down to the nearest penny. You may exercise the basic subscription privilege of any number of your subscription rights, or you may choose not to exercise any subscription rights.

If the basic subscription rights are exercised for an amount in excess of 12,000,000 shares of common stock (or in excess of 15,000,000 shares of common stock if our board of directors, in its sole discretion, determines to increase the offering size), the basic subscription rights that have been exercised will be reduced on a pro-rata basis, subject to adjustment to eliminate fractional shares, so that the total number of shares issued upon exercise of subscription rights equal 12,000,000 shares (or 15,000,000 shares of common stock if our board of directors, in its sole discretion, determines to increase the offering size), and any excess subscription amount received by the subscription agent will be promptly returned, without interest, after the rights offering has expired and all prorating calculations and reductions contemplated by the terms of the rights offering have been effected.

What is the over-subscription privilege?

We do not expect all of our stockholders to exercise all of their basic subscription privileges. The over-subscription privilege provides stockholders that exercise all of their basic subscription privileges the opportunity to purchase the shares that are not purchased by other stockholders. If you fully exercise your basic subscription privilege and basic subscription rights are exercised for an amount less than 12,000,000 shares of common stock (or 15,000,000 shares of common stock if our board of directors, in its sole discretion, determines to increase the offering size), you may also exercise an over-subscription privilege to purchase additional shares of common stock that remain unsubscribed at the expiration of the rights offering, subject to the availability and *pro rata* allocation of shares among stockholders exercising this over-subscription privilege. To the extent the number of the unsubscribed shares are not sufficient to satisfy all of the properly exercised over-subscription privileges requests, then the available shares will be prorated among those who properly exercised over-subscription privileges based on the number of shares each rights holder subscribed for under the basic subscription right. If this *pro rata* allocation results in any stockholder receiving a greater number of shares of common stock than the stockholder subscribed for pursuant to the exercise of the over-subscription privilege, then such stockholder will be allocated only that number of shares for which the stockholder oversubscribed, and the remaining shares of common stock will be allocated among all other stockholders exercising the over-subscription privilege on the same *pro rata* basis described above. The proration process will be repeated until all shares of common stock have been allocated or all over-subscription exercises have been fulfilled, whichever occurs earlier.

In order to properly exercise your over-subscription privilege, you must deliver the subscription payment related to your over-subscription privilege prior to the expiration of the rights offering. Because we will not know the total number of unsubscribed shares prior to the expiration of the rights offering, 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 price for the maximum number of shares of our common stock available to you, assuming that no stockholder other than you has purchased any shares of our common stock pursuant to their basic subscription privilege and over-subscription privilege. See [The Rights Offering](#) [The Subscription Rights](#) [Over-Subscription Privilege](#).

Fractional shares of our common stock resulting from the exercise of the over-subscription privilege will be eliminated by rounding down to the nearest whole share, with the total subscription payment being adjusted accordingly. Any excess subscription payments received by the subscription agent will be promptly returned, without interest.

What are the limitations on the exercise of the basic subscription privilege and over-subscription privilege?

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 shares of our common stock 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 twenty percent (20%) of our issued and outstanding shares of common stock following the closing of the transactions contemplated by this rights offering.

In the event that the exercise by a stockholder of the basic subscription privilege or the over-subscription privilege could, as determined by the Company in its sole discretion, potentially result in a limitation on the Company's ability to use the Tax Attributes under the Code and rules promulgated by the IRS, the Company may, but is under no obligation to, reduce the exercise by such stockholder of the basic subscription privilege or the over-subscription privilege to such number of shares of common stock as the Company, in its sole discretion, shall determine to be advisable in order to preserve the Company's ability to use the Tax Attributes.

Why are we conducting the rights offering?

We are conducting the rights offering to raise capital that we intend to use to fund our and our subsidiaries' preclinical and clinical programs and for working capital and general corporate purposes, including to acquire, license or invest in complementary businesses, technologies, product candidates or other intellectual property. See [Use of Proceeds](#). We believe that the rights offering will strengthen our financial condition by generating additional cash and increasing our

stockholders' equity.

How was the per share subscription price determined?

In determining the subscription price, our board of directors considered a number of factors, including: the likely cost of capital from other sources, the price at which our stockholders might be willing to participate in the rights offering, historical and current trading prices of our common stock, our need for liquidity and capital and the desire to provide an opportunity to our stockholders to participate in the rights offering on a *pro rata* basis. In conjunction with its review of these factors, our board of directors also reviewed a range of discounts to market value represented by the subscription prices in various prior rights offerings of public companies. The subscription price is not necessarily related to our book value, net worth or any other established criteria of value and may or may not be considered the fair value of our common stock to be offered in the rights offering. We cannot give any assurance that our common stock will trade at or above the subscription price in any given time period.

Am I required to exercise all of the subscription rights I receive in the rights offering?

No. You may exercise any number of your subscription rights, or you may choose not to exercise any subscription rights. However, if you choose not to exercise your subscription rights in full, the relative percentage of our common stock that you own will decrease, and your voting and other rights will be diluted. In addition, if you do not exercise your basic subscription privilege in full, you will not be entitled to participate in the over-subscription privilege.

How soon must I act to exercise my subscription rights?

The subscription rights may be exercised at any time beginning on the date of this prospectus and prior to the expiration of the rights offering, which is 5:00 p.m., New York City time, on November 8, 2017. If you elect to exercise any rights, the subscription agent must actually receive all required documents and payments from you prior to the expiration of the rights offering. Although we have the option of extending the expiration of the rights offering for a period not to exceed 30 days, we currently do not intend to do so.

May I transfer my subscription rights?

No. You may not sell or transfer your subscription rights to anyone.

Are we requiring a minimum subscription to complete the rights offering?

No.

Are there any conditions to completing the rights offering?

No (other than this registration statement being declared effective by the SEC).

Can our board of directors extend, cancel or amend the rights offering?

We have the option to extend the expiration of the rights offering for a period not to exceed 30 days by giving oral or written notice to the subscription agent prior to the expiration date of the rights offering, although we do not presently intend to do so. If we elect to extend the expiration of the rights offering, we will issue a press release announcing such extension no later than 9:00 a.m., New York City time, on the next business day after the most recently announced expiration time of the rights offering. We will extend the duration of the rights offering as required by applicable law or regulation and may choose to extend it if we decide to give investors more time to exercise their subscription rights in the rights offering. An extension in the offering termination date for up to 30 days will not

constitute a fundamental change to the terms of the offering, and will not give persons who have exercised their subscription rights the opportunity to cancel their subscriptions.

Our board of directors may cancel the rights offering at any time prior to the expiration of the rights offering for any reason. In the event the rights offering is cancelled, all subscription payments received by the subscription agent for the rights offering will be promptly returned, without interest.

Our board of directors, in its sole discretion, will have the right, but no obligation, to increase the size of the offering to subscription rights to purchase up to an aggregate 15,000,000 shares if the aggregate number of shares of common stock for which subscription rights are exercised exceeds 12,000,000 shares. An increase in the size of the offering will not constitute a fundamental change to the terms of the offering, and will not give persons who have exercised their subscription rights the opportunity to cancel their subscriptions.

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.

Has our board of directors made a recommendation to our stockholders regarding the rights offering?

Neither our board of directors nor the dealer-manager is making any recommendation to stockholders regarding the exercise of rights in the rights offering. You should make an independent investment decision about whether or not to exercise your rights. Stockholders who exercise subscription rights risk investment loss on new money invested. We cannot assure you that the market price for our common stock will remain above the subscription price or that anyone purchasing shares at the subscription price will be able to sell those shares in the future at the same price or a higher price. If you do not exercise your rights, you will lose any value represented by your rights and your percentage ownership interest in us will be diluted. Please see **Risk Factors** for a discussion of some of the risks involved in investing in our common stock.

What will happen if I choose not to exercise my subscription rights?

If you do not exercise any subscription rights, the number of shares of our common stock you own will not change; however, due to the fact that shares of common stock may be purchased by other stockholders in the rights offering, your percentage ownership in the Company after the completion of the rights offering will be diluted.

How do I exercise my subscription rights? What forms and payment are required to purchase the shares of our common stock?

If you wish to participate in the rights offering, you must take the following steps:

- (i) deliver payment to the subscription agent using the methods outlined in this prospectus before 5:00 p.m., New York City time, on November 8, 2017; and
- (ii) deliver a properly completed rights certificate to the subscription agent before 5:00 p.m., New York City time, on November 8, 2017.

If you cannot deliver your rights certificate to the subscription agent prior to the expiration of the rights offering, you may follow the guaranteed delivery procedures described under **The Rights Offering** **Guaranteed Delivery 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 full extent possible based on the amount of the payment received, subject to the elimination of fractional shares.

When will I receive my new shares?

If you purchase shares of our common stock through the rights offering, you will receive your new shares as soon as practicable after the closing of the offering.

After I send in my payment and rights certificate, may I cancel my exercise of subscription rights?

No. All 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 and even if the rights offering is extended by our board of directors. However, if we amend the rights offering to allow for an extension of the rights offering for a period of more than 30 days or make a fundamental change to the terms of the rights offering set forth in this prospectus, you may cancel your subscription and receive a refund of any money you have advanced. You should not exercise your subscription rights unless you are certain that you wish to purchase additional shares of our common stock at the subscription price equal to a range of 88%-92% of the volume weighted average price per share of our common stock on the NASDAQ Capital Market for the five trading days immediately preceding and including October 13, 2017, rounded down to the nearest penny.

What should I do if I want to participate in the rights offering but my shares are held in the name of my broker, dealer, custodian bank or other nominee?

If you hold your shares of our common stock or our warrants in the name of a broker, dealer, custodian bank or other nominee, then your broker, dealer, custodian bank or other nominee is the record holder of the shares or warrants you own. The record holder must exercise the subscription rights on your behalf for the shares of our common stock you wish to purchase.

If you wish to participate in the rights offering and purchase shares of our common stock, please promptly contact the record holder of your shares. We will ask your broker, dealer, custodian bank or other nominee to notify you of the rights offering. You should complete and return to your record holder the form entitled Beneficial Owner Election Form. You should receive this form from your record holder with the other rights offering materials.

How many shares of our common stock will be outstanding after the rights offering?

Assuming 12,000,000 shares of our common stock are issued in the rights offering through the exercise of subscription rights, we anticipate that 47,788,912 shares of our common stock will be outstanding following the completion of the rights offering. Assuming our board of directors, in its sole discretion, determines to increase the offering size to subscription rights to purchase up to 15,000,000 shares of our common stock are issued in the rights offering through the exercise of subscription rights, we anticipate that 50,788,912 shares of our common stock will be outstanding following the completion of the rights offering.

How much proceeds will the Company receive from the rights offering?

Assuming full participation of 12,000,000 shares in the rights offering, we estimate that the net proceeds from the rights offering will be approximately \$8.1 million, after deducting expenses related to this offering payable by us estimated at approximately \$0.9 million, including dealer-manager fees. Please 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 additional shares of our common stock and should be considered as carefully as you would consider any other equity investment. Among other things, you should carefully consider the risks described under the headings **Risk Factors** in this prospectus.

May stockholders and warrant holders in all states participate in the rights offering?

Although we intend to distribute the rights to all stockholders and holders of our warrants, we reserve the right in some states to require such holders, if they wish to participate, to state and agree upon exercise of their respective rights that they are acquiring the shares for investment purposes only, and that they have no present intention to resell or transfer any shares acquired. Our securities are not being offered in any jurisdiction where the offer is not permitted under applicable local laws.

If the rights offering is not completed, 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 the rights offering is not completed, all subscription payments received by the subscription agent will be promptly returned, without interest. If you own shares in street name, it may take longer for you to receive payment because the subscription agent will return payments through the record holder of your shares.

Will the subscription rights be listed on a stock exchange or national market?

The subscription rights may not be sold, transferred or assigned and will not be listed for trading on the NASDAQ Capital Market or any stock exchange or market. However, the shares of common stock issued in the rights offering will be traded on the NASDAQ Capital Market under the symbol **HTBX**.

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

We will not mail this prospectus or the rights certificates to stockholders whose addresses are outside the United States or who have an army post office or foreign post office address. The subscription agent will hold the rights certificates for their account. To exercise subscription rights, our foreign stockholders must notify the subscription agent and timely follow the procedures described in [The Rights Offering Foreign Stockholders](#).

What fees or charges apply if I purchase shares of our common stock?

We are not charging any fee or sales commission to issue subscription rights to you or to issue shares to you if you exercise your subscription rights. If you exercise your subscription rights through the record holder of your shares, you are responsible for paying any fees your record holder may charge you.

What are the U.S. federal income tax consequences of receipt of or exercise of subscription rights?

For U.S. federal income tax purposes, you generally should not recognize income or loss in connection with the receipt or exercise of subscription rights unless, by way of example only, the rights offering is part of a disproportionate distribution within the meaning of applicable tax rules (in which case you may recognize taxable income upon receipt of the subscription rights). We believe that the rights offering should not be treated as part of a disproportionate distribution, but that conclusion is unclear and is not binding on the IRS or the courts. You are urged to consult your own tax advisor as to your particular tax consequences resulting from the receipt and exercise of subscription rights and the receipt, ownership and disposition of our common stock. For further information, please see [Material U.S. Federal Income Tax Considerations](#).

To whom should I send my forms and payment?

If your shares are held in the name of a broker, dealer or other nominee, then you should send your subscription documents, rights certificate, notices of guaranteed delivery and subscription payment to that record holder. If you are the record holder, then you should send your subscription documents, rights certificate, notices of guaranteed delivery and subscription payment by hand delivery, first class mail or courier service to:

Continental Stock Transfer & Trust Company
Attn: Corporate Actions Department
1 State Street, 30th Floor
New York, New York 10004

You are solely responsible for completing delivery to the subscription agent of your subscription documents, rights certificate and payment. We urge you to allow sufficient time for delivery of your subscription materials to the subscription agent.

Whom should I contact if I have other questions?

If you have other questions or need assistance, please contact the information agent, D.F. King & Co., Inc., at (866) 796-1290 (toll free) or htbx@dfking.com.

RISK FACTORS

An investment in our securities involves a high degree of risk. You should carefully consider the risks and uncertainties described below together with all of the other information contained or incorporated by reference in this prospectus, including our consolidated financial statements and the related notes, before making a decision to invest in our securities or to exercise your subscription rights to purchase shares of our common stock. You should also consider the risks, uncertainties and assumptions discussed under Item 1A, Risk Factors, in Part I of our Annual Report on Form 10-K for the year ended December 31, 2016 and Item 1A, Risk Factors, in Part II of our Quarterly Reports on Form 10-Q for the periods ended March 31, 2017 and June 30, 2017, respectively, and any updates or other risks contained in other filings that we may make with the SEC after the date of this prospectus, all of which are incorporated herein by reference, and may be amended, supplemented or superseded from time to time by other reports we file with the SEC in the future and any additional prospectus supplement. If any of these risks actually occur, our business, results of operations and financial condition could suffer. In that case, the market price of our common stock could decline, and you may lose all or part of your investment.

Risks Related to this Rights Offering

Your ownership interest in our company may be diluted as a result of the rights offering.

Common stockholders who do not fully exercise their respective subscription rights should expect that they will, at the completion of the rights offering, own a smaller proportional interest in our company than would otherwise be the case had they fully exercised their basic subscription rights.

The market price of our common stock is volatile and may decline before or after the subscription rights expire.

The market price of our common stock could be subject to wide fluctuations in response to numerous factors, some of which are beyond our control. These factors include, among other things, actual or anticipated variations in our costs of doing business, operating results and cash flow, the nature and content of our earnings releases and our competitors earnings releases, customers, competitors or markets, changes in financial estimates by securities analysts, business conditions in our markets and the general state of the securities markets and the market for similar stocks, changes in capital markets that affect the perceived availability of capital to companies in our industries, governmental legislation or regulation, as well as general economic and market conditions, such as continued downturns in our economy and recessions.

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 shares of our common stock in the rights offering at a price greater than the prevailing market price, 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 shares are delivered upon expiration of the rights offering, you will not be able to sell the shares of our common stock that you purchase in the rights offering. Certificates (physical, electronic or book-entry form) representing shares of our common stock 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.

The rights offering may cause the price of our common stock to decrease.

Depending upon the trading price of our common stock at the time of our announcement of the rights offering and its terms, including the subscription price, together with the number of shares of common stock we propose to issue and ultimately will issue if the rights offering is completed, the rights offering may result in an immediate decrease in the market value of our common stock. This decrease may continue after the completion of the rights offering. If that occurs, you may have committed to buy shares of common stock in the rights offering at a price greater than the prevailing market price. Further, if a substantial number of rights are exercised and the holders of the shares received upon exercise of those rights choose to sell some or all of those shares, the resulting sales could depress the market price of our common stock. Your purchase of shares of our common stock in the rights offering may be at a price greater than the prevailing trading price. There is no assurance that following the exercise of your rights you will be able to sell your common stock at a price equal to or greater than the subscription price.

The subscription price determined for the rights offering is not necessarily an indication of the value of our common stock.

In determining the subscription price, our board of directors considered a number of factors, including: the likely cost of capital from other sources, the price at which our stockholders might be willing to participate in the rights offering, historical and current trading prices of our common stock, our need for liquidity and capital and the desire to provide an opportunity to our stockholders to participate in the rights offering on a *pro rata* basis. In conjunction with its review of these factors, our board of directors also reviewed a range of discounts to market value represented by the subscription prices in various prior rights offerings of public companies. The subscription price is not necessarily related to our book value, net worth or any other established criteria of value and may or may not be considered the fair value of our common stock to be offered in the rights offering. We cannot give any assurance that our common stock will trade at or above the subscription price in any given time period. We do not intend to change the subscription price in response to changes in the trading price of our common stock prior to the closing of the rights offering.

If you purchase shares of our common stock in the rights offering, you will incur immediate and substantial dilution.

Dilution is the difference between the subscription price per share and the pro forma net tangible book value per share after giving effect to the rights offering. The subscription price per share that you pay for shares of our common stock sold in the rights offering is substantially higher than our pro forma net tangible book value per share after giving effect to the rights offering. The subscription price will be equal to 88%-92% of the volume weighted average price per share of our common stock on the NASDAQ Capital Market for the five trading days immediately preceding and including October 13, 2017, rounded down to the nearest penny. Assuming the subscription price is determined to be \$0.75 (the last reported sale price of our common stock on October 9, 2017) you will incur immediate dilution in net tangible book value per share of \$0.56. As a result of this dilution, investors purchasing shares of our common stock in the rights offering may receive significantly less than the full subscription price that they paid for in the rights offering in the event of liquidation. See [Dilution](#) for additional information.

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 the rights offering.

Completion of the rights offering is not subject to us raising a minimum offering amount. As such, proceeds from this rights offering may not be sufficient to meet the objectives we state in this prospectus or other corporate milestones that we may set. Investors should not rely on the success of the rights offering to address our need for funding. Therefore, if you exercise the basic subscription privilege or the over-subscription privilege, you may be investing in a company that continues to desire additional capital.

The subscription rights are not transferable and there is no market for the subscription rights.

You may not sell, transfer or assign your subscription rights. The subscription rights are only transferable by operation of law. 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 and acquire additional shares of our common stock to realize any value that may be embedded in the subscription rights.

None of our officers, directors or significant stockholders is obligated to exercise their subscription right and, as a result, the offering may be undersubscribed.

As a group, our officers and directors own or have the right to acquire, within 60 days of September 13, 2017, approximately 8.8% of our outstanding common stock. Although we expect one or more of our directors and executive officers to participate in this offering, we cannot guarantee you that any of our officers or directors or owners will exercise their basic or over-subscription privileges to purchase any shares issued in connection with the rights offering. As a result, the offering may be undersubscribed and proceeds may not be sufficient to meet the objectives we state in this prospectus or other corporate milestones that we may set.

If we terminate the rights offering for any reason, we will have no obligation other than to return subscription monies promptly.

We may decide, in our discretion and for any reason, to cancel or terminate the rights offering at any time prior to the expiration date. If the rights offering is terminated, we will have no obligation with respect to those rights that have been exercised except to return promptly, without interest or deduction, the subscription monies deposited with the subscription agent. If we terminate the rights offering and you have not exercised any rights, such rights will expire worthless.

Our common stock price may be volatile as a result of this rights offering.

The trading price of our common stock may fluctuate substantially. The price of the common stock that will prevail in the market after the rights offering may be higher or lower than the subscription price depending on many factors, some of which are beyond our control and may not be directly related to our operating performance. These factors include, but are not limited to, the following:

- price and volume fluctuations in the overall stock market from time to time;
- significant volatility in the market price and trading volume of our securities;
- actual or anticipated changes or fluctuations in our operating results;
- material announcements by us regarding business performance, financings, mergers and acquisitions or other transactions;
- general economic conditions and trends;
- competitive factors;
- loss of key supplier or distribution relationships; or
- departure of key personnel.

We will have broad discretion in the use of the net proceeds from the rights offering and may not use the proceeds effectively.

Although we plan to use the proceeds of the rights offering to raise capital that we intend to use to fund our and our subsidiaries preclinical and clinical programs and for working capital and general corporate purposes, including to acquire, license or invest in complementary businesses, technologies, product candidates or other intellectual property, we will have broad discretion in determining precisely how the proceeds of the rights offering will be used. Our discretion is not substantially limited by the uses set forth in this prospectus in the section entitled Use of Proceeds. While our board of directors believes the flexibility in application of the net proceeds is prudent, the broad discretion it affords entails increased risks to the investors in the rights offering. Investors in the rights offering have no current

basis to evaluate the possible merits or risks of any application of the net proceeds of the rights offering. Our stockholders may not agree with the manner in which we choose to allocate and spend the net proceeds.

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

Holders of subscription rights who desire to purchase shares of our common stock in the rights 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 our warrants and you wish to exercise your rights, you must act promptly to ensure that your broker, dealer, custodian bank, trustee or other nominee acts for you and that all required forms and payments are actually received by your broker, dealer, custodian bank, trustee or other nominee in sufficient time to deliver such forms and payments to the subscription agent to exercise the rights granted in the rights 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, custodian 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, as may be extended.

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 the 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.

If you make payment of the subscription price by uncertified check, your check may not clear in sufficient time to enable you to purchase shares in this rights offering.

Any uncertified check used to pay for shares 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 by uncertified 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 you wish to purchase.

The U.S. federal income tax treatment of the receipt of subscription rights is somewhat uncertain and it may be treated as a taxable event to holders of shares of our stock and to holders of rights or warrants to acquire shares of our stock.

If, by way of example only, the rights offering is deemed to be part of a disproportionate distribution under section 305 of the Code, holders of shares of our common stock, and holders of rights or warrants to acquire shares of our common stock, may recognize taxable income for U.S. federal income tax purposes in connection with the receipt of subscription rights in the rights offering depending, in part, on our current and accumulated earnings and profits, the fair market value of the subscription rights and, if applicable, our stockholders' tax basis in our common stock. A disproportionate distribution is a distribution or a series of distributions, including deemed distributions, that has the effect of the receipt of cash or other property by some Shareholders (defined below in the section entitled, "Material U.S. Federal Income Tax Considerations") and an increase in the proportionate interest of other Shareholders in the company's assets or earnings and profits. It is unclear whether the fact that we have outstanding options and certain other equity-based awards (other than the warrants contemplated in the section entitled, "Material U.S. Federal Income Tax Considerations") could cause the receipt of subscription rights to be part of a disproportionate distribution. Although there are options and certain other equity-based awards (other than the previously mentioned warrants), the existence of which could impact the Shareholders, this offering does not address any of the tax issues, or potential tax issues, applicable to holders of such options or other equity-based awards. Please see "Material U.S. Federal Income Tax Considerations" for further information on the tax treatment of the rights offering.

The rights offering could impair or limit our net operating loss carryforwards.

As of June 30, 2017, we had net operating losses (NOLs) of approximately \$53.3 million for U.S. federal income tax purposes. Under the Code, an ownership change (defined below) with respect to a corporation can significantly limit the amount of pre-ownership change NOLs, and certain other tax assets and tax attributes, that the corporation may utilize after the ownership change to offset future taxable income. The effect of such limitations is a reduction of the amount of cash which would otherwise be available to the corporation to satisfy its obligations. An ownership change generally should occur if the aggregate stock ownership of holders of at least 5% of our stock increases by more than 50 percentage points over the preceding three-year period. The amount of the annual limitation generally is equal to the product calculated by multiplying (i) the value of our stock immediately prior to the ownership change, by the adjusted federal long-term tax exempt rate. The purchase of shares of our common stock pursuant to the rights offering may trigger an ownership change with respect to the company, and thereby limit the company's ability to use its NOLs to offset income in tax periods following the rights offering.

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. Our board of directors, in its sole discretion, will have the right, but no obligation, to increase the size of the offering to subscription rights to purchase up to an aggregate 15,000,000 shares if the aggregate number of shares of common stock for which subscription rights are exercised exceeds 12,000,000 shares. 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 or offering size. An increase in the size of the offering or extension of the offering expiration date for up to 30 days will not constitute a fundamental change to the terms of the offering, and will not give persons who have exercised their subscription rights the opportunity to cancel their subscriptions. 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.

There is no back-stop or standby commitment in place to purchase rights or shares that are not purchased in the offering.

RHK Capital, as the dealer-manager of this rights offering, is acting as placement agent for any unsubscribed shares of our common stock. There is no back-stop or standby commitment in place to purchase rights or shares that are not purchased in the offering. The dealer-manager's services to us in this connection cannot be construed as any assurance that this transaction will be successful. RHK Capital does not make any recommendation with respect to whether you should exercise the basic subscription or over-subscription privileges or to otherwise invest in our company.

Your subscription privilege is subject to adjustment and reduction.

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 shares of our common stock 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 twenty percent (20%) of our issued and outstanding shares of common stock following

the closing of the transactions contemplated by this rights offering.

In the event that the exercise by a stockholder of the basic subscription privilege or the over-subscription privilege could, as determined by us in our sole discretion, potentially result in a limitation on our ability to use net operating losses, tax credits and other tax attributes, which we refer to as the Tax Attributes, under the Code, and rules promulgated by the Internal Revenue Service, we may, but are under no obligation to, reduce the exercise by such stockholder of the basic subscription privilege or the over-subscription privilege to such number of shares of common stock as we in our sole discretion shall determine to be advisable in order to preserve our ability to use the Tax Attributes.

If subscription rights holders exercise basic subscription rights of more than 12,000,000 shares of common stock (or 15,000,000 shares of common stock, if our board of directors, in its sole discretion, determines to increase the offering size), then the total number of exercised basic subscription rights to be fulfilled by the Company shall be limited to 12,000,000 shares of common stock (or 15,000,000 shares of common stock, if our board of directors, in its sole discretion, determines to increase the offering size), and exercised basic subscription rights will be reduced on a pro-rata basis based on the number of shares subscribed for by each subscribing holder as part of their basic subscription rights, subject to adjustment to eliminate fractional shares. If the pro-rated amount of shares allocated to you in connection with your basic subscription rights is less than your basic subscription request, then the excess funds held by the subscription agent on your behalf will be promptly returned to you, without interest, 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.

After considering the exercises of the basic subscription privilege, to the extent that basic subscription rights have been exercised for less than 12,000,000 shares of common stock (or 15,000,000 shares of common stock, if our board of directors, in its sole discretion, determines to increase the offering size), if the acceptance of all of the properly exercised over-subscription privileges requests would result in the exercise of more than 12,000,000 shares of common stock (or 15,000,000 shares of common stock, if our board of directors, in its sole discretion, determines to increase the offering size) of subscription rights, then the available shares will be prorated among those who properly exercised over-subscription privileges based on the number of shares each rights holder subscribed for under the basic subscription right, as set forth more fully in this prospectus, and a participating stockholder may not receive the full number of shares for which such stockholder exercised over-subscription privileges.

Risks Relating to our Company

We have had limited operations to date.

We are a clinical stage company and have had limited operations to date. We have yet to demonstrate our ability to overcome the risks frequently encountered in our industry and are still subject to many of the risks common to such enterprises, including our ability to implement our business plan, market acceptance of our proposed business and products, under-capitalization, cash shortages, limitations with respect to personnel, financing and other resources, competition from better funded and experienced companies, and uncertainty of our ability to generate revenues. There is no assurance that our activities will be successful or will result in any revenues or profit, and the likelihood of our success must be considered in light of the stage of our development. Even if we generate revenue, there can be no assurance that we will be profitable. In addition, no assurance can be given that we will be able to consummate our business strategy and plans, or that financial, technological, market, or other limitations may force us to modify, alter, significantly delay, or significantly impede the implementation of such plans. We have insufficient results for investors to use to identify historical trends. Investors should consider our prospects in light of the risk, expenses and difficulties we will encounter as an early stage company. Our revenue and income potential is unproven and our

business model is continually evolving. We are subject to the risks inherent to the operation of a new business enterprise, and cannot assure you that we will be able to successfully address these risks.

We have a limited operating history upon which to evaluate our ability to commercialize our products.

We are a clinical stage company and our success is dependent upon our ability to obtain regulatory approval for and commercialize our products and we have not demonstrated an ability to perform the functions necessary for the approval or successful commercialization of any product candidates. The successful commercialization of any product candidates will require us to perform a variety of functions, including:

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- continuing to undertake preclinical development and successfully enroll patients in clinical trials;
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- participating in regulatory approval processes;
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- formulating and manufacturing products; and
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- conducting sales and marketing activities.

While various members of our management and staff have significant experience in conducting cancer trials, the Company, to date, has not successfully completed any clinical trials other than the Phase 1 portion of our Phase 1/2 bladder cancer trial and the Phase 1 portion of our current HS-110 lung cancer trial has limited experience conducting and enrolling patients in clinical trials. Until recently, our operations have been limited primarily to organizing and staffing the Company, acquiring, developing and securing our proprietary technology and undertaking preclinical trials and preparing for our early clinical trials of our product candidates. These operations provide a limited basis for you to assess our ability to commercialize our product candidates and the advisability of investing in our securities.

Our consolidated financial statements have been prepared assuming that we will continue as a going concern.

Our financial statements have been prepared under the assumption that we will continue as a going concern; however, we have incurred significant losses from operations to date and we expect our expenses to increase in connection with our ongoing activities, and the addition of Pelican's activities. There can be no assurance that funding will be available on acceptable terms on a timely basis, or at all. The various ways that we could raise capital carry potential risks. Any additional sources of financing will likely involve the issuance of our equity securities, which will have a dilutive effect on our stockholders. If we raise funds through collaborations and licensing arrangements, we might be required to relinquish significant rights to its technologies or tests or grant licenses on terms that are not favorable to us. If we do not succeed in raising additional funds on acceptable terms or at all, we may be unable to complete planned preclinical and clinical trials, or obtain approval of our product candidates from the FDA and other regulatory authorities.

We expect to continue to generate operating losses and experience negative cash flows and it is uncertain whether we will achieve profitability.

For the six months ended June 30, 2017 and 2016, we incurred a net loss of \$6.5 million and \$7.8 million, respectively. We have an accumulated deficit of \$63.4 million through June 30, 2017. We expect to continue to incur operating losses until such time, if ever, as we are able to achieve sufficient levels of revenue from operations. Our ability to achieve profitability will depend on us obtaining regulatory approval for our product candidates and market acceptance of our product offerings and our capacity to develop, introduce and sell our products to our targeted markets. There can be no assurance that any of our product candidates will be approved for commercial sale, or even if our product candidates are approved for commercial sale that we will ever generate significant sales or achieve profitability. Accordingly, the extent of future losses and the time required to achieve profitability, if ever, cannot be predicted at this point.

Even if we succeed in developing and commercializing one or more product candidates, we expect to incur substantial losses for the foreseeable future and may never become profitable. We also expect to continue to incur significant operating expenses and anticipate that our expenses will increase substantially in the foreseeable future as we:

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continue to undertake preclinical development and conduct clinical trials for product candidates;

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seek regulatory approvals for product candidates;

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implement additional internal systems and infrastructure; and

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hire additional personnel.

We also expect to experience negative cash flows for the foreseeable future as we fund our operating losses. As a result, we will need to generate significant revenues or raise additional financing in order to achieve and maintain profitability. We may not be able to generate these revenues or achieve profitability in the future. Our failure to achieve or maintain profitability would likely negatively impact the value of our securities and financing activities.

We will need to raise additional capital to operate our business and our failure to obtain funding when needed may force us to delay, reduce or eliminate our development programs or commercialization efforts.

During the six months ended June 30, 2017, our operating activities used net cash of approximately \$5.4 million and as of June 30, 2017 our cash and cash equivalents were approximately \$8.3 million. During the year ended December 31, 2016, our operating activities used net cash of approximately \$13.5 million and as of December 31, 2016 our cash and cash equivalents were approximately \$7.8 million. We have experienced significant losses since inception and have a significant accumulated deficit. As of June 30, 2017, our accumulated deficit totaled approximately \$63.4 million and as of December 31, 2016, our accumulated deficit totaled approximately \$57.0 million on a consolidated basis. We expect to incur additional operating losses in the future and therefore expect our cumulative losses to increase. We do not expect to derive revenue from any significant source in the near future until we or our potential partners successfully commercialize our products. Despite cost-saving measures that we implemented, we expect our expenses to increase if and when we initiate and conduct Phase 2 and 3 and other clinical trials, and seek marketing approval for our product candidates. Until such time as we receive approval from the FDA and other regulatory authorities for our product candidates, we will not be permitted to sell our products and therefore will not have product revenues from the sale of products. For the foreseeable future we will have to fund all of our operations and capital expenditures from equity and debt offerings, cash on hand, licensing fees and grants.

We expect that our current cash and cash equivalents will allow us to complete the enrollment of additional patients in the Phase 2 clinical trial for HS-110; however, if the trial design or size were to change, we may need to raise money earlier than anticipated.

We will need to raise additional capital to fund our future operations and we cannot be certain that funding will be available on acceptable terms on a timely basis, or at all. To meet our financing needs, we are considering multiple alternatives, including, but not limited to, this rights offering, current and additional equity financings, which we expect will include sales of common stock through at-the-market offerings (ATM) and otherwise pursuant to the At Market Issuance Sales Agreement (the FBR Sales Agreement) entered into with FBR Capital Markets & Co. (FBR), debt financings and/or funding from partnerships or collaborations. Due to our decreased stock price we currently do not meet the requirements to utilize the ATM and there can be no assurance that we will be able to meet the requirements for use of the FBR Sales Agreement in the future, especially in light of the fact that we are subject to the smaller reporting company requirements, or to complete any such transactions on acceptable terms or otherwise. Any additional sources of financing will likely involve the issuance of our equity or debt securities, which will have a dilutive effect on our stockholders. To the extent that we raise additional funds by issuing equity securities, our stockholders may experience significant dilution. Any debt financing, if available, may involve restrictive covenants that may impact our ability to conduct our business. If we do not succeed in raising additional funds on acceptable terms, we may be unable to complete planned preclinical and clinical trials or obtain approval of our product candidates from the FDA and other regulatory authorities. In addition, we could be forced to delay, discontinue or curtail product development, forego sales and marketing efforts, and forego licensing in attractive business opportunities. Any additional sources of financing will likely involve the issuance of our equity or debt securities, which will have a dilutive effect on our stockholders.

We currently have no product revenues and may not generate product revenue at any time in the near future, if at all.

We currently have no products for sale and we cannot guarantee that we will ever have any drug products approved for sale. We and our product candidates are subject to extensive regulation by the FDA, and comparable regulatory authorities in other countries governing, among other things, research, testing, clinical trials, manufacturing, labeling, promotion, marketing, adverse event reporting and recordkeeping of our product candidates. Until, and unless, we receive approval from the FDA and other regulatory authorities for our product candidates, we cannot commercialize our product candidates and will not have product revenues. In addition, the technology that we out-licensed is in the early stages of development and there is a low likelihood of success for any such technology at that stage, therefore there can be no assurance that any products will be developed by such licensee or that we will derive any revenue from such licensee. For the foreseeable future, we will have to fund all of our operations from equity and debt offerings, cash on hand and grants. We believe that due to our current cash position and estimates of expenses, there is substantial doubt about our ability to continue as a going concern. In addition, changes may occur that would consume our available capital at a faster pace than expected, including changes in and progress of our development activities, acquisitions of additional candidates and changes in regulation. Moreover, preclinical studies and clinical trials may not start or be completed as we forecast and may not achieve the desired results. Therefore, we expect that we will seek additional sources of funding, such as additional financing or grant funding, and additional financing may not be available on favorable terms, if at all. Our ability to raise capital through the sale of equity may be limited by the various rules of the SEC and the Nasdaq Capital Market that place limits on the number of shares of stock that may be sold. If we do not succeed in raising additional funds on acceptable terms, we may be unable to complete planned preclinical and clinical trials or obtain approval of our product candidates from the FDA and other regulatory authorities. In addition, we could be forced to delay, discontinue or curtail product development, forego sales and marketing efforts, and forego licensing in attractive business opportunities. Any additional sources of financing will likely involve the issuance of our equity or debt securities, which will have a dilutive effect on our stockholders.

We have identified a material weakness in our internal controls, and we cannot provide assurances that this weakness will be effectively remediated or that additional material weaknesses will not occur in the future. If our internal control over financial reporting or our disclosure controls and procedures are not effective, we may not be able to accurately report our financial results, prevent fraud, or file our periodic reports in a timely manner, which may cause investors to lose confidence in our reported financial information and may lead to a decline in our stock price.

Our management is responsible for establishing and maintaining adequate internal control over our financial reporting, as defined in Rule 13a-15(f) under the Exchange Act. During the second quarter of 2017, we identified a material weakness in our controls over financial reporting related to the accounting for significant transactions that occurred during the quarter. Specifically, we did not design and maintain effective controls related to the acquisition for the purchase price of the acquired assets and liabilities of Pelican. Although management believes that the control deficiencies will be remediated by the end of the fiscal year, there can be no assurance that the deficiency will be remediated at such time or that the internal control over financial reporting, as modified, will enable us to identify or avoid material weaknesses in the future. In addition, the material weakness will not be considered remediated until the

applicable controls operate for a sufficient period of time and management has concluded, through testing, that these controls are designed and operating effectively.

We are substantially dependent on the success of our product candidates and we cannot provide any assurance that any of our product candidates will be commercialized.

Our main focus and the investment of a significant portion of our efforts and financial resources has been in the development of our product candidate, HS-110, for which we are currently actively conducting Phase 2 clinical trials, respectively. Our future success depends heavily on our ability to successfully manufacture, develop, obtain regulatory approval, and commercialize this product candidates, which may never occur. Before commercializing this product candidate, we will require additional clinical trials and regulatory approvals for which there can be no guarantee that we will be successful. We currently generate no revenues from any of our product candidates, and we may never be able to develop or commercialize a marketable drug.

If we experience delays in the enrollment of patients in our clinical trials, our receipt of necessary regulatory approvals could be delayed or prevented.

Our inability to locate and enroll a sufficient number of eligible patients in our clinical trials for any of our current or future clinical trials would result in significant delays or may require us to abandon one or more clinical trials. Our ability to enroll patients in trials is affected by many factors out of our control including the size and nature of the patient population, the proximity of patients to clinical sites, the eligibility criteria for the trial, the design of the clinical trial, competing clinical trials and clinicians' and patients' perceptions as to the potential advantages of the drug being studied in relation to other available therapies, including any new drugs that may be approved for the indications we are investigating.

Risks Relating to our Business

If we do not obtain the necessary regulatory approvals in the United States and/or other countries we will not be able to sell our product candidates.

We cannot assure you that we will receive the approvals necessary to commercialize any of our product candidates or any product candidates we acquire or develop in the future. We will need FDA approval to commercialize our product candidates in the United States and approvals from the FDA-equivalent regulatory authorities in foreign jurisdictions to commercialize our product candidates in those jurisdictions. In order to obtain FDA approval of any product candidate, we must submit to the FDA a BLA, demonstrating that the product candidate is safe, pure and potent, or effective for its intended use. This demonstration requires significant research including preclinical studies, as well as clinical trials. Satisfaction of the FDA's regulatory requirements typically takes many years, depends upon the type, complexity and novelty of the product candidate and requires substantial resources for research, development and testing. We cannot predict whether our clinical trials will demonstrate the safety and efficacy of our product candidates or if the results of any clinical trials will be sufficient to advance to the next phase of development or for approval from the FDA. We also cannot predict whether our research and clinical approaches will result in drugs or therapeutics that the FDA considers safe and effective for the proposed indications. The FDA has substantial discretion in the drug approval process. The approval process may be delayed by changes in government regulation, future legislation or administrative action or changes in FDA policy that occur prior to or during our regulatory review. Delays in obtaining regulatory approvals may:

prevent or delay commercialization of, and our ability to derive product revenues from, our product candidates; and

diminish any competitive advantages that we may otherwise believe that we hold.

Even if we comply with all FDA requests, the FDA may ultimately reject one or more of our BLAs. We may never obtain regulatory clearance for any of our product candidates. Failure to obtain FDA approval of any of our product candidates will severely undermine our business by leaving us without a saleable product, and therefore without any source of revenues, until another product candidate can be developed. There is no guarantee that we will ever be able to develop or acquire another product candidate.

In addition, the FDA may require us to conduct additional preclinical and clinical testing or to perform post-marketing studies, as a condition to granting marketing approval of a product. Regulatory approval of oncology products often requires that patients in clinical trials be followed for long periods to assess their overall survival. The results generated after approval could result in loss of marketing approval, changes in product labeling, and/or new or increased concerns about the side effects or efficacy of a product. The FDA has significant post-market authority, including the explicit authority to require post-market studies and clinical trials, labeling changes based on new safety information, and compliance with FDA-approved risk evaluation and mitigation strategies. The FDA's exercise of its authority has in some cases resulted, and in the future could result, in delays or increased costs during product development, clinical trials and regulatory review, increased costs to comply with additional post-approval regulatory requirements and potential restrictions on sales of approved products.

In foreign jurisdictions, we must also receive approval from the appropriate regulatory authorities before we can commercialize any vaccines. Foreign regulatory approval processes generally include all of the risks associated with the FDA approval procedures described above. There can be no assurance that we will receive the approvals necessary to commercialize our product candidates for sale outside the United States.

Our product candidates are in early stages of development, and therefore they will require extensive preclinical and clinical testing.

Because our product candidates are in early stages of development they will require extensive preclinical and clinical testing. Although we have commenced a Phase 2 clinical trial for HS-110, we cannot predict with any certainty if or when we might submit a BLA for regulatory approval for any of our product candidates or whether any such BLA will be accepted for review by the FDA, or whether any BLA will be approved upon review.

Even if our clinical trials are completed as planned, we cannot be certain that their results will support our proposed indications. Success in preclinical testing and early clinical trials does not ensure that later clinical trials will be successful, and we cannot be sure that the results of later clinical trials will replicate the results of prior clinical trials and preclinical testing. For example, the Phase 1 HS-410 clinical trial, as well as the interim data from the Phase 2 HS-410 clinical study, showed evidence of an immune response in NMIBC patients exposed to HS-410, however, the topline data from the Phase 2 clinical trial reported that there was no statistically significant difference in the primary endpoint between the vaccine and placebo arms of the trial. The Phase 2 clinical trial of HS-410 used doses and dosing regimens which had not previously been tested, and combinations with other immunotherapy agents. In addition, immune response is not an acceptable regulatory endpoint for approval, and the HS-410 Phase 1 trial involved a small sample size and was not randomized or blinded. The clinical trial process may fail to demonstrate that our product candidates are safe and effective for their proposed uses. This failure could cause us to abandon a product candidate and may delay development of other product candidates. Any delay in, or termination of, our clinical trials will delay and possibly preclude the filing of any BLAs with the FDA and, ultimately, our ability to commercialize our product candidates and generate product revenues.

Clinical trials are very expensive, time-consuming and difficult to design and implement.

As part of the regulatory process, we must conduct clinical trials for each product candidate to demonstrate safety and efficacy to the satisfaction of the FDA and other regulatory authorities. The number and design of the clinical trials that will be required varies depending upon product candidate, the condition being evaluated and the trial results themselves. Therefore, it is difficult to accurately estimate the cost of the clinical trials. Clinical trials are very expensive and difficult to design and implement, in part because they are subject to rigorous regulatory requirements. The clinical trial process is also time consuming. We estimate that clinical trials of our product candidates will take at least several years to complete. Furthermore, failure can occur at any stage of the trials, and we could encounter problems that cause us to abandon or repeat clinical trials. The commencement and completion of clinical trials may be delayed or prevented by several factors, including:

unforeseen safety issues;

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failure to determine appropriate dosing;

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greater than anticipated cost of our clinical trials;

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failure to demonstrate effectiveness during clinical trials;

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slower than expected rates of patient recruitment or difficulty obtaining investigators;

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patient drop-out or discontinuation;

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inability to monitor patients adequately during or after treatment;

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third party contractors failing to comply with regulatory requirements or meet their contractual obligations to us in a timely manner;

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insufficient or inadequate supply or quality of product candidates or other necessary materials to conduct our trials;

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potential additional safety monitoring, or other conditions required by FDA or comparable foreign regulatory authorities regarding the scope or design of our clinical trials, or other studies requested by regulatory agencies;

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problems engaging IRBs to oversee trials or in obtaining and maintaining IRB approval of studies;

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imposition of clinical hold or suspension of our clinical trials by regulatory authorities; and

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inability or unwillingness of medical investigators to follow our clinical protocols.

In addition, we or the FDA may suspend or terminate our clinical trials at any time if it appears that we are exposing participants to unacceptable health risks or if the FDA finds deficiencies in our Investigational New Drug, or IND, submissions or the conduct of these trials. Therefore, we cannot predict with any certainty when, if ever, future clinical trials will commence or be completed.

We are at risk of a clinical hold at any time based on the evaluation of the data and information submitted to the governing regulatory authorities. On February 2, 2016, we received notice from the FDA of a partial clinical hold on our Phase 2 HS-410 clinical trial despite the fact that we did not have a safety concern. The partial clinical hold came after we concluded that the cell line on which HS-410 is based had been previously misidentified. The partial clinical hold was lifted on February 10, 2016. However, if in the future we are delayed in addressing, or unable to address, any FDA concerns, we could be delayed, or prevented, from conducting our clinical trials.

Misidentification of cell lines could impact our clinical development and intellectual property rights.

Our product candidates are based on human cell lines produced by third parties and licensed by us. Cell line characterization and contamination is a known issue in biomedical research. For example, despite standard procedures to identify the origins and characteristics of our cell lines in early 2016 we discovered that the origin of the cell line used in HS-410 was misidentified. The misidentification resulted in the FDA placing our HS-410 Phase 2 clinical trial on partial clinical hold while the FDA reviewed certain updated documentation provided by us related to the misidentification. In the event we were to use a cell line in the future that is also misidentified, the clinical development of the product candidate utilizing the mischaracterized cell line could be materially and adversely affected, we could lose the right to use the cell line and our intellectual property rights relating to our development of product candidates based on that cell line could be materially and adversely affected. Although we have implemented certain additional procedures to properly identify our cell lines, we may not be able to detect that a cell line has been mischaracterized or mislabeled by a third party.

There is uncertainty as to market acceptance of our technology and product candidates.

Even if the FDA approves one or more of our product candidates, the products may not gain broad market acceptance among physicians, healthcare payers, patients, and the medical community. We have conducted our own research into the markets for our product candidates; however, we cannot guarantee market acceptance of our product candidates, if approved, and have somewhat limited information on which to estimate our anticipated level of sales. Our product candidates, if approved, will require patients, healthcare providers and doctors to adopt our technology. Our industry is susceptible to rapid technological developments and there can be no assurance that we will be able to match any new technological advances. If we are unable to match the technological changes in the needs of our customers the demand for our products will be reduced. Acceptance and use of any products we market will depend upon a number of factors including:

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perceptions by members of the health care community, including physicians, about the safety and effectiveness of our products;

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limitation on use or warnings required by FDA in our product labeling;

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cost-effectiveness of our products relative to competing products;

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convenience and ease of administration;

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potential advantages of alternative treatment methods;

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availability of reimbursement for our products from government or other healthcare payers; and

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effectiveness of marketing and distribution efforts by us and our licensees and distributors, if any.

Because we expect virtually all of our product revenues for the foreseeable future to be generated from sales of our current product candidates, if approved, the failure of these therapeutics to find market acceptance would substantially harm our business and would adversely affect our revenue.

Our development program partially depends upon third-party researchers who are outside our control.

We are dependent upon independent investigators and collaborators, such as universities and medical institutions, to conduct our clinical trials under agreements with us. These collaborators are not our employees and we cannot control the amount or timing of resources that they devote to our programs. These investigators may not assign as great a priority to our programs or pursue them as diligently as we would if we were undertaking such programs ourselves. If outside collaborators fail to devote sufficient time and resources to our development programs, or if their performance is substandard, the approval of our FDA applications, if any, and our introduction of new product candidates, if any, will be delayed if obtained at all. These collaborators may also have relationships with other commercial entities, some of whom may compete with us. If our collaborators assist our competitors at our expense, our competitive position would be harmed.

We will rely significantly on third parties to formulate and manufacture our product candidates.

We have developed certain experience in the formulation, development and/or manufacturing of biologics but do not intend to establish our own manufacturing facilities. To date, the selection and initial replication of our biological cell lines used in our trials has been performed by individuals working at third party laboratories over which we have little process or quality control and therefore the process and replication could be subject to human error. We lack the resources and expertise to formulate or manufacture our own product candidates. The investigational products for our clinical trials are manufactured by our contractors under current good manufacturing practices, (cGMPs) and we have entered into agreements with commercial-scale manufacturers for the production and supply of investigational product for additional Phase 2 and Phase 3 clinical trials as well as commercialization. We must also develop and validate a potency assay prior to submission of a license application. Such assays have traditionally proven difficult to develop for cell-based products and must be established prior to initiating any Phase 3 clinical trials. If any of our current product candidates, or any product candidates we may develop or acquire in the future, receive FDA approval, we will rely on one or more third-party contractors for manufacturing. Our anticipated future reliance on a limited number of third-party manufacturers exposes us to the following risks:

We may be unable to identify manufacturers on acceptable terms or at all because the number of potential manufacturers with appropriate expertise and facilities is limited.

If we change manufacturers at any point during the development process or after approval, we will be required to demonstrate comparability between the products made by the old and new manufacturers. If we are unable to do so, we may need to conduct additional clinical trials with product manufactured by the new manufacturer. Accordingly, it may be necessary to evaluate the comparability of the HS-110 or HS-410 produced by the two different manufacturers at some point during the clinical development process.

If we change the manufacturer of a product subsequent to the approval of the product, we will need to obtain approval from the FDA of the change in manufacturer. Any such approval would likely require significant testing and expense, and the new manufacturer may be subject to a cGMP inspection prior to approval.

Our third-party manufacturers might be unable to formulate and manufacture our product candidates in the volume and with the quality required to meet our clinical needs and commercial needs, if any.

Our contract manufacturers may not perform as agreed or may not remain in the contract manufacturing business for the time required to supply our clinical trials or to successfully produce, store and distribute our product candidates.

Drug manufacturers are subject to ongoing periodic unannounced inspection by the FDA, and corresponding state agencies to ensure compliance with cGMPs and other government regulations and corresponding foreign standards. We do not have control over third-party manufacturers' compliance with these regulations and standards.

If any third-party manufacturer makes improvements in the manufacturing process for our products, we may not own, or may have to share, the intellectual property rights to the innovation.

Our contract manufacturers have in the past and may in the future encounter difficulties in achieving quality control and quality assurance and may experience shortages in qualified personnel. Our contract manufacturers are subject to inspections by the FDA and comparable agencies in other jurisdictions to assess compliance with applicable regulatory requirements. Any failure to follow cGMP or other regulatory requirements or delay, interruption or other issues that arise in the manufacture, packaging, or storage of our products as a result of a failure of the facilities or operations of third parties to comply with regulatory requirements or pass any regulatory authority inspection could significantly impair our ability to develop and commercialize our products, including leading to significant delays in the availability of products for our clinical studies or the termination or hold on a clinical study, or the delay or prevention of a filing or approval of marketing applications for our product candidates. Significant noncompliance could also result in the imposition of sanctions, including fines, injunctions, civil penalties, failure of regulatory authorities to grant marketing approvals for our product candidates, delays, suspension or withdrawal of approvals, license revocation, seizures or recalls of products, operating restrictions and criminal prosecutions, any of which could damage our reputation. If we or our contract manufacturers are not able to maintain regulatory compliance, we may not be permitted to market our products and/or may be subject to product recalls, seizures, injunctions, or criminal prosecution.

Each of these risks could delay our clinical trials, the approval, if any, of our product candidates by the FDA or the commercialization of our product candidates or could also result in higher costs or deprive us of potential product revenues.

For our product candidates, we rely upon single third parties to manufacture and supply our drug substance. Any problems experienced by either our third party manufacturers or their vendors could result in a delay or interruption in the supply of our product candidate to us until the third party manufacturer or its vendor cures the problem or until we locate and qualify an alternative source of manufacturing and supply.

For our product candidates we currently rely on third party manufacturers to purchase from their third party vendors the materials necessary to produce our product candidates and manufacture our product candidates for our clinical studies. If any of our third party manufacturers were to experience any prolonged disruption for our manufacturing we could be forced to seek additional third party manufacturing contracts, thereby increasing our development costs and negatively impacting our timeliness and any commercialization costs.

For each of our ongoing clinical trials, we are administering our product candidates, in combination with other immunotherapy agents. Any problems obtaining the other immunotherapy agents could result in a delay or interruption in our clinical trials.

For our ongoing clinical trials of HS-110 we administer our product candidate in combination with another immunotherapy agent, nivolumab. Therefore, our success will be dependent upon the continued use of this other immunotherapy agents. If any of the immunotherapy agents that are used in our clinical trials are unavailable while the trials are continuing, our timeliness and commercialization costs could be impacted. In addition, if any of these other immunotherapy agents are determined to have safety or efficacy problems, our clinical trials and commercialization efforts would be adversely affected.

Adverse effects resulting from other immunotherapy drugs or therapies could also negatively affect the perceptions by members of the health care community, including physicians, about the safety and effectiveness of our product candidates.

There are many other companies that have developed or are currently trying to develop immunology vaccines for the treatment of cancer. If adverse effects were to result from any immunotherapy drugs or therapies being developed, manufactured and marketed by others it could be attributed to our products or immunotherapy protocols as a whole. In fact, in the past biologics have been associated with certain safety risks and other companies developing biologics have had patients in trials suffer from serious adverse events, including death. Any such attribution could negatively

affect the perceptions by members of the health care community, including physicians, about the safety and effectiveness of our product candidates and the future of immunotherapy for the treatment of cancer. Our industry is susceptible to rapid technological changes and there can be no assurance that we will be able to match any new technological challenges presented by the adverse effects resulting from immunotherapy drugs or therapies developed, manufactured or marketed by others.

Even if we are able to obtain regulatory approval for our product candidates, we will continue to be subject to ongoing and extensive regulatory requirements, and our failure, or the failure of our contract manufacturers, to comply with these requirements could substantially harm our business.

If the FDA approves any of our product candidates, the labeling, manufacturing, packaging, adverse event reporting, storage, advertising, promotion and record keeping for our products will be subject to ongoing FDA requirements and continued regulatory oversight and review. We may also be subject to additional FDA post-marketing obligations. If we are not able to maintain regulatory compliance, we may not be permitted to market our product candidates and/or may be subject to product recalls or seizures. The subsequent discovery of previously unknown problems with any marketed product, including AEs of unanticipated severity or frequency, may result in restrictions on the marketing of the product, and could include withdrawal of the product from the market.

We have no experience selling, marketing or distributing products and have no internal capability to do so.

We currently have no sales, marketing or distribution capabilities. We do not anticipate having the resources in the foreseeable future to allocate to the sales and marketing of our proposed products, if approved. Our future success depends, in part, on our ability to enter into and maintain collaborative relationships for such capabilities, the collaborator's strategic interest in the products under development and such collaborator's ability to successfully market and sell any such products. We intend to pursue collaborative arrangements regarding the sales and marketing of our products, however, there can be no assurance that we will be able to establish or maintain such collaborative arrangements, or if able to do so, that our collaborators will have effective sales forces. To the extent that we decide not to, or are unable to, enter into collaborative arrangements with respect to the sales and marketing of our proposed products, significant capital expenditures, management resources and time will be required to establish and develop an in-house marketing and sales force with technical expertise. There can also be no assurance that we will be able to establish or maintain relationships with third party collaborators or develop in-house sales and distribution capabilities. To the extent that we depend on third parties for marketing and distribution, any revenues we receive will depend upon the efforts of such third parties, and there can be no assurance that such efforts will be successful. In addition, there can also be no assurance that we will be able to successfully market and sell our products in the United States or overseas on our own.

We may not be successful in establishing and maintaining strategic partnerships, which could adversely affect our ability to develop and commercialize products.

We may seek to enter into strategic partnerships in the future, including alliances with other biotechnology or pharmaceutical companies, to enhance and accelerate the development and commercialization of our products. We face significant competition in seeking appropriate strategic partners and the negotiation process is time-consuming and complex. Moreover, we may not be successful in our efforts to establish a strategic partnership or other alternative arrangements for any future product candidates and programs because our research and development pipeline may be insufficient, our product candidates and programs may be deemed to be at too early of a stage of development for collaborative effort and/or third parties may not view our product candidates and programs as having the requisite potential to demonstrate safety and efficacy or return on investment. Even if we are successful in our efforts to establish strategic partnerships, the terms that we agree upon may not be favorable to us and we may not be able to maintain such strategic partnerships if, for example, development or approval of a product candidate is delayed or sales of an approved product are disappointing.

If we ultimately determine that entering into strategic partnerships is in our best interest but either fail to enter into, are delayed in entering into or fail to maintain such strategic partnerships:

the development of certain of our current or future product candidates may be terminated or delayed;

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our cash expenditures related to development of certain of our current or future product candidates may increase significantly and we may need to seek additional financing;

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we may be required to hire additional employees or otherwise develop expertise, such as sales and marketing expertise, for which we have not budgeted;

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we will bear all of the risk related to the development of any such product candidates; and

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the competitiveness of any product candidate that is commercialized could be reduced.

To the extent we elect to enter into licensing or collaboration agreements to partner our product candidates, our dependence on such relationships may adversely affect our business.

Our commercialization strategy for certain of our product candidates may depend on our ability to enter into agreements with collaborators to obtain assistance and funding for the development and potential commercialization of these product candidates. Supporting diligence activities conducted by potential collaborators and negotiating the financial and other terms of a collaboration agreement are long and complex processes with uncertain results. Even if we are successful in entering into one or more collaboration agreements, collaborations may involve greater uncertainty for us, as we have less control over certain aspects of our collaborative programs than we do over our proprietary development and commercialization programs. We may determine that continuing a collaboration under the terms provided is not in our best interest, and we may terminate the collaboration. Our collaborators could delay or terminate their agreements, and our product candidates subject to collaborative arrangements may never be successfully developed or commercialized.

Further, our future collaborators may develop alternative products or pursue alternative technologies either on their own or in collaboration with others, including our competitors, and the priorities or focus of our collaborators may shift such that our programs receive less attention or fewer resources than we would like, or they may be terminated altogether. Any such actions by our collaborators may adversely affect our business prospects and ability to earn revenues. In addition, we could have disputes with our future collaborators, such as the interpretation of terms in our agreements. Any such disagreements could lead to delays in the development or commercialization of any potential products or could result in time-consuming and expensive litigation or arbitration, which may not be resolved in our favor.

If we cannot compete successfully for market share against other drug companies, we may not achieve sufficient product revenues and our business will suffer.

The market for our product candidates is characterized by intense competition and rapid technological advances. If any of our product candidates receives FDA approval, it will compete with a number of existing and future drugs and therapies developed, manufactured and marketed by others. Existing or future competing products may provide greater therapeutic convenience or clinical or other benefits for a specific indication than our products, or may offer comparable performance at a lower cost. If our products fail to capture and maintain market share, we may not achieve sufficient product revenues and our business will suffer.

We will compete against fully integrated pharmaceutical companies and smaller companies that are collaborating with larger pharmaceutical companies, academic institutions, government agencies and other public and private research organizations. Many of these competitors have oncology compounds already approved or in development. In addition, many of these competitors, either alone or together with their collaborative partners, operate larger research and

development programs or have substantially greater financial resources than we do, as well as significantly greater experience in:

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developing drugs, biologics and other therapies;
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undertaking preclinical testing and clinical trials;
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obtaining FDA and other regulatory approvals of drugs, biologics and other therapies;
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formulating and manufacturing drugs, biologics and other therapies; and
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launching, marketing and selling drugs, biologics and other therapies.

We have limited protection for our intellectual property, which could impact our competitive position.

We intend to rely on a combination of common law copyright, patent, trademark, and trade secret laws and measures to protect our proprietary information. We have obtained exclusive rights to license the technology for which patent protection has been obtained; however, certain patents expire in 2019 and such protection does not prevent unauthorized use of such technology. In addition, our license for certain cell lines are subject to non-exclusive licenses and do not have patent protection. Trademark and copyright protections may be limited, and enforcement could be too costly to be effective. It may also be possible for unauthorized third parties to copy aspects of, or otherwise obtain and use, our proprietary information without authorization, including, but not limited to, product design, software, customer and prospective customer lists, trade secrets, copyrights, patents and other proprietary rights and materials. Other parties can use and register confusingly similar business, product and service names, as well as domain names, which could divert customers, resulting in a material adverse effect on our business, operating results and financial condition.

If we fail to successfully enforce our intellectual property rights, our competitive position could suffer, which could harm our operating results. Competitors may challenge the validity or scope of our patents or future patents we may obtain. In addition, our licensed patents may not provide us with a meaningful competitive advantage. We may be required to spend significant resources to monitor and police our licensed intellectual property rights. We may not be able to detect infringement and our competitive position may be harmed. In addition, competitors may design around our technology or develop competing technologies. Intellectual property rights may also be unavailable or limited in some foreign countries, which could make it easier for competitors to capture market share.

The technology we license, our products or our development efforts may be found to infringe upon third-party intellectual property rights.

Third parties may in the future assert claims or initiate litigation related to their patent, copyright, trademark and other intellectual property rights in technology that is important to us. The asserted claims and/or litigation could include claims against us, our licensors or our suppliers alleging infringement of intellectual property rights with respect to our products or components of those products. Regardless of the merit of the claims, they could be time consuming, result in costly litigation and diversion of technical and management personnel, or require us to develop a non-infringing technology or enter into license agreements. We have not undertaken an exhaustive search to discover any third party intellectual patent rights which might be infringed by commercialization of the product candidates described herein. Although we are not currently aware of any such third party intellectual patent rights, it is possible that such rights currently exist or might be obtained in the future. In the event that a third party controls such rights and we are unable to obtain a license to such rights on commercially reasonable terms, we may not be able to sell or continue to develop our products, and may be liable for damages for such infringement. We cannot assure you that licenses will be available on acceptable terms, if at all. Furthermore, because of the potential for significant damage awards, which are not necessarily predictable, it is not unusual to find even arguably unmeritorious claims resulting in large settlements. If any infringement or other intellectual property claim made against us by any third party is

successful, or if we fail to develop non-infringing technology or license the proprietary rights on commercially reasonable terms and conditions, our business, operating results and financial condition could be materially adversely affected.

If our products, methods, processes and other technologies infringe the proprietary rights of other parties, we could incur substantial costs and we may have to:

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obtain licenses, which may not be available on commercially reasonable terms, if at all;

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abandon an infringing drug or therapy candidate;

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redesign our products or processes to avoid infringement;

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stop using the subject matter claimed in the patents held by others;

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pay damages; or

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defend litigation or administrative proceedings which may be costly whether we win or lose, and which could result in a substantial diversion of our financial and management resources.

We rely on licenses to use various technologies that are material to our business and if the agreements were to be terminated or if other rights that may be necessary or we deem advisable for commercializing our intended products cannot be obtained, it would halt our ability to market our products and technology, as well as have an immediate material adverse effect on our business, operating results and financial condition.

We have licensing agreements with certain universities granting us the right to use certain critical intellectual property. The terms of the licensing agreements continue until the end of the life of the last patent to expire. If we breach the terms of these licensing agreements, including any failure to make minimum royalty payments required thereunder or failure to reach certain developmental milestones, using best efforts to introduce a licensed product in certain territories by certain dates, the licensor has the right to terminate the license. If we were to lose or otherwise be unable to maintain these licenses on acceptable terms, or find that it is necessary or appropriate to secure new licenses from other third parties, it would halt our ability to market our products and technology, which would have an immediate material adverse effect on our business, operating results and financial condition.

We may be unable to generate sufficient revenues to meet the minimum royalties or developmental milestones required under our license agreements.

For the years ended December 31, 2017, 2018, 2019, 2020, and 2021 our minimum royalty obligations under our licensing agreements, required to be paid with the passage of time, are \$130,374, \$101,187, \$70,000, \$97,000 and \$52,000, respectively. No assurance can be given that we will generate sufficient revenue or raise additional financing to make these minimum royalty payments. The license agreements also provide for certain developmental milestones, including future payments to Pelican based on the achievement of certain milestones. No assurance can be given that we will meet all of the required developmental milestones. Any failure to make the payments or reach the milestones required by the license agreements would permit the licensor to terminate the license. If we were to lose or otherwise be unable to maintain these licenses, it would halt our ability to market our products and technology, which would have an immediate material adverse effect on our business, operating results and financial condition.

Our ability to generate product revenues will be diminished if our therapies sell for inadequate prices or patients are unable to obtain adequate levels of reimbursement.

Our ability to commercialize our therapies, alone or with collaborators, will depend in part on the extent to which reimbursement will be available from:

government and health administration authorities;

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private health maintenance organizations and health insurers; and

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other healthcare payers.

Significant uncertainty exists as to the reimbursement status of newly approved healthcare products. Healthcare payers, including Medicare, are challenging the prices charged for medical products and services. Cost control initiatives could decrease the price that we would receive for any products in the future, which would limit our revenue and profitability. Government and other healthcare payers increasingly attempt to contain healthcare costs by limiting both coverage and the level of reimbursement for drugs and therapeutics. We might need to conduct post-marketing studies in order to demonstrate the cost-effectiveness of any future products to such payers satisfaction. Such studies might require us to commit a significant amount of management time and financial and other resources. Our future products might not ultimately be considered cost-effective. Even if one of our product candidates is approved by the FDA, insurance coverage may not be available, and reimbursement levels may be inadequate, to cover such therapies. If government and other healthcare payers do not provide adequate coverage and reimbursement levels for one of our products, once approved, market acceptance of such product could be reduced.

Legislative and regulatory changes affecting the health care industry could adversely affect our business.

Political, economic and regulatory influences are subjecting the health care industry to potential fundamental changes that could substantially affect our results of operations. In many countries, the government controls the pricing and profitability of prescription pharmaceuticals. In the United States, we expect that there will continue to be federal and state proposals to implement similar governmental controls. In addition, recent changes in the Medicare program and increasing emphasis on managed care in the United States will continue to put pressure on pharmaceutical product pricing. It is uncertain whether or when any legislative proposals will be adopted or what actions federal, state, or private payers for health care treatment and services may take in response to any health care reform proposal or legislation. We cannot predict the effect health care reforms may have on our business and we can offer no assurances that any of these reforms will not have a material adverse effect on our business. These actual and potential changes are causing the marketplace to put increased emphasis on the delivery of more cost-effective treatments. In addition, uncertainty remains regarding proposed significant reforms to the U.S. health care system.

We may not successfully effect our intended expansion, which would harm our business prospects.

Our success will depend upon the expansion of our operations and the effective management of our growth, which will place a significant strain on our management and on our administrative, operational and financial resources. To manage this growth, we must expand our facilities, augment our operational, financial and management systems and hire and train additional qualified personnel. If we are unable to manage our growth effectively, our business would be harmed.

We may be exposed to liability claims associated with the use of biological and hazardous materials and chemicals.

Our research and development activities may involve the controlled use of biological and hazardous materials and chemicals. Although we believe that our safety procedures for using, storing, handling and disposing of these materials comply with federal, state and local laws and regulations, we cannot completely eliminate the risk of accidental injury or contamination from these materials. In the event of such an accident, we could be held liable for any resulting damages and any liability could materially adversely affect our business, financial condition and results of operations. In addition, the federal, state and local laws and regulations governing the use, manufacture, storage, handling and disposal of hazardous or radioactive materials and waste products may require us to incur substantial compliance costs that could materially adversely affect our business, financial condition and results of operations.

We rely on key executive officers and scientific and medical advisors, and their knowledge of our business and technical expertise would be difficult to replace.

We are highly dependent on our principal scientific, regulatory and medical advisors and our chief executive officer. Other than a \$2,000,000 insurance policy we hold on the life of Jeffrey Wolf, we do not have key person life insurance policies for any of our officers or advisors. The loss of the technical knowledge, management and industry expertise of any of our key personnel could result in delays in product development, loss of customers and sales and diversion of management resources, which could adversely affect our operating results.

If we are unable to hire additional qualified personnel, our ability to grow our business may be harmed.

We will need to hire additional qualified personnel with expertise in preclinical and clinical research, government regulation, formulation and manufacturing, sales and marketing and accounting and financing. In particular, over the next 12 months, we expect to hire additional new employees. We compete for qualified individuals with numerous biopharmaceutical companies, universities and other research institutions. Competition for such individuals is intense, and we cannot be certain that our search for such personnel will be successful. Attracting and retaining qualified personnel will be critical to our success.

We may incur substantial liabilities and may be required to limit commercialization of our products in response to product liability lawsuits.

The testing and marketing of drug and biological product candidates entail an inherent risk of product liability. Product liability claims might be brought against us by consumers, health care providers or others selling or otherwise coming into contact with our products. Clinical trial liability claims may be filed against us for damages suffered by clinical trial subjects or their families. If we cannot successfully defend ourselves against product liability claims, we may incur substantial liabilities or be required to limit commercialization of our products which could impact our ability to continue as a going concern. Our inability to obtain sufficient product liability insurance at an acceptable cost to protect against potential product liability claims could prevent or inhibit the commercialization of pharmaceutical products we develop, alone or with collaborators. In addition, regardless of merit or eventual outcome, product liability claims may result in:

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decreased demand for any approved product candidates;
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impairment of our business reputation;
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withdrawal of clinical trial participants;
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costs of related litigation;
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distraction of management's attention;
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substantial monetary awards to patients or other claimants;
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loss of revenues; and
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the inability to successfully commercialize any approved drug candidates.

International expansion of our business exposes us to business, regulatory, political, operational, financial and economic risks associated with doing business outside of the United States.

Our business strategy incorporates international expansion, including establishing and maintaining clinician marketing and education capabilities outside of the United States and expanding our relationships with distributors and manufacturers. Doing business internationally involves a number of risks, including:

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multiple, conflicting and changing laws and regulations such as tax laws, export and import restrictions, employment laws, regulatory requirements and other governmental approvals, permits and licenses;

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failure by us or our distributors to obtain regulatory approvals for the sale or use of our product candidates in various countries;

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difficulties in managing foreign operations;

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complexities associated with managing multiple payor-reimbursement regimes or self-pay systems;

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limits on our ability to penetrate international markets if our product candidates cannot be processed by a manufacturer appropriately qualified in such markets;

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financial risks, such as longer payment cycles, difficulty enforcing contracts and collecting accounts receivable and exposure to foreign currency exchange rate fluctuations;

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reduced protection for intellectual property rights;

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natural disasters, political and economic instability, including wars, terrorism and political unrest, outbreak of disease, boycotts, curtailment of trade and other business restrictions; and

failure to comply with the Foreign Corrupt Practices Act, including its books and records provisions and its anti-bribery provisions, by maintaining accurate information and control over sales and distributors activities.

Any of these risks, if encountered, could significantly harm our future international expansion and operations and, consequently, have a material adverse effect on our financial condition, results of operations and cash flows.

We may acquire other businesses or form joint ventures or make investments in other companies or technologies that could harm our operating results, dilute our stockholders' ownership, increase our debt or cause us to incur significant expense.

As part of our business strategy, we may pursue acquisitions of businesses and assets such as we recently did with the Pelican. We also may pursue strategic alliances and joint ventures that leverage our core technology and industry experience to expand our offerings or distribution. Other than our recent acquisition of 80% of the equity of Pelican, we have no experience with acquiring other companies and limited experience with forming strategic alliances and joint ventures. We may not be able to find suitable partners or acquisition candidates, and we may not be able to complete such transactions on favorable terms, if at all. If we make any acquisitions, we may not be able to integrate these acquisitions successfully into our existing business, and we could assume unknown or contingent liabilities. Any future acquisitions also could result in significant write-offs or the incurrence of debt and contingent liabilities, any of which could have a material adverse effect on our financial condition, results of operations and cash flows. Integration of an acquired company also may disrupt ongoing operations and require management resources that would otherwise focus on developing our existing business. We may experience losses related to investments in other companies, which could have a material negative effect on our results of operations. We may not identify or complete these transactions in a timely manner, on a cost-effective basis, or at all, and we may not realize the anticipated benefits of any acquisition, technology license, strategic alliance or joint venture.

To finance any acquisitions or joint ventures, we may choose to issue shares of our common stock as consideration, which would dilute the ownership of our stockholders. If the price of our common stock is low or volatile, we may not be able to acquire other companies or fund a joint venture project using our stock as consideration. Alternatively, it may be necessary for us to raise additional funds for acquisitions through public or private financings. Additional funds may not be available on terms that are favorable to us, or at all.

Uncertainty regarding health care reform and declining general economic or business conditions may have a negative impact on our business.

Continuing concerns over U.S. health care reform legislation and energy costs, geopolitical issues, the availability and cost of credit and government stimulus programs in the United States and other countries have contributed to increased volatility and diminished expectations for the global economy. If the economic climate does not improve or continues to be uncertain, our business, as well as the financial condition of our suppliers and our third-party payors, could be adversely affected, resulting in a negative impact on our business, financial condition and results of operations.

The U.S. government may have march-in rights to certain of our intellectual property.

Because federal grant monies were used in support of the research and development activities that resulted in certain of our issued pending U.S. patent applications, the federal government retains what are referred to as march-in rights to patents that are granted on these applications.

In particular, the National Institutes of Health, which administered grant monies to the primary inventor of the technology we license, technically retain the right to require us, under certain specific circumstances, to grant the U.S. government either a nonexclusive, partially exclusive or exclusive license to the patented invention in any field of use, upon terms that are reasonable for a particular situation. Circumstances that trigger march-in rights include, for example, failure to take, within a reasonable time, effective steps to achieve practical application of the invention in a field of use, failure to satisfy the health and safety needs of the public and failure to meet requirements of public use specified by federal regulations. The National Institutes of Health can elect to exercise these march-in rights on their own initiative or at the request of a third-party.

Risk Factors Relating to the Pelican Acquisition (the Acquisition)

Several of Pelican's directors have conflicts of interest that may have influenced them to support or approve the Acquisition without regard to your interests.

Jeffrey Wolf and Edward Smith serve on the board of directors of Heat and Pelican and are expected to continue to serve on the board of directors of Heat following the consummation of the Acquisition. Taylor Schreiber, M.D., Ph.D., serves as the Chairman of Heat's Scientific Advisory Board and serves on Pelican's board of directors. John Monahan, Ph.D. a director of Heat, is a member of the limited liability company that owns shares of common stock of Pelican. They each have a direct or indirect financial interest in both Pelican and our company.

In order to develop Pelican's product candidates and receive the grant funding awarded by CPRIT, we will have to devote significant resources to Pelican.

Neither we nor Pelican are expected to derive revenue from any source in the near future until they or their potential partners successfully commercialize products. The CPRIT Grant requires that Pelican provide matching funds for one half of the award amount in order for Pelican to receive the grant funding. In order to receive the full \$15.2 million award over three years, Pelican must raise matching funds in the aggregate amount of \$7,622,611. Pelican has received from us matching funds in the amount of \$910,231 and the grant award in the amount of \$1,820,462 for the first contract fiscal year has been made available to Pelican from CPRIT. For the second fiscal year (June 2017 through May 2018) of the award, Pelican must provide matching funds of \$3,177,507 in order for CPRIT to provide \$6,355,014 of grant funding. For the third fiscal year (June 2018 through May 2019) of the award Pelican must provide matching funds of \$3,534,873 in order for CPRIT to provide \$7,069,746 of grant funding. In addition, we have agreed to loan Pelican approximately \$250,000 to pay Pelican's legal fees and expenses incurred in connection with the Acquisition. Our financial statements have been prepared under the assumption that we will continue as a going concern; however, we have incurred significant losses from operations to date and we expect our expenses to increase in connection with our ongoing activities, and the addition of Pelican's activities. There can be no assurance that funding will be available on acceptable terms on a timely basis, or at all. The various ways that we could raise capital carry potential risks. Any additional sources of financing will likely involve the issuance of our equity securities, which will have a dilutive effect on our stockholders. If we raise funds through collaborations and licensing arrangements, we might be required to relinquish significant rights to its technologies or tests or grant licenses on terms that are not favorable to us. If we do not succeed in raising additional funds on acceptable terms or at all, we may be unable to complete planned preclinical and clinical trials, access the CPRIT award or obtain approval of our product candidates from the FDA and other regulatory authorities.

If Pelican is unable to hire additional qualified personnel, its ability to utilize the CPRIT grant will be forfeited.

In order to access the CPRIT grant a majority of Pelican's employees must reside in Texas as well as its Chief Executive Officer and other executive officers. Pelican has identified qualified individuals and will have to negotiate agreements with each identified individual and will also need to hire such additional qualified personnel with expertise in preclinical testing, clinical research and testing, government regulation, formulation and manufacturing, sales and marketing and accounting and financing. Pelican will compete for qualified individuals with numerous biopharmaceutical companies, universities and other research institutions. Competition for such individuals is intense, and there can be no assurance that the search for such personnel will be successful. Attracting and retaining qualified personnel will be critical to Pelican's access to the CPRIT grant.

The combined company may not experience the anticipated strategic benefits of the Acquisition.

We believe that the Acquisition will provide certain strategic benefits that may not be realized by each of the companies if Pelican was not acquired by us. Specifically, we believe the Acquisition provides certain strategic benefits which would enable us to accelerate our business plan through an increased access to capital in the public equity markets. The market price of our common stock may decline as a result of the Acquisition if the combined company does not achieve the perceived benefits of the Acquisition as rapidly or to the extent anticipated by us or Pelican or investors, financial or industry analysts. There can be no assurance that these anticipated benefits of the Acquisition will materialize or that if they materialize will result in increased stockholder value or revenue stream to the combined company.

We may be unable to successfully integrate the Pelican businesses with its current management and structure.

Our failure to successfully complete the integration of Pelican could have an adverse effect on our prospects, business activities, cash flow, financial condition, results of operations and stock price. Integration challenges may include the following:

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assimilating Pelican's technology and retaining personnel in Texas as required by the CPRIT grant award;

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estimating the capital, personnel and equipment required for Pelican based on the historical experience of management with the businesses they are familiar with;

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minimizing potential adverse effects on existing business relationships;

.
successfully developing the new products and services; and

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coordinating our efforts throughout various distant localities such as Texas where Pelican is headquartered and must remain headquartered in order to access the CPRIT grant award.

Pelican has had limited operations to date.

Pelican is a start-up entity and has had limited operations to date. As a start-up entity, Pelican is subject to many of the risks common to such enterprises, including its ability to implement its business plan, market acceptance of its proposed business and products, under-capitalization, cash shortages, limitations with respect to personnel, financing and other resources, competition from better funded and experienced companies, and uncertainty of its ability to generate revenues. There is no assurance that its activities will be successful or will result in any revenues or profit, and the likelihood of its success must be considered in light of the stage of its development. Even if it generates revenue, there can be no assurance that it will be profitable. In addition, no assurance can be given that it will be able to consummate its business strategy and plans, as described herein, or that financial, technological, market, or other limitations may force it to modify, alter, significantly delay, or significantly impede the implementation of such plans.

Pelican has insufficient results for investors to use to identify historical trends or even to make quarter to quarter comparisons of its operating results. Pelican's revenue and income potential is unproven and its business model is continually evolving. Pelican is subject to the risks inherent to the operation of a new business enterprise, and there can be no assurance that Pelican will be able to successfully address these risks.

Pelican has a limited operating history upon which to evaluate its ability to commercialize its products.

Pelican is a development-stage company and its success is dependent upon its ability to develop and commercialize its products and it has not demonstrated an ability to perform the functions necessary for the successful development and commercialization of any product candidates. The successful commercialization of any product candidates will require Pelican to perform a variety of functions, including:

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- continuing to undertake preclinical development trials and initiating clinical trials;
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- participating in regulatory approval processes and obtaining regulatory approvals;
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- formulating and manufacturing products; and
- .
- conducting sales and marketing activities.

Pelican's operations have been limited to organizing and staffing Pelican, acquiring, developing and securing its proprietary technology and undertaking preclinical studies of its product candidates. Pelican has yet to engage in any clinical trials and therefore the safety of its product candidates is uncertain.

Pelican has generated operating losses and experienced negative cash flows and it is uncertain whether it will achieve profitability.

For the year ended December 31, 2016, Pelican incurred a net loss of (\$703,736). At December 31, 2016, Pelican had an accumulated deficit of (\$3,042,685), a stockholder's deficit of (\$990,299) and a working capital deficiency of (\$553,471). Pelican will continue to incur operating losses until such time, if ever, as it is able to achieve sufficient levels of revenue from operations. Its ability to achieve profitability will depend on the market development and acceptance of its product offerings and its capacity to develop, introduce and sell its products to its targeted markets. There can be no assurance that Pelican will ever generate significant sales or achieve profitability. Accordingly, the extent of future losses and the time required to achieve profitability, if ever, cannot be predicted at this point.

It is expected that Pelican will experience negative cash flows for the foreseeable future as it funds its operating losses and capital expenditures. As a result, we may seek to raise additional funding in the future in order to obtain matching funds under the CPRIT Grant. We may not be able to raise additional funding on favorable terms or at all.

Pelican's consolidated financial statements have been prepared assuming that it will continue as a going concern.

Pelican's consolidated financial statements as of December 31, 2016 have been prepared under the assumption that it will continue as a going concern for the next twelve months. Our management has concluded that substantial doubt exists about our ability to continue as a going concern as a result of anticipated capital needs as well as past recurring losses and an accumulated deficit. Pelican's ability to continue as a going concern is dependent upon its ability to obtain additional equity or debt financing, attain further operating efficiencies, reduce expenditures, and, ultimately, to generate revenue. Pelican's consolidated financial statements as of December 31, 2016 did not include any adjustments that might result from the outcome of this uncertainty. If Pelican cannot continue as a viable entity, we and we other stockholders may lose some or all of their investment in Pelican.

Pelican's product candidates are in early stages of clinical trials.

Because Pelican's product candidates are in early stages of development they will require extensive preclinical and clinical testing. Pelican's lead product has not yet entered clinical trials and cost, speed and ability to advance through clinical trials is uncertain. Pelican cannot predict with any certainty if or when it might submit a Biologics License Application (BLA) for regulatory approval for any of its product candidates or whether any such BLA will be accepted.

Pelican relies on licenses to use various technologies that are material to its business and if the agreements were to be terminated, it would halt its ability to market its products and technology, as well as have an immediate material adverse effect on its business, operating results and financial condition.

Pelican has licensing agreements with the University granting it the right to use certain critical intellectual property. The terms of the licensing agreements continue until the end of the life of the last patent to expire. If Pelican breaches the terms of these licensing agreements, including any failure to make minimum royalty payments required thereunder or failure to reach certain developmental milestones such as use best efforts to introduce a licensed product in certain territories by 2020, the licensor has the right to terminate the license. If Pelican were to lose or otherwise be unable to maintain these licenses on acceptable terms, it would halt its ability to market its products and technology, which would have an immediate material adverse effect on its business, operating results and financial condition.

Pelican may be unable to generate sufficient revenues to meet the minimum royalties or developmental milestones required under its license agreements or to pay outstanding obligations.

For the year ending December 31, 2017 and thereafter Pelican's minimum royalty obligations (exclusive of any milestone payments) under its licensing agreements are \$40,000 annually. No assurance can be given that Pelican will generate sufficient revenue or raise additional financing to make these minimum royalty payments. The license agreements also provide for certain developmental milestones. No assurance can be given that Pelican will meet all of the required developmental milestones. Any failure to make the payments or reach the milestones required by the license agreements would permit the licensor to terminate the license. If Pelican were to lose or otherwise be unable to maintain these licenses, it would halt its ability to market its products and technology, which would have an immediate material adverse effect on its business, operating results and financial condition.

There is uncertainty as to market acceptance of Pelican's technology and products.

Pelican has conducted its own research into the markets for its products; however, because it will be a new entrant into the market, it cannot guarantee market acceptance of its products and have somewhat limited information on which to estimate anticipated level of sales. Pelican's products will require patients and doctors to adopt its technology. Pelican's industry is susceptible to rapid technological developments and there can be no assurance that it will be able to match any new technological advances. If it is unable to match the technological changes in the needs of its customers the demand for its products will be reduced.

Risks Related to Our Common Stock

Our failure to meet the continued listing requirements of the NASDAQ Capital Market could result in a de-listing of our common stock.

Our shares of common stock are currently listed on The NASDAQ Capital Market. If we fail to satisfy the continued listing requirements of The NASDAQ Capital Market, such as the corporate governance requirements, minimum bid price requirement or the minimum stockholder's equity requirement, The NASDAQ Capital Market may take steps to de-list our common stock. Any de-listing would likely have a negative effect on the price of our common stock and would impair stockholders' ability to sell or purchase its common stock when they wish to do so. On March 15, 2017, we received written notice from the Listing Qualifications Department of NASDAQ Stock Market LLC ("NASDAQ") notifying us that for the preceding 30 consecutive business days (January 31, 2017 through March 14, 2017), our common stock did not maintain a minimum closing bid price of \$1.00 ("Minimum Bid Price Requirement") per share as required by NASDAQ Listing Rule 5550(a)(2). The notice has no immediate effect on the listing or trading of our

common stock which will continue to trade on The NASDAQ Capital Market under the symbol HTBX. On September 12, 2017, we received written notice from NASDAQ that we had been granted an additional 180-day extension, or until March 12, 2018, to regain compliance with the Minimum Bid Price Requirement. Compliance can be achieved automatically and without further action if the closing bid price of our common stock is at or above \$1.00 for a minimum of ten consecutive business days at any time prior to March 12, 2018, in which case NASDAQ will notify us of our compliance and the matter will be closed. We can also regain compliance the Company cures the deficiency on or before March 12, 2018 by effecting a reverse stock split, if necessary.

The March 15, 2017 notice was the third notice we received from NASDAQ notifying us that we were not in compliance with continued listing requirements of The NASDAQ Capital Market. No assurance can be given that we will be able to satisfy its continued listing requirements and maintain the listing of our common stock on The NASDAQ Capital Market. We intend to attempt to take actions to restore its compliance with NASDAQ's listing requirements, but we can provide no assurance that any action taken by us would result in our common stock meeting the NASDAQ listing requirements, or that any such action would stabilize the market price or improve the liquidity of our common stock. Although our stockholders have approved a reverse stock split, there can be no assurance that a reverse stock split if effected will result in an increase in our stock price for the requisite time period.

On May 2, 2016, we received written notice from the Listing Qualifications Department of NASDAQ Stock Market LLC notifying us that for the preceding 30 consecutive business days (March 18, 2016 through April 29, 2016), our common stock did not maintain a minimum closing bid price of \$1.00 (Minimum Bid Price Requirement) per share as required by NASDAQ Listing Rule 5550(a)(2). Compliance was achieved automatically and without further action when the closing bid price of our common stock was at or above \$1.00 for a minimum of ten consecutive business days at any time during the 180-day compliance period.

In addition, on February 22, 2016, we received a deficiency letter from the NASDAQ indicating that as of December 31, 2015 our stockholders' equity of \$2,495,000 did not meet the \$2,500,000 minimum required to maintain continued listing. Although the proceeds of our March 2016 offering satisfied the continued listing requirements of the NASDAQ with respect to stockholders' equity, there can be no assurance that we will continue to satisfy such requirements.

The possible issuance of common stock subject to options, restricted stock units and warrants may dilute the interests of stockholders.

In 2009, we adopted a 2009 Stock Option and Restricted Stock Plan (the 2009 Plan). In 2014, we adopted a 2014 Stock Incentive Plan (the 2014 Plan) and, in 2016 and 2015, we increased the number of shares of common stock that we have authority to grant under the 2014 Plan to a total of 3 million shares. In addition, at the 2017 Annual Meeting, our 2017 Stock Incentive Plan (the 2017 Plan) was approved by our stockholders, which provides for the issuance of up to 5,000,000 shares of common stock as compensation awards. As of June 30, 2017, awards for 2,520,000 shares of common stock have been granted under the 2009 Plan and the 2014 Plan and there were 614,483 shares of common stock remaining available for grant under these plans. In addition, as of June 30, 2017, we have 17,392 shares issuable upon exercise of warrants granted to third parties in connection with prior private placements of our equity securities and debt, 2,961,571 shares of common stock issuable upon exercise of warrants granted to third parties in connection with our recent public offering, and 125,000 shares of common stock issuable at \$12.50 per share upon exercise of warrants issued to underwriters in connection with our initial public offering. To the extent that outstanding stock options and warrants are exercised, or additional securities are issued, dilution to the interests of our stockholders may occur. Moreover, the terms upon which we will be able to obtain additional equity capital may be adversely affected since the holders of the outstanding options can be expected to exercise them at a time when we would, in all likelihood, be able to obtain any needed capital on terms more favorable to us than those provided in such outstanding options.

We have additional securities available for issuance, which, if issued, could adversely affect the rights of the holders of our common stock.

Our certificate of incorporation authorizes the issuance of 100,000,000 shares of our common stock and 10,000,000 shares of preferred stock. In certain circumstances, the common stock and preferred stock, as well as the awards available for issuance under the 2009, 2014 Plan and 2017 Plan, can be issued by our board of directors, without stockholder approval. Any future issuances of such stock would further dilute the percentage ownership of us held by holders of preferred stock and common stock. In addition, the issuance of preferred stock may be used as an anti-takeover device without further action on the part of our stockholders, and may adversely affect the holders of the common stock. Our board of directors is authorized to create and issue from time to time, without stockholder approval, up to an aggregate of 10,000,000 shares of preferred stock of which 8,212,500 have been designated, in one or more series and to establish the number of shares of any series of preferred stock and to fix the designations, powers, preferences and rights of the shares of each series and any qualifications, limitations or restrictions of the shares of each series. The authority to designate preferred stock may be used to issue series of preferred stock, or rights to acquire preferred stock, that could dilute the interest of, or impair the voting power of, holders of the common stock or could also be used as a method of determining, delaying or preventing a change of control.

We have never paid dividends and have no plans to pay dividends in the future.

Holders of shares of our common stock are entitled to receive such dividends as may be declared by our board of directors. To date, we have paid no cash dividends on our shares of our preferred or common stock and we do not expect to pay cash dividends in the foreseeable future. We intend to retain future earnings, if any, to provide funds for operations of our business. Therefore, any return investors in our preferred or common stock may have will be in the form of appreciation, if any, in the market value of their shares of common stock.

We are an emerging growth company, and any decision on our part to comply with certain reduced disclosure requirements applicable to emerging growth companies could make our common stock less attractive to investors.

We are an emerging growth company, as defined in the Jumpstart Our Business Startups Act enacted in April 2012, and, for as long as we continue to be an emerging growth company, we may choose to take advantage of exemptions from various reporting requirements applicable to other public companies including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, not being required to comply with any new requirements adopted by the Public Company Accounting Oversight Board, or the PCAOB, requiring mandatory audit firm rotation or a supplement to the auditor's report in which the auditor would be required to provide additional information about the audit and the financial statements of the issuer, not being required to comply with any new audit rules adopted by the PCAOB after April 5, 2012 unless the SEC determines otherwise, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements, and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved. We could remain an emerging growth company until the earliest of: (i) the last day of the fiscal year in which we have total annual gross revenues of \$1 billion or more; (ii) the last day of our fiscal year following the fifth anniversary of the date of our first sale of common equity securities pursuant to an effective registration statement; (iii) the date on which we have issued more than \$1 billion in nonconvertible debt during the previous three years; or (iv) the date on which we are deemed to be a large accelerated filer. We cannot predict if investors will find our common stock less attractive if we choose to rely on these exemptions. If some investors find our common stock less attractive as a result of any choices to reduce future disclosure, there may be a less active trading market for our common stock and our stock price may be more volatile. Further, as a result of these scaled regulatory requirements, our disclosure may be more limited than that of other public companies and you may not have the same protections afforded to stockholders of such companies.

Under Section 107(b) of the Jumpstart Our Business Startups Act, emerging growth companies can delay adopting new or revised accounting standards until such time as those standards apply to private companies. We have irrevocably elected not to avail ourselves of this exemption from new or revised accounting standards and, therefore, we will be subject to the same new or revised accounting standards as other public companies that are not emerging growth companies.

Future sales of our common stock by our existing stockholders could cause our stock price to decline.

On September 13, 2017, we had 35,788,912 shares of our common stock outstanding, all of which are currently eligible for sale in the public market, subject, in certain circumstances to the volume, manner of sale and other limitations under Rule 144 promulgated under the Securities Act. It is conceivable that stockholders may wish to sell some or all of their shares. If our stockholders sell substantial amounts of our common stock in the public market at the same time, the market price of our common stock could decrease significantly due to an imbalance in the supply and demand of our common stock. Even if they do not actually sell the stock, the perception in the public market that our stockholders might sell significant shares of our common stock could also depress the market price of our common stock.

A decline in the price of shares of our common stock might impede our ability to raise capital through the issuance of additional shares of our common stock or other equity securities, and may cause stockholders to lose part or all of their investment in our shares of common stock.

Our shares of common stock are from time to time thinly traded, so stockholders may be unable to sell at or near ask prices or at all if they need to sell shares to raise money or otherwise desire to liquidate their shares.

Our common stock has from time to time been thinly-traded, meaning that the number of persons interested in purchasing our common stock at or near ask prices at any given time may be relatively small or non-existent. This situation is attributable to a number of factors, including the fact that we are a small company that is relatively unknown to stock analysts, stock brokers, institutional investors and others in the investment community that generate or influence sales volume, and that even if we came to the attention of such persons, they tend to be risk-averse and would be reluctant to follow an unproven company such as ours or purchase or recommend the purchase of our shares until such time as we became more seasoned and viable. As a consequence, there may be periods of several days or more when trading activity in our shares is minimal or non-existent, as compared to a seasoned issuer that has a large and steady volume of trading activity that will generally support continuous sales without an adverse effect on share price. We cannot give stockholders any assurance that a broader or more active public trading market for our common shares will develop or be sustained, or that current trading levels will be sustained.

The trading in our stock has in the past and may continue to be very volatile.

Our stock price and the trading volume of our stock continues to be very volatile. As such, investors may find it difficult to obtain accurate stock price quotations and holders of our stock may be unable to resell their stock at desirable prices. Sales of substantial amounts of our common stock, or the perception that such sales might occur, could adversely affect prevailing market prices of our common stock and our stock price may decline substantially in a short period of time. As a result, our stockholders could suffer losses or be unable to liquidate holdings.

Certain provisions of the General Corporation Law of the State of Delaware may have anti-takeover effects that may make an acquisition of our company by another company more difficult.

We are subject to the provisions of Section 203 of the General Corporation Law of the State of Delaware, which prohibits a Delaware corporation from engaging in any business combination, including mergers and asset sales, with an interested stockholder (generally, a 15% or greater stockholder) for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is approved in a prescribed manner. The operation of Section 203 may have anti-takeover effects, which could delay, defer or prevent a takeover attempt that a holder of our common stock might consider in its best interest.

The shares of common stock offered under the FBR Sales Agreement may be sold in at the market offerings, and investors who buy shares at different times will likely pay different prices.

Investors who purchase shares that are sold under the FBR Sales Agreement at different times will likely pay different prices, and so may experience different outcomes in their investment results. We will have discretion, subject to market demand, to vary the timing, prices, and numbers of shares sold, and there is no minimum or maximum sales price. Investors may experience declines in the value of their shares as a result of share sales made at prices lower than the prices they paid.

Reports published by securities or industry analysts, including projections in those reports that exceed our actual results, could adversely affect our common stock price and trading volume.

Securities research analysts, including those affiliated with our underwriters, establish and publish their own periodic projections for our business. These projections may vary widely from one another and may not accurately predict the results we actually achieve. Our stock price may decline if our actual results do not match securities research analysts projections. Similarly, if one or more of the analysts who writes reports on us downgrades our stock or publishes inaccurate or unfavorable research about our business or if one or more of these analysts ceases coverage of our company or fails to publish reports on us regularly, our stock price or trading volume could decline. While we expect securities research analyst coverage following this offering, if no securities or industry analysts begin to cover us, the trading price for our stock and the trading volume could be adversely affected.

Our management team may invest or spend the proceeds of our prior offering in ways with which stockholders may not agree or in ways that may not yield a significant return.

Our management will have broad discretion over the use of proceeds from this offering. The net proceeds from this offering are to be used for general corporate purposes, which may include, among other things, increasing our working capital, funding research and development, clinical trials, vendor payables, potential regulatory submissions, hiring additional personnel and capital expenditures. Our management has considerable discretion in the application of the net proceeds, and stockholders will not have the opportunity to assess whether the proceeds are being used appropriately. The net proceeds may be used for corporate purposes that do not improve our operating results or enhance the value of our common stock. See Use of Proceeds.

Our need for future financing may result in the issuance of additional securities that will cause investors to experience dilution.

Our cash requirements may vary from those now planned depending upon numerous factors, including the result of future research and development activities. We expect our expenses to increase in connection with our ongoing activities, particularly as we continue the research and development and initiate and conduct clinical trials of, and seek marketing approval for, our product candidates. In addition, if we obtain marketing approval for any of our product candidates, we expect to incur significant commercialization expenses related to product sales, marketing, manufacturing and distribution. Accordingly, we will need to obtain substantial additional funding in connection with our continuing operations. There are no other commitments by any person for future financing. Our securities may be offered to other investors at a price lower than the price per share offered to current stockholders, or upon terms that may be deemed more favorable than those offered to current stockholders. In addition, the issuance of securities in any future financing may dilute an investor's equity ownership and have the effect of depressing the market price for our securities. Moreover, we may issue derivative securities, including options and/or warrants, from time to time, to procure qualified personnel or for other business reasons. The issuance of any such derivative securities, which is at the discretion of our board of directors, may further dilute the equity ownership of our stockholders. No assurance can be given as to our ability to procure additional financing, if required, and on terms deemed favorable to us. To the extent additional capital is required and cannot be raised successfully, we may then have to limit our then current operations and/or may have to curtail certain, if not all, of our business objectives and plans.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference herein contain forward-looking statements, including statements regarding the progress and timing of our product development, the goals of our development activities, estimates of the potential markets for our product candidates, estimates of the capacity of manufacturing and other facilities to support our products, our expected future revenues, operations and expenditures and projected cash needs. The forward-looking statements are contained principally in the sections entitled Prospectus Summary, Risk Factors, Management's Discussion and Analysis of Financial Condition and Results of Operations and Business. These statements relate to future events of our financial performance and involve known and unknown risks, uncertainties and other factors that could cause our actual results, levels of activity, performance or achievement to differ materially from those expressed or implied by these forward-looking statements. Those risks and uncertainties include, among others:

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our ability to implement our business plan;
- .
our ability to raise additional capital to meet our liquidity needs;
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our ability to generate sufficient proceeds from the rights offering;
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our ability to generate product revenues;
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our ability to achieve profitability;
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our ability to comply with our loan covenants;
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our ability to satisfy U.S. (including FDA) and international regulatory requirements;
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our ability to obtain market acceptance of our technology and products;

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our ability to compete in the market;

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our ability to advance our clinical trials;

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our ability to fund, design and implement clinical trials;

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

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

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

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our ability to effectively implement cost-cutting measures;

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

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our ability to attract and retain sufficient, qualified personnel;

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

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

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our ability to adequately support future growth;

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Pelican's ability to operate successfully and our ability to integrate our operations with those of Pelican; and

potential product liability or intellectual property infringement claims.

Forward-looking statements include all statements that are not historical facts. In some cases, you can identify forward-looking statements by terms such as may, will, should, could, would, expects, plans, anticipates, estimates, projects, predicts, potential, or the negative of those terms, and similar expressions and comparative terminology intended to identify forward-looking statements. These statements reflect our current views with respect to future events and are based on assumptions and subject to risks and uncertainties. Given these uncertainties, you should not place undue reliance on these forward-looking statements. These forward-looking statements represent our estimates and assumptions only as of the date of this prospectus and, except as required by law, we undertake no obligation to update or review publicly any forward-looking statements, whether as a result of new information, future events or otherwise after the date of this prospectus. You should read this prospectus, the documents incorporated by reference in this prospectus, the documents referenced in this prospectus and the documents filed as exhibits to the registration statement, of which this prospectus is a part, completely and with the understanding that our actual future results may be materially different from what we expect. We qualify all of our forward-looking statements by these cautionary statements.

USE OF PROCEEDS

Assuming the exercise of subscription rights to purchase 12,000,000 shares of common stock at an assumed subscription price of \$0.75 per share (the last reported sale price of our common stock on the NASDAQ Capital Market on October 9, 2017), we estimate that the net proceeds from this rights offering will be approximately \$8.1 million, after deducting expenses related to the rights offering payable by us estimated at approximately \$0.9 million, including dealer-manager fees. If the offering size is increased and subscription rights are exercised to purchase 15,000,000 shares of common stock at an assumed subscription price of \$0.75 per share (the last reported sale price of our common stock on the NASDAQ Capital Market on October 9, 2017) we estimate that the net proceeds from this rights offering will be approximately \$10.1 million, after deducting expenses related to the rights offering payable by us estimated at approximately \$1.1 million, including dealer-manager fees.

A \$0.10 increase (decrease) in the assumed subscription price of \$0.75 per share would increase (decrease) the expected net proceeds of this rights offering by \$1.1 million, assuming the exercise of subscription rights to purchase 12,000,000 shares of common stock.

We are conducting this rights offering to raise capital that we intend to use to fund our and our subsidiaries' preclinical and clinical programs and for working capital and general corporate purposes, including, to acquire, license or invest in complementary businesses, technologies, product candidates or other intellectual property. We have broad discretion in determining how the proceeds of this offering will be used, and our discretion is not limited by the aforementioned possible uses. Our board of directors believes the flexibility in application of the net proceeds is prudent. See **Risk Factors** **Risks Related to this Rights Offering**. We will have broad discretion in the use of the net proceeds from the rights offering and may not use the proceeds effectively.

As of the date of this prospectus, we cannot specify with certainty all of the particular uses for the net proceeds to be received from this offering. The amounts and timing of our actual expenditures will depend on numerous factors including the progress in, and costs of, our clinical trials and other preclinical development programs and the amount of funding, if any, received from grants. Accordingly, our management will have broad discretion in the application of the net proceeds, and investors will be relying on the judgment of management regarding the application of the net proceeds from the offering. We may find it necessary or advisable to reallocate the net proceeds of this offering; however, any such reallocation would be substantially limited to the categories set forth above as we do not intend to use the net proceeds for other purposes. Pending such uses set forth above, we plan to invest the net proceeds in government securities and other short-term investment grade, marketable securities.

CAPITALIZATION

The following table sets forth our capitalization as of June 30, 2017:

on an actual basis; and

on an as adjusted basis to give effect to the exercise in the rights offering of subscription rights for 12,000,000 shares of common stock at an assumed subscription price of \$0.75 per share (the last reported sale price of our common stock on the NASDAQ Capital Market on October 9, 2017) and after deducting expenses related to the rights offering payable by us estimated at approximately \$0.9 million, including dealer-manager fees.

This capitalization table should be read in conjunction with Management's Discussion and Analysis of Financial Condition and Results of Operations and our historical financial statements and notes to those financial statements that are incorporated by reference in this prospectus.

	As of June 30, 2017	
	Actual	As Adjusted⁽¹⁾
Cash and cash equivalents	\$ 8,345,769	\$ 16,405,769
Total current and long term liabilities	8,056,001	8,056,001
Common stock, \$0.0002 par value; 50,000,000 shares authorized, 35,769,846 shares issued and outstanding, actual; Preferred Stock, \$0.001 par value, 10,000,000 shares authorized, no shares issued and outstanding	6,839	9,239
Additional paid-in capital	73,726,240	81,783,840
Accumulated deficit	(63,413,508)	(63,413,508)
Accumulated other Comprehensive Loss	(148,266)	(148,266)
Total Stockholders' Equity Less		
Non-Controlling Interest	10,171,305	18,231,305
Non-Controlling Interest	(1,162,603)	(1,162,603)
Total stockholders' equity	9,008,702	17,068,702

Total capitalization	\$	17,064,703	\$	25,124,703
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(1)

The number of shares of common stock shown above to be outstanding after this rights offering is based on 35,769,846 shares outstanding as of June 30, 2017, and excludes as of that date:

2,520,000 shares of our common stock issuable upon exercise of outstanding options under our equity incentive plans at a weighted-average exercise price of \$2.16 per share;

3,103,963 shares of our common stock reserved for issuance upon the exercise of outstanding warrants with a weighted-average exercise price of \$1.46 per share; and

614,483 shares of our common stock which are reserved for equity awards that may be granted under our equity incentive plans.

Each \$0.10 increase (decrease) in the assumed subscription price of \$0.75 per share (the last reported sale price of our common stock on the NASDAQ Capital Market on October 9, 2017) would increase (decrease) each of cash, additional paid-in capital, total shareholders equity (deficit) and total capitalization by approximately \$1,104,000, assuming subscription rights to purchase 12,000,000 shares of common stock, and after deducting estimated offering expenses.

Similarly, each increase (decrease) of 1,000,000 shares of common stock to be purchased upon exercise of subscription rights offered at \$0.75 per share (the last reported sale price of our commons stock on the NASDAQ Capital Market on October 9, 2017) would increase (decrease) cash, additional paid-in capital, total shareholders equity (deficit) and total capitalization by approximately \$690,000, assuming the assumed subscription price remains at \$0.75 (the last reported sale price of our common stock on the NASDAQ Capital Market on October 9, 2017) and after deducting estimated selling agents' commissions and estimated offering expenses payable by us.

DILUTION

Purchasers of our common stock in the rights offering will experience an immediate and substantial dilution of the net tangible book value of the shares purchased. At June 30, 2017, we had a net tangible book value of approximately \$953,364 or \$0.03 per share of our common stock. After giving effect to the assumed exercise of subscription rights to purchase 12,000,000 shares of our common stock in the rights offering at an assumed subscription price of \$0.75 (the last reported sale price of our common stock on the NASDAQ Capital Market on October 9, 2017) and after deducting transaction and offering expenses, the pro forma net tangible book value at June 30, 2017, attributable to common stockholders would have been \$9,013,364 or \$0.19 per share of our common stock. This amount represents an immediate dilution to purchasers in the rights offering of \$0.56. The following table illustrates this per-share dilution.

Assumed subscription price	\$ 0.75
Net tangible book value per share prior to the rights offering	\$ 0.03
Increase per share attributable to the rights offering	\$ 0.16
As adjusted net tangible book value per share after the rights offering	\$ 0.19
Dilution in net tangible book value per share to purchasers	\$ 0.56

The foregoing discussion and table do not take into account further dilution to new investors that could occur upon the exercise of outstanding options or warrants having a per share exercise price less than the per share offering price to the public in the rights offering. In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that additional capital is raised through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our stockholders.

If our board of directors, in its sole discretion, determines to increase the offering size to subscription rights to purchase 15,000,000 shares of our common stock, the as adjusted net tangible book value will increase to \$11,083,364 or approximately \$0.22 per share and would result in an immediate dilution to new investors of \$0.53 per share.

A 20% increase in the assumed subscription price of \$0.75 per share (the last reported sale price of our common stock on the NASDAQ Capital Market on October 9, 2017) would result in an incremental increase to the as adjusted net tangible book value of \$1,656,000 or approximately \$0.22 per share and would result in an incremental increase in dilution to new investors of \$0.12 per share, assuming the exercise of subscription rights to purchase 12,000,000 shares of our common stock in the rights offering and after deducting estimated expenses related to the rights offering payable by us estimated offering expense. A 20% (decrease) in the assumed subscription price of \$0.75 per share (the last reported sale price of our common stock on the NASDAQ Capital Market on October 9, 2017) would result in an incremental decrease to the as adjusted net tangible book value of \$1,656,000 or approximately \$0.12 per share and would result in an incremental decrease in dilution to new investors of \$0.11 per share, assuming the exercise of subscription rights to purchase 12,000,000 shares of our common stock in the rights offering and after deducting

estimated expenses related to the rights offering payable by us estimated offering expense.

The table and discussion above are based on 35,769,846 shares of common stock issued and outstanding as of June 30, 2017 and excludes as of that date:

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2,520,000 shares of our common stock issuable upon the exercise of outstanding stock options with a weighted average exercise price of \$2.16 per share;

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3,103,963 additional shares of our common stock issuable upon the exercise of outstanding warrants at a weighted average exercise price of \$1.46 per share; and

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614,483 additional shares of our common stock reserved for future issuance under our equity incentive plans.

THE RIGHTS OFFERING

Please read the following information concerning the subscription rights in conjunction with the statements under Description of Subscription Rights in this prospectus, which the following information supplements.

The Subscription Rights

We are distributing, at no charge, to holders of our common stock and holders of our warrants non-transferrable subscription rights to purchase up to an aggregate of 12,000,000 shares of our common stock. Subject to proration, holders of our common stock will receive one subscription right for each share of common stock owned at, and our warrant holders will receive one subscription right for each share of common stock into which the warrants held by them were exercisable at, 5:00 p.m., New York City time, on October 13, 2017. If the aggregate number of shares of common stock for which subscription rights are exercised exceeds 12,000,000 shares, our board of directors, in its sole discretion, will have the right, but no obligation, to increase the size of the offering to subscription rights to purchase up to an aggregate 15,000,000 shares.

Each subscription right will entitle the holder to a basic subscription privilege and an over-subscription privilege, which are described below.

Basic Subscription Privilege

With your basic subscription privilege, subject to proration, you may purchase one share of our common stock per subscription right, upon delivery of the required documents and payment of the subscription price equal to 88%-92% of the volume weighted average price per share of our common stock on the NASDAQ Capital Market for the five trading days immediately preceding and including October 13, 2017, rounded down to the nearest penny. You may exercise all or a portion of your basic subscription privilege. However, if you exercise less than your full basic subscription privilege, you will not be entitled to purchase shares pursuant to your over-subscription privilege.

If the basic subscription rights are exercised for an amount in excess of 12,000,000 shares of common stock (or in excess of 15,000,000 shares of common stock if our board of directors, in its sole discretion, determines to increase the offering size), the basic subscription rights that have been exercised will be reduced on a *pro rata* basis based on the number of shares each rights holder subscribed for under the basic subscription right, subject to adjustment to eliminate fractional shares, so that the total number of shares issued upon exercise of subscription rights shall equal

12,000,000 shares of common stock (or 15,000,000 shares of common stock if our board of directors, in its sole discretion, determines to increase the offering size), and any excess subscription amount received by the subscription agent will be promptly returned, without interest, after the rights offering has expired and all prorating calculations and reductions contemplated by the terms of the rights offering have been effected.

Basic subscription rights may only be exercised for whole numbers of shares of our common stock; no fractional shares of common stock will be issued in this rights offering. If the basic subscription rights are exercised for an amount in excess of 12,000,000 shares of common stock (or in excess of 15,000,000 shares of common stock if our board of directors, in its sole discretion, determines to increase the offering size), the number of shares of common stock each subscription rights holder may acquire will be rounded down to result in delivery of whole shares.

We will deliver certificates (physical, electronic or book-entry form) representing shares of our common stock purchased with the basic subscription privilege as soon as practicable after the rights offering has expired.

Over-Subscription Privilege

If you fully exercise your basic subscription privilege and basic subscription rights are exercised for an amount less than 12,000,000 shares of common stock (or 15,000,000 shares of common stock if our board of directors, in its sole discretion, determines to increase the offering size), you may also exercise an over-subscription privilege to purchase additional shares of common stock that remain unsubscribed at the expiration of the rights offering, subject to the availability and pro rata allocation of shares among stockholders exercising this over-subscription privilege. To the extent the number of the unsubscribed shares are not sufficient to satisfy all of the properly exercised over-subscription privileges requests, then the available shares will be prorated among those who properly exercised over-subscription privileges based on the number of shares each rights holder subscribed for under the basic subscription right. If this pro rata allocation results in any stockholder receiving a greater number of shares of common stock than the stockholder subscribed for pursuant to the exercise of the over-subscription privilege, then such stockholder will be allocated only that number of shares for which the stockholder oversubscribed, and the remaining shares of common stock will be allocated among all other stockholders exercising the over-subscription privilege on the same pro rata basis described above. The proration process will be repeated until all shares of common stock have been allocated or all over-subscription exercises have been fulfilled, whichever occurs earlier.

In order to properly exercise your over-subscription privilege, you must deliver the subscription payment related to your over-subscription privilege prior to the expiration of the rights offering. Because we will not know the total number of unsubscribed shares prior to the expiration of the rights offering, 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 price for the maximum number of shares of our common stock available to you, assuming that no stockholder other than you has purchased any shares of our common stock pursuant to their basic subscription privilege and over-subscription privilege.

We can provide no assurances that you will actually be entitled to purchase the number of shares 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 your exercise of the over-subscription privilege if all of our stockholders exercise their basic subscription privileges in full, and we will only honor an over-subscription privilege to the extent sufficient shares of our common stock are available following the exercise of subscription rights under the basic subscription privileges.

- To the extent the aggregate subscription price of the maximum number of unsubscribed shares 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 shares available to you, and any excess subscription payments received by the subscription agent will be promptly returned, without interest.
- To the extent holders properly exercise their over-subscription privileges for an aggregate amount of shares that is less than the number of the unsubscribed shares you will be allocated the number of unsubscribed

shares for which you actually paid in connection with the over-subscription privilege.

Fractional shares of our common stock resulting from the exercise of the over-subscription privilege will be eliminated by rounding down to the nearest whole share, with the total subscription payment being adjusted accordingly. Any excess subscription payments received by the subscription agent will be promptly returned, without interest.

We will deliver certificates (physical, electronic or book-entry form) representing shares of our common stock purchased with the basic subscription privilege as soon as practicable after the rights offering has expired.

Subscription Price

In determining the subscription price, which is calculated based on 88%-92% of the volume weighted average price per share of our common stock on the NASDAQ Capital Market for the five trading days immediately preceding and including October 13, 2017, rounded down to the nearest penny, our board of directors considered a number of factors, including: the likely cost of capital from other sources, the price at which holders might be willing to participate in the rights offering, historical and current trading prices of our common stock, our need for liquidity and capital and the desire to provide an opportunity to our stockholders and warrant holders to participate in the rights offering on a pro rata basis. In conjunction with its review of these factors, our board of directors also reviewed a range of discounts to market value represented by the subscription prices in various prior rights offerings of public companies. See **Risk Factors** **Risks Related to the Rights Offering**. The subscription price determined for the rights offering is not necessarily an indication of the value of our common stock.

Expiration Date

The subscription period during which you may exercise your subscription rights expires at 5:00 p.m., New York City time, on November 8, 2017, which is the expiration of the rights offering. If you do not exercise your subscription rights prior to that time, your subscription rights will expire and will no longer be exercisable. We will not be required to issue shares of our common stock to you if the subscription agent receives your rights certificate or your subscription payment after that time, regardless of when the rights certificate and subscription payment were sent, unless you send the documents in compliance with the guaranteed delivery procedures described below.

Limitation on Exercise of Basic Subscription Privilege and Over-Subscription Privilege

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 shares of our common stock 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 twenty percent (20%) of our issued and outstanding shares of common stock following the closing of the transactions contemplated by this rights offering.

In the event that the exercise by a stockholder of the basic subscription privilege or the over-subscription privilege could, as determined by us in our sole discretion, potentially result in a limitation on our ability to use net operating losses, tax credits and other tax attributes, which we refer to as the **Tax Attributes**, under the Internal Revenue Code of 1986, as amended, which we refer to as the **Code**, and rules promulgated by the Internal Revenue Service (the **IRS**), we may, but are under no obligation to, reduce the exercise by such stockholder of the basic subscription privilege or

the over-subscription privilege to such number of shares of common stock as we, in our sole discretion, shall determine to be advisable in order to preserve our ability to use the Tax Attributes.

Reasons for the Rights Offering

In authorizing the rights offering, our board of directors carefully evaluated our need for liquidity, financial flexibility and additional capital. Our board of directors also considered several alternative capital raising methods prior to concluding that the rights offering was the appropriate alternative under the circumstances. We are conducting the rights offering to raise capital that we intend to use for general corporate purposes, which may include funding for sales and marketing and general working capital purposes. See Use of Proceeds. Although we believe that the rights offering will strengthen our financial condition, our board of directors is making no recommendation regarding your exercise of the subscription rights.

Method of Exercising Subscription Rights

You may exercise your subscription rights as follows:

Subscription by Registered Holders

You may exercise your subscription rights by properly completing and executing the rights certificate together with any required signature guarantees and forwarding it, together with your full subscription payment, to the subscription agent at the address set forth below under Subscription Agent, prior to the expiration of the rights offering.

Subscription by DTC Participants

We expect that the exercise of your subscription rights may be made through the facilities of the Depository Trust Company (DTC). If your subscription rights are held of record through DTC, you may exercise your subscription rights by instructing DTC, or having your broker instruct DTC, to transfer your subscription rights from your account to the account of the subscription agent, together with certification as to the aggregate number of subscription rights you are exercising and the number of shares of our common stock you are subscribing for under your basic subscription privilege and your over-subscription privilege, if any, and your full subscription payment.

Subscription by Beneficial Owners

If you are a beneficial owner of shares of our common stock or our warrants that are registered in the name of a broker, custodian bank or other nominee, or if you hold our common stock certificates or certificates representing warrants directly and would prefer to have an institution conduct the transaction relating to the subscription rights on your behalf, you should instruct your broker, custodian bank or other nominee or institution to exercise your subscription rights and deliver all documents and payment on your behalf prior to the expiration date of the rights offering. Your subscription rights will not be considered exercised unless the subscription agent receives from you, your broker, custodian bank, nominee or institution, as the case may be, all of the required documents and your full subscription payment prior to the expiration date of the rights offering.

Payment Method

Payments must be made in full in U.S. currency by:

- check or bank draft payable to Continental Stock Transfer & Trust Company, the subscription agent, drawn upon a U.S. bank;
- postal, telegraphic or express money order payable to the subscription agent; or
- wire transfer of immediately available funds to accounts maintained by the subscription agent.

Payments received after the expiration of the rights offering will not be honored, and the subscription agent will promptly return your subscription payment to you, without interest. The subscription agent will be deemed to receive payment upon:

- clearance of any uncertified check deposited by the subscription agent;
- receipt by the subscription agent of any certified check bank draft drawn upon a U.S. bank;
- receipt by the subscription agent of any postal, telegraphic or express money order; or
- receipt of collected funds in the subscription agent's account.

If you elect to exercise your subscription rights, we urge you to consider using a certified or cashier's check, money order or wire transfer of funds to ensure that the subscription agent receives your funds prior to the expiration of the rights offering. If you send an uncertified check, payment will not be deemed to have been received by the subscription agent until the check has cleared, but if you send a certified check bank draft drawn upon a U.S. bank, a postal, telegraphic or express money order or wire or transfer funds directly to the subscription agent's account, payment will be deemed to have been received by the subscription agent immediately upon receipt of such instruments and wire or transfer.

Any personal check used to pay for shares of our common stock in the rights offering must clear the appropriate financial institutions prior to the expiration date of the rights offering. The clearinghouse may require five or more business days. Accordingly, holders that wish to pay the subscription price by means of an uncertified personal check are urged to make payment sufficiently in advance of the expiration of the rights offering to ensure such payment is received and clears by such date.

You should read the instruction letter accompanying the rights certificate carefully and strictly follow it. **DO NOT SEND RIGHTS CERTIFICATES OR PAYMENTS TO US.**

Except as described below under **Guaranteed Delivery Procedures**, 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 amount. The risk of delivery of all documents and payments is borne by you or your nominee, and not by the subscription agent or us.

The method of delivery of rights certificates and payment of the subscription amount 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 overnight courier or by registered mail, properly insured, with return receipt requested, and that a sufficient number of days be allowed to ensure delivery to the subscription agent and clearance of payment prior to the expiration of the rights offering.

Unless a rights certificate provides that the shares of our common stock are to be delivered to the record holder of such rights or such certificate is submitted for the account of a bank or a broker, signatures on such rights certificate must be guaranteed by an eligible guarantor institution, as such term is defined in Rule 17Ad-15 under the Exchange Act, subject to any standards and procedures adopted by the subscription agent.

Missing or Incomplete Subscription Information

If you do not indicate the number of subscription rights being exercised, or the subscription agent does not receive the full subscription payment for the number of subscription rights that you indicate are being exercised, then you will be deemed to have exercised the maximum number of subscription rights that may be exercised with the aggregate subscription payment you delivered to the subscription agent. If we do not apply your full subscription payment to your purchase of shares of our common stock, any excess subscription payment received by the subscription agent will be promptly returned to you, without interest.

Extension, Cancellation and Amendment

We may extend the expiration of the rights offering for a period not to exceed 30 days by giving oral or written notice to the subscription agent prior to the expiration date of the rights offering, although we do not presently intend to do so. If we elect to extend the expiration of the rights offering, we will issue a press release announcing such extension no later than 9:00 a.m., New York City time, on the next business day after the most recently announced expiration time of the rights offering. We will extend the duration of the rights offering as required by applicable law or regulation and may choose to extend it if we decide to give investors more time to exercise their subscription rights in the rights offering. If we elect to extend the rights offering for a period of more than 30 days, then holders who have subscribed for rights may cancel their subscriptions and receive a refund of all subscription payments advanced. An extension in the offering termination date for up to 30 days will not constitute a fundamental change to the terms of the offering, and will not give persons who have exercised their subscription rights the opportunity to cancel their subscriptions.

Our board of directors may cancel the rights offering at any time prior to the expiration of the rights offering for any reason. In the event the rights offering is cancelled, all subscription payments received by the subscription agent for the rights offering will be promptly returned, without interest.

Our board of directors, in its sole discretion, will have the right, but no obligation, to increase the size of the offering to subscription rights to purchase up to an aggregate 15,000,000 shares if the aggregate number of shares of common stock for which subscription rights are exercised exceeds 12,000,000 shares. An increase in the size of the offering will not constitute a fundamental change to the terms of the offering, and will not give persons who have exercised their subscription rights the opportunity to cancel their subscriptions.

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.

Conditions, Withdrawal and Termination

We reserve the right to withdraw the rights offering prior to the expiration date of the rights offering for any reason. We may terminate the rights offering, in whole or in part, if at any time before completion of the rights offering there is any judgment, order, decree, injunction, statute, law or regulation entered, enacted, amended or held to be applicable to the rights offering that in the sole judgment of our board of directors would or might make the rights offering or its completion, whether in whole or in part, illegal or otherwise restrict or prohibit completion of the rights offering. We may waive any of these conditions and choose to proceed with the rights offering even if one or more of these events occur. If we terminate, cancel or withdraw the rights offering, in whole or in part, we will issue a press release notifying the stockholders of such event, all affected subscription rights will expire without value, and all excess subscription payments received by the subscription agent will be promptly returned, without interest, following such termination, cancellation or withdrawal.

Subscription Agent

The subscription agent for this rights offering is Continental Stock Transfer & Trust Company. The address to which subscription documents, rights certificates, notices of guaranteed delivery and subscription payments other than wire

transfers should be mailed or delivered is:

Continental Stock Transfer & Trust Company
Attn: Corporate Actions Department
1 State Street, 30th Floor

New York, New York 10004

If you deliver subscription documents, rights certificates or notices of guaranteed delivery in a manner different than that described in this prospectus, we may not honor the exercise of your subscription rights.

Information Agent

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 information agent, D.F. King & Co., Inc., at (866) 796-1290 (toll free) or htbx@dfking.com.

Fees and Expenses

We will pay all fees charged by the subscription agent and the information agent in connection with the rights offering. We will also pay the fees and expenses charged by RHK Capital as dealer-manager for the rights offering, and placement agent for any unsubscribed shares of common stock, consisting of a 6.0% commission on the gross proceeds of the offering and a 1.8% non-accountable expense fee, as well as an out-of-pocket accountable expense allowance of 0.2% of the gross proceeds of the offering. RHK Capital has informed us that it will re-allow 4.0% of its dealer-manager fee to each broker-dealer whose clients purchase shares of common stock in this offering pursuant to the exercise of their subscription rights. See Plan of Distribution. You are responsible for paying any other commissions, fees, taxes or other expenses incurred in connection with the exercise of the subscription rights.

No Fractional Shares

We will not issue fractional shares or cash in lieu of fractional shares. Fractional shares of our common stock resulting from the exercise of the over-subscription privileges will be eliminated by rounding down to the nearest whole share, with the total subscription payment being adjusted accordingly. Any excess subscription payments received by the subscription agent will be promptly returned, without interest. Fractional shares of our common stock will not result from the exercise of the basic-subscription privileges.

Medallion Guarantee May Be Required

Your signature on each subscription rights certificate must be guaranteed by an eligible institution, such as a member firm of a registered national securities exchange or a member of the Financial Industry Regulatory Authority, Inc. (“FINRA”), or a commercial bank or trust company having an office or correspondent in the United States, subject to standards and procedures adopted by the subscription agent, unless:

- your subscription rights certificate provides that shares are to be delivered to you as record holder of those subscription rights; or
- you are an eligible institution.

You can obtain a signature guarantee from a financial institution—such as a commercial bank, savings, bank, credit union or broker dealer—that participates in one of the Medallion signature guarantee programs. The three Medallion signature guarantee programs are the following:

- Securities Transfer Agents Medallion Program (STAMP), whose participants include U.S. and Canadian financial institutions;
- Stock Exchanges Medallion Program (SEMP), whose participants include the regional stock exchange member firms and clearing and trust companies; and
- New York Stock Exchange Medallion Signature Program (MSP), whose participants include New York Stock Exchange member firms.

If a financial institution is not a member of a recognized Medallion signature guarantee program, it would not be able to provide signature guarantees. Also, if you are not a customer of a participating financial institution, it is likely the financial institution will not guarantee your signature. Therefore, the best source of a Medallion signature guarantee would be a bank, savings and loan association, brokerage firm or credit union with which you do business. The participating financial institution will use a Medallion imprint or stamp to guarantee your signature, indicating that the financial institution is a member of a Medallion signature guarantee program and is an acceptable signature guarantor.

Notice to Nominees

If you are a broker, custodian bank or other nominee holder that holds shares of our common stock or our warrants for the account of others on the record date, you should notify the beneficial owners of such shares or warrants 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. You should obtain instructions from the beneficial owner, as set forth in the instructions we have provided to you for your distribution to beneficial owners. If the beneficial owner so instructs, you should complete the appropriate rights certificate and submit it to the subscription agent with the proper subscription payment. If you hold shares of our common stock or our warrants for the account(s) of more than one beneficial owner, 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 or direct holders of our warrants 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 the subscription agent to request a copy.

Beneficial Owners

If you are a beneficial owner of shares of our common stock or our warrants or will receive your subscription rights through a broker, custodian bank or other nominee, we will ask your broker, custodian bank or other nominee to notify you of the rights offering. If you wish to exercise your subscription rights, you will need to have your broker, custodian bank or other nominee act for you. If you hold certificates of our common stock or certificates representing warrants directly and would prefer to have your broker, custodian bank or other nominee act for you, you should contact your nominee and request it to effect the transactions for you. To indicate your decision with respect to your subscription rights, you should complete and return to your broker, custodian bank or other nominee the form entitled **Beneficial Owners Election Form**. You should receive this form from your broker, custodian bank or other nominee with the other rights offering materials. If you wish to obtain a separate subscription rights certificate, you should contact the nominee as soon as possible and request that a separate subscription rights certificate be issued to you. You should contact your broker, custodian bank or other nominee if you do not receive this form, but you believe you are entitled to participate in the rights offering. We are not responsible if you do not receive the form from your broker, custodian bank or nominee or if you receive it without sufficient time to respond.

Guaranteed Delivery Procedures

If you wish to exercise subscription rights, but you do not have sufficient time to deliver the rights certificate evidencing your subscription rights to the subscription agent prior to the expiration of the rights offering, you may exercise your subscription rights by the following guaranteed delivery procedures:

- deliver to the subscription agent prior to the expiration of the rights offering the subscription payment for each share you elected to purchase pursuant to the exercise of subscription rights in the manner set forth above under “—Payment Method”;
- deliver to the subscription agent prior to the expiration of the rights offering the form entitled “Notice of Guaranteed Delivery”; and
- deliver the properly completed rights certificate evidencing your subscription rights to be exercised and the related nominee holder certification, if applicable, with any required signatures guaranteed, to the subscription agent within two (2) business days following the date of the Notice of Guaranteed Delivery.

Your Notice of Guaranteed Delivery must be delivered in substantially the same form provided with the Form of Instructions for Use of Subscription Rights Certificates, which will be distributed to you with your rights certificate. Your Notice of Guaranteed Delivery must include a signature guarantee from an eligible institution acceptable to the subscription agent. A form of that guarantee is included with the Notice of Guaranteed Delivery.

In your Notice of Guaranteed Delivery, you must provide:

- your name;
- the number of subscription rights represented by your rights certificate, the number of shares of our common stock for which you are subscribing under your basic subscription privilege, and the number of shares of our common stock for which you are subscribing under your over-subscription privilege, if any; and
- your guarantee that you will deliver to the subscription agent a rights certificate evidencing the subscription rights you are exercising within two (2) business days following the date the subscription agent receives your Notice of Guaranteed Delivery.

You may deliver your Notice of Guaranteed Delivery to the subscription agent in the same manner as your rights certificate at the address set forth above under Subscription Agent.

The information agent will send you additional copies of the form of Notice of Guaranteed Delivery if you need them. You should call D.F. King & Co., Inc., at (866) 796-1290 (toll free) to request additional copies of the form of Notice of Guaranteed Delivery.

Transferability of Subscription Rights

The subscription rights granted to you are non-transferable and, therefore, you may not sell, transfer or assign your subscription rights to anyone. The subscription rights will not be listed for trading on the NASDAQ Capital Market or any stock exchange or market.

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. In resolving all such questions, we will review the relevant facts, consult with our legal advisors and we may request input from the relevant parties. Our determination will be final and binding. We reserve the absolute right to reject any subscriptions or directions not properly submitted or the acceptance of which would be unlawful. You must resolve any irregularities in connection with your subscriptions before the subscription period expires, unless waived by us in our sole discretion. Neither we nor the subscription agent shall be 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 a

properly completed and duly executed rights certificate and any other required documents and the full subscription payment has been received by the subscription agent. Our interpretations of the terms and conditions of the rights offering will be final and binding.

Escrow Arrangements; Return of Funds

The subscription agent will hold funds received in payment for shares of our common stock in a segregated account pending completion of the rights offering. The subscription agent will hold this money in escrow until the rights offering is completed or is withdrawn and canceled. If the rights offering is withdrawn or canceled for any reason, all subscription payments received by the subscription agent will be promptly returned, without interest. In addition, all subscription payments received by the subscription agent will be promptly returned, without interest, if subscribers decide to cancel their subscription rights in the event that we extend the rights offering for a period of more than 30 days after the expiration date or if there is a fundamental change to the terms of the rights offering.

Stockholder Rights

You will have no rights as a holder of the shares of our common stock you purchase in the rights offering, if any, until certificates (physical, electronic or book-entry form) representing the shares of our common stock are issued to you. You will have no right to revoke your subscriptions after you deliver your completed rights certificate, the full subscription payment and any other required documents to the subscription agent. See No Revocation or Change.

Foreign Stockholders

We will not mail this prospectus or the rights certificates to stockholders whose addresses are outside the United States or who have an army post office or foreign post office address. The subscription agent will hold the rights certificates for their account. To exercise subscription rights, our foreign stockholders must notify the subscription agent prior to 11:00 a.m., New York City time, at least two (2) business days prior to the expiration of the rights offering and demonstrate to the satisfaction of the subscription agent that the exercise of such subscription rights does not violate the laws of the jurisdiction of such stockholder.

No Revocation or Change

Once you submit the form of rights certificate to exercise any subscription rights, 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 later learn information that you consider to be unfavorable to the exercise of your subscription rights and even if the rights offering is extended by our board of directors. However, if we amend the rights offering to allow for an extension of the rights offering for a period of more than 30 days or make a fundamental change to the terms of the rights offering set forth in this prospectus, you may cancel your subscription and receive a refund of any money you have advanced. You should not exercise your subscription rights unless you are certain that you wish to purchase additional shares of our common stock at the subscription price.

Regulatory Limitation

We will not be required to issue to you shares of our common stock pursuant to the rights offering if, in our opinion, you are required to obtain prior clearance or approval from any state or federal regulatory authorities to own or control such shares and if, at the time the rights offering expires, you have not obtained such clearance or approval.

U.S. Federal Income Tax Treatment of Rights Distribution

For U.S. federal income tax purposes, you generally should not recognize income or loss in connection with the receipt or exercise of subscription rights unless the rights offering is part of a disproportionate distribution within the meaning of applicable tax rules (in which case you may recognize taxable income upon receipt of the subscription rights). We believe that the rights offering should not be part of a disproportionate distribution, but certain aspects of that determination are unclear. This position is not binding on the IRS or the courts, however. You are urged to

consult your own tax advisor as to your particular tax consequences resulting from the receipt and exercise of subscription rights and the receipt, ownership and disposition of our common stock. For further information, please see [Material U.S. Federal Income Tax Considerations](#).

No Recommendation to Rights Holders

Although our directors may invest their own money in the rights offering, our board of directors is making no recommendation regarding your exercise of the subscription rights. You are urged to make your decision based on your own assessment of our business and the rights offering. Please see [Risk Factors](#) for a discussion of some of the risks involved in investing in our common stock.

Listing

The subscription rights will not be listed for trading on the NASDAQ Capital Market or any stock exchange or market. The shares of our common stock issuable upon exercise of the subscription rights will trade on the NASDAQ Capital Market under the symbol [HTBX](#).

Shares of our Common Stock Outstanding After the Rights Offering

Assuming 12,000,000 shares of our common stock are issued in the rights offering through the exercise of subscription rights, we anticipate that 47,788,912 shares of our common stock will be outstanding following the completion of the rights offering. Assuming our board of directors, in its sole discretion, determines to increase the offering size to subscription rights to purchase up to 15,000,000 shares of our common stock are issued in the rights offering through the exercise of subscription rights, we anticipate that 50,788,912 shares of our common stock will be outstanding following the completion of the rights offering.

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 shares of our common stock 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.

MARKET FOR COMMON EQUITY AND RELATED STOCKHOLDER MATTERS**Market Information**

Our common stock has traded on the NASDAQ Capital Market under the symbol **HTBX** since July 29, 2013. Prior to that time, there was no public market for our common stock. The following table states the range of the high and low sales prices of our common stock for the year ended December 31, 2015, the year ended December 31, 2016, the quarters ended March 31, 2017 and June 30, 2017, and the quarter ending September 30, 2017 to date. These quotations represent inter-dealer prices, without retail mark-up, markdown, or commission, and may not represent actual transactions. The last reported sale price of our common stock as reported on the NASDAQ on October 9, 2017 was \$0.75 per share. As of October 9, 2017, there were approximately 30 stockholders of record of our common stock. This number does not include beneficial owners from whom shares are held by nominees in street name.

		High		Low
YEAR ENDED DECEMBER 31, 2015				
First Quarter	\$	8.30	\$	3.99
Second Quarter	\$	8.35	\$	5.73
Third quarter	\$	6.58	\$	3.42
Fourth quarter	\$	4.50	\$	1.84
YEAR ENDED DECEMBER 31, 2016				
First Quarter	\$	4.32	\$	0.68
Second Quarter	\$	0.80	\$	0.46
Third Quarter	\$	1.81	\$	0.66
Fourth Quarter	\$	3.23	\$	0.70
YEAR ENDED DECEMBER 31, 2017				
First Quarter	\$	1.25	\$	0.71
Second Quarter	\$	0.90	\$	0.55
Third Quarter	\$	0.72	\$	0.48
Fourth Quarter (through October 9, 2017)	\$	0.76	\$	0.64

DIVIDEND POLICY

We have never declared or paid any cash dividends on our capital stock and we do not currently intend to pay any cash dividends on our common stock in the foreseeable future. We expect to retain all available funds and future earnings, if any, to fund the development and growth of our business. Any future determination to pay dividends, if any, on our common stock will be at the discretion of our board of directors and will depend on, among other factors, our results of operations, financial condition, capital requirements and contractual restrictions.

DESCRIPTION OF OUR SECURITIES

General

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

We are authorized to issue 100,000,000 shares of common stock, par value \$0.0002 per share, of which 35,788,912 shares are outstanding as of September 13, 2017 and 10,000,000 shares of preferred stock, par value \$0.0001 per share, of which 112,500 shares are designated Series 1 Preferred Stock, 2,000,000 shares are designated Series A Preferred Stock, 4,100,000 are designated as Series B-1 Preferred Stock and 2,000,000 are designated Series B-2 Preferred Stock. There are currently no shares of Preferred Stock outstanding.

Common Stock

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

Reverse Stock Splits

At our 2017 Annual Meeting of Stockholders, our stockholders approved an amendment to our certificate of incorporation, as amended, to implement a reverse stock split of our common stock with the ratio to be determined by our board of directors, within a range of one (1) share of common stock for every two (2) to ten (10) shares of common stock. If the board of directors continues to believe that a reverse stock split is in the best interests of our Company and our stockholders, the board will determine the ratio, within the range approved by our stockholders, of the reverse stock split and implement such reverse stock split by filing a certificate of amendment to our certificate of incorporation (the Certificate of Amendment for Reverse Split) with the Secretary of State of the State of Delaware (the Reverse Stock Split). The Reverse Stock Split, if any, will become effective after the filing of the Certificate of Amendment for Reverse Split on the effective date set forth in this certificate.

Preferred Stock

We are authorized to issue 10,000,000 shares of Preferred Stock, par value \$.0001 per share, of which 112,500 shares have been designated Series 1 Preferred Stock, 2,000,000 shares have been designated Series A Preferred Stock, 4,100,000 have been designated as Series B-1 Preferred Stock and 2,000,000 have been designated Series B-2 Preferred Stock. None of such shares of Preferred Stock are outstanding. Any authorized and undesignated shares of preferred stock may be issued from time to time in one or more series pursuant to a resolution or resolutions providing for such issue duly adopted by our Board of Directors (authority to do so being hereby expressly vested in the Board of Directors). The Board of Directors is further authorized, subject to limitations prescribed by law, to fix by resolution or resolutions the designations, powers, preferences and rights, and the qualifications, limitations or restrictions thereof, of any wholly unissued series of preferred stock, including without limitation authority to fix by resolution or resolutions the dividend rights, dividend rate, conversion rights, voting rights, rights and terms of redemption (including sinking fund provisions), redemption price or prices, and liquidation preferences of any such series, and the number of shares constituting any such series and the designation thereof, or any of the foregoing.

Outstanding Common Stock Warrants

On March 10, 2011, we issued warrants to purchase 32,610 shares of common stock to non-employee placement agents in consideration for a private equity placement transaction, of which 17,392 warrants remain outstanding as of June 30, 2017. The warrants have an exercise price of \$0.48 per share and expire 10 years from the issuance date.

In connection with our initial public offering, we issued warrants to the underwriters for 125,000 shares of common stock issuable at \$12.50 per share upon exercise. The warrants have a five-year life and expire on July 23, 2018. In addition, the warrants provide for registration rights upon request, in certain cases. The holders of the warrants were granted demand registration rights for a period of five years from the effective date of the offering and piggyback registration rights for a period of seven years from the effective date of the offering. The exercise price and number of shares issuable upon exercise of the warrants may be adjusted in certain circumstances including in the event of a stock dividend or our recapitalization, reorganization, merger or consolidation. However, the warrant exercise price or underlying shares will not be adjusted for issuances of shares of common stock at a price below the warrant exercise price.

In connection with our March 2016 public offering, we issued warrants to purchase 6,825,000 shares of our common stock, at an exercise price of \$1.00 per share. The warrants have a five-year life and expire after March 22, 2021.

Stock Option Plans

Under the 2017 Plan we are authorized to grant 5,000,000 awards in the form of options, restricted stock, restricted stock units and other stock based awards. Under the 2014 Plan we are authorized to grant 500,000 awards in the form of options, restricted stock, restricted stock units and other stock based awards. Under the 2009 Plan under which we are authorized to grant 869,565 awards in the form of options, restricted stock, restricted stock units and other stock based awards. As of June 30, 2017: (1) 3,424,836 awards had been granted under the 2014 Plan, of which 143,832 were exercised, and 706,375 were canceled and there were 281,539 shares of common stock available for grant under the 2014 Plan, and (2) 960,176 awards had been granted under the 2009 Plan, of which 288,625 were exercised, and 423,555 were canceled and there were 332,944 shares of common stock available for grant under the 2009 Plan. No awards have been granted under the 2017 Plan.

Potential Anti-Takeover Effects

Certain provisions set forth in our Third Amended and Restated Certificate of Incorporation, as amended, in our bylaws and in Delaware law, which are summarized below, may be deemed to have an anti-takeover effect and may delay, deter or prevent a tender offer or takeover attempt that a stockholder might consider to be in its best interests, including attempts that might result in a premium being paid over the market price for the shares held by stockholders.

Blank Check Preferred Stock. Our certificate of incorporation and bylaws contain provisions that permit us to issue, without any further vote or action by the stockholders, up to 10,000,000 shares of preferred stock in one or more series and, with respect to each such series, to fix the number of shares constituting the series and the designation of the series, the voting powers, if any, of the shares of the series, and the preferences and relative, participating, optional and other special rights, if any, and any qualifications, limitations or restrictions, of the shares of such series.

Special Meetings of Stockholders. Our bylaws provide that special meetings of stockholders may be called only by the chairman or by our board. Stockholders are not permitted to call a special meeting of stockholders, to require that the board call such a special meeting, or to require that our board request the calling of a special meeting of stockholders.

While the foregoing provisions of our certificate of incorporation, bylaws and Delaware law may have an anti-takeover effect, these provisions are intended to enhance the likelihood of continuity and stability in the composition of the Board of directors and in the policies formulated by the Board of directors and to discourage certain types of transactions that may involve an actual or threatened change of control. In that regard, these provisions are designed to reduce our vulnerability to an unsolicited acquisition proposal. The provisions also are intended to discourage certain tactics that may be used in proxy fights. However, such provisions could have the effect of discouraging others from making tender offers for our shares and, as a consequence, they also may inhibit fluctuations in the market price of our common stock that could result from actual or rumored takeover attempts. Such provisions also may have the effect of preventing changes in our management.

Delaware Takeover Statute

In general, Section 203 of the Delaware General Corporation Law prohibits a Delaware corporation that is a public company from engaging in any business combination (as defined below) with any interested stockholder (defined generally as an entity or person beneficially owning 15% or more of the outstanding voting stock of the corporation and any entity or person affiliated with such entity or person) for a period of three years following the date that such stockholder became an interested stockholder, unless: (1) prior to 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; (2) on consummation 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 commenced, excluding for purposes of determining the number of shares outstanding those shares owned (x) by persons who are directors and also officers and (y) by 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 (3) on or subsequent to such date, the business combination is approved by the Board of directors and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least two-thirds of the outstanding voting stock that is not owned by the interested stockholder.

Section 203 of the Delaware General Corporation Law defines business combination to include: (1) any merger or consolidation involving the corporation and the interested stockholder; (2) any sale, transfer, pledge or other disposition of ten percent or more of the assets of the corporation involving the interested stockholder; (3) 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; (4) any transaction involving the corporation that has the effect of increasing the proportionate share of the stock of any class or series of the corporation beneficially owned by the interested stockholder; or (5) the receipt by the interested stockholder of the benefit of any loans, advances, guarantees, pledges or other financial benefits provided by or through the corporation.

Listing of Common Stock

Our common stock is currently listed on the NASDAQ Capital Market under the trading symbol HTBX.

Transfer Agent

The transfer agent and registrar for our common stock is Continental Stock Transfer & Trust Company. They are located at 1 State Street, 30th floor, New York, New York 10004. Their telephone number is (212) 509-4000.

DESCRIPTION OF SUBSCRIPTION RIGHTS

The Subscription Rights

We are distributing, at no charge, to holders of our common stock and holders of our warrants non-transferrable subscription rights to purchase one share of our common stock for each share of common stock owned at, and each share of common stock into which the warrants held by them were exercisable at, 5:00 p.m., New York City time, on October 13, 2017; provided, that, the rights may only be exercised for a maximum of 12,000,000 shares of common stock, subject to proration. If the aggregate number of shares of common stock for which subscription rights are exercised exceeds 12,000,000 shares, our board of directors, in its sole discretion, will have the right, but no obligation, to increase the size of the offering to subscription rights to purchase up to an aggregate 15,000,000 shares.

Each subscription right will entitle the holder to a basic subscription privilege and an over-subscription privilege, which are described below.

Basic Subscription Privilege

With your basic subscription privilege, you may purchase one share of our common stock per subscription right, upon delivery of the required documents and payment of the subscription price of \$ per share, prior to the expiration of the rights offering. You may exercise all or a portion of your basic subscription privilege. However, if you exercise less than your full basic subscription privilege, you will not be entitled to purchase shares pursuant to your over-subscription privilege.

If the basic subscription rights are exercised for an amount in excess of 12,000,000 shares of common stock (or in excess of 15,000,000 shares of common stock if our board of directors, in its sole discretion, determines to increase the offering size), the basic subscription rights that have been exercised will be reduced on a pro-rata basis, subject to adjustment to eliminate fractional shares, so that the total number of shares issued upon exercise of subscription rights equal 12,000,000 shares (or in excess of 15,000,000 shares of common stock if our board of directors, in its sole discretion, determines to increase the offering size), and any excess subscription amount received by the subscription agent will be promptly returned, without interest, after the rights offering has expired and all prorating calculations and reductions contemplated by the terms of the rights offering have been effected.

Basic subscription rights may only be exercised for whole numbers of shares of our common stock; no fractional shares of common stock will be issued in this rights offering. If the basic subscription rights are exercised for an amount in excess of 12,000,000 shares of common stock (or 15,000,000 shares of common stock if our board of directors, in its sole discretion, determines to increase the offering size), the number of shares of common stock each subscription rights holder may acquire will be rounded down to result in delivery of whole shares.

We will deliver certificates (physical, electronic or book-entry form) representing shares of our common stock purchased with the basic subscription privilege as soon as practicable after the rights offering has expired.

Over-Subscription Privilege

If you fully exercise your basic subscription privilege and basic subscription rights are exercised for an amount less than 12,000,000 shares of common stock (or 15,000,000 shares of common stock if our board of directors, in its sole discretion, determines to increase the offering size), you may also exercise an over-subscription privilege to purchase additional shares of common stock that remain unsubscribed at the expiration of the rights offering, subject to the availability and *pro rata* allocation of shares among stockholders exercising this over-subscription privilege. To the extent the number of the unsubscribed shares are not sufficient to satisfy all of the properly exercised over-subscription privileges requests, then the available shares will be prorated among those who properly exercised over-subscription privileges based on the number of shares each rights holder subscribed for under the basic subscription right. If this *pro rata* allocation results in any stockholder receiving a greater number of shares of common stock than the stockholder subscribed for pursuant to the exercise of the over-subscription privilege, then such stockholder will be allocated only that number of shares for which the stockholder oversubscribed, and the remaining shares of common stock will be allocated among all other stockholders exercising the over-subscription privilege on the same *pro rata* basis described above. The proration process will be repeated until all shares of common stock have been allocated or all over-subscription exercises have been fulfilled, whichever occurs earlier.

In order to properly exercise your over-subscription privilege, you must deliver the subscription payment related to your over-subscription privilege prior to the expiration of the rights offering. Because we will not know the total number of unsubscribed shares prior to the expiration of the rights offering, 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 price for the maximum number of shares of our common stock available to you, assuming that no stockholder other than you has purchased any shares of our common stock pursuant to their basic subscription privilege and over-subscription privilege.

We can provide no assurances that you will actually be entitled to purchase the number of shares 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 your exercise of the over-subscription privilege if all of our stockholders exercise their basic subscription privileges in full, and we will only honor an over-subscription privilege to the extent sufficient shares of our common stock are available following the exercise of subscription rights under the basic subscription privileges.

- To the extent the aggregate subscription price of the maximum number of unsubscribed shares 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 shares available to you, and any excess subscription payments received by the subscription agent will be promptly returned, without interest.
- To the extent the stockholders properly exercise their over-subscription privileges for an aggregate amount of shares that is less than the number of the unsubscribed shares, you will be allocated the number of unsubscribed shares for which you actually paid in connection with the over-subscription privilege.

Fractional shares of our common stock resulting from the exercise of the over-subscription privilege will be eliminated by rounding down to the nearest whole share, with the total subscription payment being adjusted accordingly. Any excess subscription payments received by the subscription agent will be promptly returned, without interest.

We will deliver certificates (physical, electronic or book-entry form) representing shares of our common stock purchased with the basic subscription privilege as soon as practicable after the rights offering has expired.

Subscription Price

In determining the subscription price of \$ per share, our board of directors considered a number of factors, including: the likely cost of capital from other sources, the price at which our stockholders might be willing to participate in the rights offering, historical and current trading prices of our common stock, our need for liquidity and capital and the desire to provide an opportunity to our stockholders to participate in the rights offering on a *pro rata* basis. In conjunction with its review of these factors, our board of directors also reviewed a range of discounts to market value represented by the subscription prices in various prior rights offerings of public companies. See Risk Factors Risks Related to this Rights Offering The subscription price determined for the rights offering is not necessarily an indication of the value of our common stock.

Limitation on Exercise of Basic Subscription Privilege and Over-Subscription Privilege

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 shares of our common stock 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 twenty percent (20%) of our issued and outstanding shares of common stock following the closing of the transactions contemplated by this rights offering.

In the event that the exercise by a holder of the basic subscription privilege or the over-subscription privilege could, as determined by us in our sole discretion, potentially result in a limitation on our ability to use net operating losses, tax credits and other tax attributes, which we refer to as the Tax Attributes, under the Internal Revenue Code of 1986, as amended, which we refer to as the Code, and rules promulgated by the Internal Revenue Service (the IRS), we may, but are under no obligation to, reduce the exercise by such stockholder of the basic subscription privilege or the over-subscription privilege to such number of shares of common stock as we, in our sole discretion, shall determine to be advisable in order to preserve our ability to use the Tax Attributes.

Distribution Arrangements

RHK Capital, which is a broker-dealer and member of FINRA, will act as dealer-manager for the rights offering. The principal business address of the dealer-manager is 276 Post Road West, Westport, Connecticut 06880.

Under the terms and subject to the conditions contained in a dealer-manager agreement, RHK Capital will provide marketing assistance and advice to our company in connection with the rights offering and will solicit the exercise of rights and participation in the over-subscription privilege. This rights offering is not contingent upon any number of rights being exercised. In addition, RHK Capital is acting as the placement agent for any unsubscribed shares of our common stock.

Under the terms and subject to the conditions contained in the dealer-manager agreement, we have agreed to pay RHK Capital a cash fee of 6.0% of the gross proceeds of this offering, a non-accountable expense allowance of 1.8% of the gross proceeds of this rights offering, and an out-of-pocket accountable expense allowance of 0.2%. RHK Capital has informed us that it will re-allow 4.0% of its dealer-manager fee to each broker-dealer whose clients purchase shares of common stock in this offering pursuant to the exercise of their subscription rights. We have agreed to indemnify RHK Capital and its affiliates against, or contribute to losses arising out of, certain liabilities arising under the Securities Act. RHK Capital's participation in this offering is subject to customary conditions contained in the dealer-manager agreement. The dealer-manager agreement also provides that the dealer-manager 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 or gross negligence of the dealer-manager. RHK Capital and its 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 customary fees. RHK Capital does not make any recommendation with respect to whether you should exercise the basic subscription or over subscription rights or to otherwise invest in our company. See Plan of Distribution.

MATERIAL U.S. FEDERAL INCOME TAX CONSIDERATIONS

This following discussion addresses material U.S. federal income tax considerations relating to (i) the receipt and exercise (or expiration) of the subscription rights as contemplated throughout this rights offering, and (ii), if applicable in connection with the exercise of the basic subscription privilege or, if applicable, the over-subscription privilege, the acquisition, ownership and sale of shares of our stock and, insofar as it relates to matters of U.S. federal income tax law and regulations or legal conclusions with respect thereto, constitutes the opinion of our tax counsel, Seligson & Giannattasio, LLP. This discussion addresses only the treatment to a Shareholder (defined below), that is a U.S. holder (defined below), and who receives subscription rights pursuant to this rights offering, or holds shares of our stock issued upon the exercise of the basic subscription privilege or, if applicable, the over-subscription privilege, in each instance as capital assets within the meaning of Code Section 1221. This discussion does not provide a complete or comprehensive analysis of all potential tax considerations. The information provide herein is based on existing United States federal income tax authorities, including but not limited to, the Code, the Treasury Regulations promulgated thereunder, legislative history, judicial authority and published rulings, any of which may subsequently change, possibly retroactively, or interpreted differently by the IRS, so as to result in U.S. federal income tax consequences different from those discussed throughout this rights offering. This discussion neither binds nor precludes the IRS from adopting a position contrary to, or otherwise challenging, the positions addressed in this prospectus, and we cannot assure you that such a contrary position could not be asserted successfully by the IRS or adopted by a court if the position or matter was litigated. We have not sought, and will not seek a ruling from the IRS regarding the tax considerations discussed herein. Additionally, this discussion does not address any tax consequences under foreign, state, or local tax laws, nor does it address the effects of the U.S. federal estate or gift tax laws.

This discussion does not purport to deal with all aspects of U.S. federal income taxation that may be relevant to a particular beneficial owner in light of such beneficial owner's circumstances. For example, this discussion does not apply to you if you are not a U.S. holder or if you are a member of a special class of holders subject to special rules, including, without limitation, financial institutions, banks, regulated investment companies, real estate investment trusts, dealers in securities or foreign currency, traders in securities that elect to use a mark-to-market method of accounting for securities holdings, tax-exempt organizations or entities, tax-deferred or other retirement accounts, insurance companies, persons liable for alternative minimum tax, holders who hold stock as part of a hedge, straddle, conversion, constructive sale or other integrated security transaction, holders whose functional currency is not the U.S. dollar, certain former citizens or residents of the U.S., and holders who received our stock on which the subscription rights are distributed in satisfaction of our indebtedness.

As used throughout this discussion, a U.S. holder means a beneficial owner of subscription rights, or stock acquired pursuant to the exercise of the basic subscription privilege or, if applicable, the over-subscription privilege, that is:

- An individual who is a citizen or resident of the United States, including an alien individual who either is a lawful permanent resident of the United States or meets the substantial presence test under Code Section 7701(b);

- A corporation (or entity treated as a corporation for U.S. federal income tax purposes) created or organized, or treated as created or organized, in or under the laws of the United States, any state thereof or the District of Columbia;
- An estate whose income is subject to U.S. federal income tax regardless of its source; or
- A trust (i) if a U.S. court can exercise primary supervision over the trust's administration and one or more U.S. persons are authorized to control all substantial decisions of the trust, or (ii) that has a valid election in effect under applicable Treasury Regulations to be treated as a U.S. person.

In addition, as used throughout this discussion, the phrase "Securities," means both (i) shares of our common stock, and (ii) rights or warrants to acquire shares of our common stock; and the term "Shareholder," means a U.S. holder who is either (i) a holder of shares of our common stock, or (ii) a holder of rights or warrants to acquire shares of our common stock. As such, this discussion addresses the receipt of the subscription rights contemplated in this offering by current holders of shares of our common stock and current holders of our warrants.

If a partnership (including any entity treated as a partnership for U.S. federal income tax purposes) receives the subscription rights or holds the stock received upon exercise of the basic subscription privilege or, if applicable, the over-subscription privilege, the tax treatment of a partner in such partnership generally will depend upon the status of the partner and the activities of the partnership. Such a partner and the partnership are urged to consult their own tax advisors as to the U.S. federal income tax consequences of receiving the subscription rights, exercising (or allowing to expire) the basic subscription privilege or, if applicable, the over-subscription privilege, and acquiring, holding or disposing of our shares of stock.

EACH U.S. HOLDER OF SUBSCRIPTION RIGHTS AND, IF APPLICABLE, OUR STOCK, IS STRONGLY URGED TO CONSULT SUCH HOLDER'S OWN TAX ADVISOR REGARDING THE SPECIFIC FEDERAL, STATE, LOCAL AND FOREIGN INCOME AND OTHER TAX CONSIDERATIONS OF THE RECEIPT AND EXERCISE OF SUBSCRIPTION RIGHTS AND THE RECEIPT, OWNERSHIP AND DISPOSITION OF OUR STOCK.

Receipt of Subscription Rights Assuming the Rights Offering is Considered Non-Taxable

Receipt of the Subscription Rights

The distribution of subscription rights to a Shareholder with respect to such Shareholder's Securities is generally treated, for U.S. federal income tax purposes, as a non-taxable distribution. The remainder of this section entitled *Receipt of Subscription Rights Assuming the Rights Offering is Considered Non-Taxable* assumes that the receipt by a Shareholder of subscription rights with respect to such Shareholder's Securities pursuant to this rights offering is non-taxable for U.S. federal income tax purposes. However, this conclusion is not free from doubt, and it is possible that the IRS may take a contrary view.

If, by way of example only, receipt by a Shareholder of subscription rights is part of a disproportionate distribution, then such receipt would be treated as a taxable distribution to such Shareholder in an amount equal to fair market value of the subscription rights received. In such a case, the treatment discussed below under the section entitled *Receipt of Subscription Rights if the Rights Offering Is Considered Taxable* would be applicable.

Tax Basis in the Subscription Rights

If the fair market value of the subscription rights received by a Shareholder is less than 15% of the fair market value of such Shareholder's Securities as of the date the subscription rights are distributed, then such holder's subscription rights will be allocated a zero tax basis for U.S. federal income tax purposes. However, in such a case, such Shareholder may affirmatively elect to allocate a portion of such holder's tax basis in such holder's existing Securities between (i) such holder's Securities and (ii) such holder's subscription rights received pursuant to this offering, in proportion to the relative fair market values of such existing Securities and subscription rights determined as of the date of the receipt of the subscription rights. If a Shareholder chooses to make such an election, then such holder must make this election on a statement included with such holder's tax return for the taxable year in which such holder receives subscription rights pursuant to this offering. Such an election, if made, is irrevocable.

If the fair market value of the subscription rights received by a Shareholder is 15% or more of the fair market value of such holder's Securities as of the date the subscription rights are distributed, then such holder must allocate such holder's tax basis in such holder's existing Securities between (i) such holder's shares of Securities, and (ii) such holder's subscription rights received pursuant to this offering, in proportion to the relative fair market values of such existing Securities and subscription rights determined as of the date of the distribution of the subscription rights.

The fair market value of the subscription rights on the date the subscription rights are received is uncertain, and we have not obtained, and do not intend to obtain, an appraisal of the fair market value of the subscription rights as of that date. Fair market value is defined generally as the price at which property would hypothetically change hands between a willing buyer and a willing seller, where neither is under any compulsion to buy or sell. Fair market value is a factual determination. In determining the fair market value of the subscription rights, you should consider all relevant facts and circumstances, including but not limited to any difference between the subscription price of the subscription rights and the trading price of our common stock on the date that the subscription rights are distributed or received, the length of the time period during which the subscription rights may be exercised, the fact that the subscription rights are non-transferable, and any other relevant facts and circumstances.

Exercise of the Subscription Rights

A Shareholder will not recognize any gain or loss upon the exercise of subscription rights received pursuant to this rights offering. A Shareholder's tax basis of shares of our common stock acquired through the exercise of such subscription rights will equal the sum of (i) the subscription price paid for the shares, *plus* (ii) the tax basis, if any, in the subscription rights immediately prior to such exercise. The holding period for shares of our common stock acquired through the exercise of such subscription rights will begin on the date the subscription rights are exercised.

Expiration of the Subscription Rights

A Shareholder who allows subscription rights received pursuant to this rights offering to expire generally will not recognize any gain or loss upon such expiration. If, in connection with the receipt of subscription rights pursuant to this offering, a Shareholder, by election or otherwise, allocated a portion of the tax basis in such holder's then existing Securities to such holder's subscription rights, then upon the expiration of such subscription rights, the portion of the tax basis previously allocated to the subscription rights will be re-allocated, or re-attributed, to such holder's Securities, and the tax basis of such Securities will be restored to what it was immediately before the receipt of the subscription rights in this offering.

Receipt of Subscription Rights if the Rights Offering is Considered Taxable

Receipt of Subscription Rights

In general, receipt by a Shareholder of subscription rights to acquire shares of our common stock generally will be taxable if the distribution or issuance (alone or as part of a series of distributions or issuances, including deemed distributions and issuances) either (i) has the result of the receipt of cash or property by some Shareholders, and an increase in the proportionate interests, of other Shareholders, in the assets or earnings and profits of the Company (*i.e.*, a disproportionate distribution, as contemplated in Code Section 305(b)(2)), or (ii) is, at the election of any of the Shareholders, payable either in cash or property in lieu of the rights to acquire additional shares (*i.e.*, a distribution in lieu of money, as contemplated in Code Section 305(b)(1)). As previously indicated, for these purposes, the term Securities, means shares of our common stock and rights or warrants to acquire shares of our common stock.

With respect Shareholders who are holders of our warrants, depending on the circumstances, adjustments and changes respecting subscription rights, or the receipt of additional subscription rights pursuant to this offering, may be treated as a constructive distribution if, and to the extent that, such adjustment, change or receipt has the effect of increasing such Shareholder s proportionate interest in our earnings and profits or assets. However, in general, any such adjustment, change or receipt respecting currently outstanding warrants, which adjustment, change or receipt is made or occurs pursuant to a bona fide reasonable adjustment formula that has the effect of preventing dilution of the interest of the holders of currently outstanding warrants should generally not result in a constructive distribution. The application of these rules to Shareholders, and, in particular, to Shareholders who hold warrants to acquire shares of our common stock, are complex and subject to uncertainty.

During the last 36 months, we have not made any distributions of cash or other property with respect to our stock, nor do we have any current intention of making any distributions with respect to our stock. Currently, our common stock is our sole outstanding class of stock, and we have no current intention of issuing another class of stock or convertible debt. However, the fact that we have outstanding options, warrants and similar equity-based awards could cause, under certain circumstances that cannot currently be predicted, the receipt of subscription rights pursuant to this offering to be part of a disproportionate distribution, as contemplated in Code Section 305(b)(2). The Company intends to take the position that the outstanding options, warrants and similar equity-based awards do not cause the subscription rights issued pursuant to this rights offering to be part of a disproportionate distribution, in which case the Company believes the discussion set forth in *Receipt of Subscription Rights Assuming the Rights Offering is Considered Non-Taxable*, is applicable to all Shareholders.

If, contrary to the Company's position, the distribution or issuance to a Shareholder pursuant to this offering of subscription rights is considered part of a disproportionate distribution (or part of a distribution in lieu of money), then such distribution would generally be treated as taxable. With respect to U.S. holders of shares of our common stock, in general, a taxable distribution is treated as a dividend to the extent that the fair market value of the subscription rights distributed is allocable to our current and accumulated earnings and profits for the taxable year in which the subscription rights are distributed. Dividends received by corporate U.S. holders are taxable at ordinary corporate income tax rates, subject to any applicable dividends-received deduction. Subject to the discussion below respecting the additional Medicare tax (see, *Net Investment Income Tax*), qualified dividends received by non-corporate U.S. holders are taxable at a maximum rate of 20%, provided the holder meets applicable holding requirements. Assuming, for these purposes, the distribution pursuant to this offering of subscription rights is treated as a taxable distribution, we expect, but cannot determine with certainty prior to the consummation of the rights offering, that the Company will not have current and accumulative earnings and profits so as to cause the distribution contemplated in this rights offering to be treated as a taxable dividend to a U.S. holder of shares of our common stock. Any distributions to a U.S. holder of shares of our common stock in excess of the Company's current and accumulated earnings and profits will be treated as a tax-free return of such holder's basis in our common stock, and any further distributions in excess of such holder's basis in our common stock will be treated as gain from the sale or exchange of such common stock. With respect to U.S. holders of rights or warrants to acquire shares of our common stock, in general, the receipt of subscription rights which receipt is considered part of disproportionate distribution (or part of a distribution in lieu of money), would be taxable to such holder, and may be taxable to such holder at graduated ordinary income tax rates.

The remainder of the discussion in this section entitled, *Receipt of Subscription Rights Assuming the Rights Offering is Considered Taxable*, assumes that the receipt of subscription rights pursuant to this offering is considered part of a disproportionate distribution, and generally taxable to the receiving Shareholder.

Tax Basis in the Subscription Rights

If the receipt of subscription rights pursuant to this offering is taxable to the receiving Shareholder, then regardless of whether the receipt of subscription rights is treated as a dividend, as a tax-free return of basis, as gain from the sale or exchange of our common stock, or otherwise, a Shareholder's tax basis in the subscription rights received will be equal to the fair market value of such subscription rights.

Exercise of the Subscription Rights

If, the receipt of subscription rights pursuant to this offering is treated as taxable to the receiving Shareholder, then such Shareholder will not recognize any gain or loss upon the exercise of such subscription rights. In such a case, a Shareholder's tax basis of shares of our common stock acquired through the exercise of such subscription rights will equal the sum of (i) the subscription price paid for the shares of our common stock, *plus* (ii) the tax basis, if any, in the subscription rights immediately prior to such exercise. The holding period for shares of our common stock acquired through the exercise of the subscription rights will begin on the date the subscription rights are exercised.

Expiration of the Subscription Rights

If the receipt of subscription rights pursuant to this offering is taxable, and a Shareholder allows the subscription rights received in this offering to expire, then such Shareholder should recognize a short-term capital loss equal to such Shareholder's tax basis in the expired subscription rights. A Shareholder's ability to use any capital loss may be subject to limitations.

Net Investment Income Tax

In addition to the United States federal income tax, discussed above, certain Shareholders are subject to an additional 3.8% Medicare tax (the net investment income tax) on their net investment income to the extent that their net investment income, when added to their other modified adjusted gross income, exceeds certain thresholds (*e.g.*, \$250,000 for married individuals filing jointly). For these purposes, net investment income generally equals the taxpayer's gross investment income (*e.g.*, interest income, dividends and gain from the sale or other disposition of stock) reduced by deductions that are allocable to such income. The net investment income tax is determined in a manner which is different than the manner in which the U.S. federal income tax is determined. Shareholders are urged to consult their own tax advisors regarding the implications of the net investment income tax.

Ownership and Disposition of Shares of Our Common Stock

Distributions and Dividends

Distributions, if any, of cash or property on shares of our common stock acquired through the exercise of subscription rights will be taxable to a U.S. holder as a dividend to the extent such distribution is paid from our current and accumulated earnings and profits, as determined under U.S. federal income tax principles for the year in which the distribution is made. Dividends received by corporate U.S. holders are taxable at ordinary corporate income tax rates, subject to any applicable dividends-received deduction. Subject to the discussion below respecting the additional Medicare tax (see, *Net Investment Income Tax*), qualified dividends received by non-corporate U.S. holders are taxable at a maximum rate of 20%, provided the holder meets applicable holding requirements. Any distributions in excess of the Company's current and accumulated earnings and profits will be treated as a tax-free return of a U.S. holder's basis in our common stock, and any further distributions in excess of a U.S. holder's basis in our common stock will be treated as gain from the sale or exchange of such common stock.

Sale or Other Taxable Disposition

Upon the sale or other taxable disposition of shares of our common stock, a U.S. holder will generally recognize capital gain or loss equal to the difference between (i) the amount realized by such U.S. holder in connection with such sale or other taxable disposition, and (ii) such U.S. holder's adjusted tax basis in such stock. Such capital gain or loss will generally be long-term capital gain or loss if the U.S. holder's holding period respecting such stock is more than twelve months. U.S. holders who are individuals are eligible for preferential rates of taxation respecting their long-term capital gains. For example, long-term capital gains recognized by individuals are taxable at a maximum rate of twenty percent (20%), in addition to the additional Medicare tax (*see*, Net Investment Income Tax), if applicable. A U.S. holder's ability to use a capital loss may be subject to limitations.

Net Investment Income Tax

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-25-

**Banco Latinoamericano de Comercio Exterior, S. A.
and Subsidiaries**

Notes to consolidated financial statements (Unaudited)

Securities held-to-maturity

The amortized cost, related unrealized gross gain (loss) and fair value of securities held-to-maturity by country risk and type of debt are as follows:

(In thousands of US\$)	September 30, 2013			Fair Value
	Amortized Cost	Unrealized Gross Gain	Unrealized Gross Loss	
Corporate debt:				
Honduras	4,160	-	10	4,150
Panama	14,756	-	46	14,710
	18,916	-	56	18,860
Sovereign debt:				
Colombia	13,008	11	-	13,019
Total	31,924	11	56	31,879

(In thousands of US\$)	December 31, 2012			Fair Value
	Amortized Cost	Unrealized Gross Gain	Unrealized Gross Loss	
Corporate debt:				
Panama	12,660	-	-	12,660
Sovereign debt:				
Colombia	13,011	4	3	13,012
Honduras	6,442	9	19	6,432
Panama	2,000	45	-	2,045
	21,453	58	22	21,489
Total	34,113	58	22	34,149

Securities that show gross unrealized losses have had losses for less than 12 months. These losses are related mainly to changes in market interest rates and other market factors and not due to underlying credit concerns by the Bank about the issuers; therefore, such losses are considered temporary.

The amortized cost and fair value of securities held-to-maturity by contractual maturity as of September 30, 2013, are shown in the following table:

(In thousands of US\$)	Amortized Cost	Fair Value
Due within 1 year	16,860	16,850
After 1 year but within 5 years	15,064	15,029
	31,924	31,879

As of September 30, 2013 and December 31, 2012, securities held-to-maturity with a carrying value of \$9.2 million and \$19.4 million, respectively, were pledged to secure repurchase transactions accounted for as secured financings.

**Banco Latinoamericano de Comercio Exterior, S. A.
and Subsidiaries**

Notes to consolidated financial statements (Unaudited)

7. Investment funds

Until March 31, 2013, the Bank had an interest in two investment funds: Bladex Offshore Feeder Fund (98.74%) and Bladex Latam Fundo de Investimento Multimercado (92.38%). Prior to the sale of the Management Unit, the Bank consolidated these funds following applicable consolidation guidance.

The Bank determined that Bladex Offshore Feeder Fund was evaluated under the requirements of ASC 810-10 - Consolidation prior to the implementation of Statement of Financial Accounting Standards (“SFAS”) 167 (FIN 46 (R)) (ASU 2009-17 - Consolidation of Variable Interest Entities), because this fund met the deferral criteria in ASU 2010-10 "Amendments for Certain Investment Funds". Prior consolidation guidance required that a VIE be consolidated by the party that will absorb a majority of the entity’s expected losses or residual returns, or both.

Bladex Latam Fundo de Investimento Multimercado, a VIE, was consolidated line by line following the consolidation accounting policy of VIEs described in Note 2 (c).

As described in Note 3, on April 2, 2013, the Bank reached a definitive agreement to sell the Management Unit. The sale agreement included, among others, the transfer of the Bank's participation in BLX Brazil Ltd. and Bladex Asset Management Brazil – Gestora de Recursos Ltda., the termination of the investment advisory contracts between Bladex Asset Management Inc. and Bladex Offshore Feeder Fund and Bladex Capital Growth Fund, and the change of name of Bladex Offshore Feeder Fund to Alpha4X Offshore Feeder Fund, of Bladex Capital Growth Fund to Alpha4X Capital Growth Fund, and of Bladex Latam Fundo de Investimento Multimercado to Alpha4X Latam Fundo de Investimento Multimercado.

With the sale of the Management Unit, the Bank deconsolidated Bladex Latam Fundo de Investimento Multimercado because it ceased to be the primary beneficiary of that VIE. The deconsolidation of this fund affected the balance of the redeemable noncontrolling interest. Since the date of sale of the Management Unit, the Bank's investment in Alpha4X Latam Fundo de Investimento Multimercado is adjusted to record the Bank's participation in the profits and losses of that fund in the Net gain (loss) from investment funds trading line.

The Bank continues consolidating its investment in Alpha4X Feeder Fund, following the previous consolidation guide for VIEs applied to former Bladex Offshore Feeder Fund. At September 30, 2013, the Bank has a participation of 55.87% in that fund. As disclosed in Note 2 (e), when consolidating the Feeder, the Bank retains the specialized accounting for investment companies applied by the Feeder in the Master.

The following table summarizes the balances of investments in investment funds:

(In thousands of US\$)	September 30, 2013	December 31, 2012
Bladex Offshore Feeder Fund	-	105,888
Alpha4X Feeder Fund	119,171	-
Alpha4X Latam Fundo de Investimento Multimercado	5,834	-
	125,005	105,888

**Banco Latinoamericano de Comercio Exterior, S. A.
and Subsidiaries**

Notes to consolidated financial statements (Unaudited)

8.

Loans

The following table set forth details of the Bank's loan portfolio:

(In thousands of US\$)	September 30, 2013	December 31, 2012
Corporations:		
Private	2,484,029	2,202,613
State-owned	803,893	538,638
Banking and financial institutions:		
Private	1,686,727	1,775,938
State-owned	638,289	416,085
Middle-market companies:		
Private	577,260	681,912
Sovereign	367	100,370
Total	6,190,565	5,715,556

The composition of the loan portfolio by industry is as follows:

(In thousands of US\$)	September 30, 2013	December 31, 2012
Banking and financial institutions	2,325,016	2,192,023
Industrial	1,039,647	1,108,223
Oil and petroleum derived products	1,042,578	894,368
Agricultural	1,021,793	853,377
Services	246,485	210,925
Mining	10,000	22,122
Sovereign	367	100,370
Others	504,679	334,148
Total	6,190,565	5,715,556

Loans classified by debtor's credit quality indicators are as follows:

(In thousands of US\$) **September 30, 2013**

Rating ⁽¹⁾	Corporations		Banking and financial institutions		Middle-market companies	Sovereign Total	
	Private	State-owned	Private	State-owned	Private		
1-6	2,484,029	803,893	1,686,727	638,289	577,260	367	6,190,565
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-
Total	2,484,029	803,893	1,686,727	638,289	577,260	367	6,190,565

**Banco Latinoamericano de Comercio Exterior, S. A.
and Subsidiaries**

Notes to consolidated financial statements (Unaudited)

(In thousands of US\$) December 31, 2012

Rating ⁽¹⁾	Corporations		Banking and financial institutions		Middle-market companies	Sovereign	Total
	Private	State-owned	Private	State-owned	Private		
1-6	2,202,613	538,638	1,775,938	416,085	681,912	100,370	5,715,556
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-
Total	2,202,613	538,638	1,775,938	416,085	681,912	100,370	5,715,556

(1) Current ratings as of September 30, 2013 and December 31, 2012, respectively.

The remaining loan maturities are summarized as follows:

(In thousands of US\$)	September 30, 2013	December 31, 2012
Current:		
Up to 1 month	1,055,570	1,155,222
From 1 month to 3 months	1,321,295	1,475,201
From 3 months to 6 months	1,328,648	962,377
From 6 months to 1 year	1,002,549	752,822
From 1 year to 2 years	864,395	662,511
From 2 years to 5 years	618,108	692,884
More than 5 years	-	<u>14,539</u>
	6,190,565	5,715,556
Delinquent	-	-
Total	6,190,565	5,715,556

As of September 30, 2013 and December 31, 2012, there were no impaired loans.

**Banco Latinoamericano de Comercio Exterior, S. A.
and Subsidiaries**

Notes to consolidated financial statements (Unaudited)

The following table provides a breakdown of loans by country risk:

(In thousands of US\$)	September 30, 2013	December 31, 2012
Country:		
Argentina	341,422	222,159
Belgium	34,524	30,692
Brazil	1,739,324	1,773,401
Chile	281,675	309,712
Colombia	542,056	450,037
Costa Rica	443,413	196,857
Dominican Republic	237,396	110,688
Ecuador	130,502	173,782
El Salvador	83,136	66,013
France	1,740	59,501
Guatemala	298,885	273,051
Honduras	46,208	70,701
Jamaica	39,899	9,772
Mexico	700,287	495,954
Netherlands	64,632	77,336
Nicaragua	3,827	10,169
Panama	214,862	277,144
Paraguay	71,074	27,060
Peru	555,280	841,032
Spain	-	9,695
Trinidad and Tobago	200,000	119,347
United States of America	5,300	2,925
Uruguay	155,123	108,528
	6,190,565	5,715,556

The fixed and floating interest rate distribution of the loan portfolio is as follows:

(In thousands of US\$)	September 30, 2013	December 31, 2012
Fixed interest rates	3,378,519	3,282,876

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Floating interest rates	2,812,046	2,432,680
	6,190,565	5,715,556

As of September 30, 2013 and December 31, 2012, 89% and 92%, respectively, of the loan portfolio at fixed interest rates has remaining maturities of less than 180 days.

At September 30, 2013 and December 31, 2012, the Bank did not have loans in non-accrual status.

-30-

**Banco Latinoamericano de Comercio Exterior, S. A.
and Subsidiaries**

Notes to consolidated financial statements (Unaudited)

Following is an analysis of loans in non-accrual status with impaired balance as of September 30, 2013 and December 31, 2012:

<i>(In thousands of US\$)</i>	September 30, 2013				Three months ended September 30, 2013	Nine months ended September 30, 2013
	Recorded investment	Unpaid principal balance	Related allowance	Average principal loan balance	Interest income recognized	Interest income recognized
With an allowance recorded Private corporations	-	-	-	-	-	-
Total	-	-	-	-	-	-

<i>(In thousands of US\$)</i>	December 31, 2012				Three months ended September 30, 2012	Nine months ended September 30, 2012
	Recorded investment	Unpaid principal balance	Related allowance	Average principal loan balance	Interest income recognized	Interest income recognized
With an allowance recorded Private corporations	-	-	-	-	541	1,598
Total	-	-	-	-	541	1,598

As of September 30, 2013 and December 31, 2012, there were no impaired loans without related allowance.

As of September 30, 2013 and December 31, 2012, the Bank did not have any troubled debt restructurings.

The following table presents an aging analysis of the loan portfolio:

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(In thousands of US\$)	September 30, 2013				Total Past Due	Delinquent	Current	Total Loans
	91-120 days	121-150 days	151-180 days	Greater than 180 days				
Corporations	-	-	-	-	-	-	3,287,922	3,287,922
Banking and financial institutions	-	-	-	-	-	-	2,325,016	2,325,016
Middle-market companies	-	-	-	-	-	-	577,260	577,260
Sovereign	-	-	-	-	-	-	367	367
Total	-	-	-	-	-	-	6,190,565	6,190,565

(In thousands of US\$)	December 31, 2012				Total Past Due	Delinquent	Current	Total Loans
	91-120 days	121-150 days	151-180 days	Greater than 180 days				
Corporations	-	-	-	-	-	-	2,741,251	2,741,251
Banking and financial institutions	-	-	-	-	-	-	2,192,023	2,192,023
Middle-market companies	-	-	-	-	-	-	681,912	681,912
Sovereign	-	-	-	-	-	-	100,370	100,370
Total	-	-	-	-	-	-	5,715,556	5,715,556

**Banco Latinoamericano de Comercio Exterior, S. A.
and Subsidiaries**

Notes to consolidated financial statements (Unaudited)

As of September 30, 2013 and December 31, 2012, the Bank has credit transactions in the normal course of business with 21% and 29%, respectively, of its Class “A” and “B” stockholders. All transactions are made based on arm’s-length terms and subject to prevailing commercial criteria and market rates and are subject to all of the Bank’s Corporate Governance and control procedures. As of September 30, 2013 and December 31, 2012, approximately 13% and 18%, respectively, of the outstanding loan portfolio is placed with the Bank’s Class “A” and “B” stockholders and their related parties. As of September 30, 2013, the Bank was not directly or indirectly owned or controlled by another corporation or any foreign government, and no Class “A” or “B” shareholder was the registered owner of more than 3.5% of the total outstanding shares of the voting capital stock of the Bank.

During the nine months ended September 30, 2013 and 2012, the Bank sold loans with a book value of \$59.2 million and \$72.2 million, respectively.

9. Allowance for credit losses

The Bank classifies the allowance for credit losses into two components as follows:

a) Allowance for loan losses:

Following tables disclose the activity in the allowance for loan losses during the three and nine month periods ended September 30, 2013 and 2012:

(In thousands of US\$)

Three months ended September 30, 2013

	Corporate	Banking and financial institutions	Middle- market companies	Sovereign	Total
Balance at beginning of the period	34,286	25,327	8,540	3	68,156
Provision (reversal of provision) for loan losses	(3,774)	9,504	(1,827)	(2)	3,901
Loan recoveries and other	-	1	-	-	1
Loans written-off	-	-	-	-	-

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Balance at end of the period	30,512	34,832	6,713	1	72,058
Components:					
Generic allowance	30,512	34,832	6,713	1	72,058
Specific allowance	-	-	-	-	-
Total allowance for loan losses	30,512	34,832	6,713	1	72,058

(In thousands of US\$)

Three months ended September 30, 2012

	Corporate	Banking and financial institutions	Middle- market companies	Sovereign	Total
Balance at beginning of the period	47,841	25,953	8,259	97	82,150
Provision (reversal of provision) for loan losses	(803)	(226)	1,089	521	581
Loan recoveries and other	-	-	245	-	245
Loans written-off	-	-	-	-	-
Balance at end of the period	47,038	25,727	9,593	618	82,976
Components:					
Generic allowance	37,438	25,727	9,593	618	73,376
Specific allowance	9,600	-	-	-	9,600
Total allowance for loan losses	47,038	25,727	9,593	618	82,976

-32-

**Banco Latinoamericano de Comercio Exterior, S. A.
and Subsidiaries**

Notes to consolidated financial statements (Unaudited)

(In thousands of US\$)	Nine months ended September 30, 2013				
	Corporate	Banking and financial institutions	Middle- market companies	Sovereign	Total
Balance at beginning of the period	32,488	28,836	10,887	765	72,976
Provision (reversal of provision) for loan losses	(1,976)	5,993	(4,174)	(764)	(921)
Loan recoveries and other	-	3	-	-	3
Loans written-off	-	-	-	-	-
Balance at end of the period	30,512	34,832	6,713	1	72,058
<u>Components:</u>					
Generic allowance	30,512	34,832	6,713	1	72,058
Specific allowance	-	-	-	-	-
Total allowance for loan losses	30,512	34,832	6,713	1	72,058

(In thousands of US\$)	Nine months ended September 30, 2012				
	Corporate	Banking and financial institutions	Middle- market companies	Sovereign	Total
Balance at beginning of the period	48,865	30,523	8,952	207	88,547
Provision (reversal of provision) for loan losses	3,995	(4,813)	396	411	(11)
Loan recoveries and other	-	17	245	-	262
Loans written-off	(5,822)	-	-	-	(5,822)
Balance at end of the period	47,038	25,727	9,593	618	82,976
<u>Components:</u>					
Generic allowance	9,600	-	-	-	9,600
Specific allowance	37,438	25,727	9,593	618	73,376
Total allowance for loan losses	47,038	25,727	9,593	618	82,976

Provision (reversal of provision) of generic allowance for credit losses are mostly related to changes in volume and composition of the credit portfolio. The net decrease in the generic allowance for loan losses in 2013 was primarily due to an increased exposure in countries, customers and type of transactions with better ratings and a decreased exposure in those with lower ratings.

**Banco Latinoamericano de Comercio Exterior, S. A.
and Subsidiaries**

Notes to consolidated financial statements (Unaudited)

Following is a summary of loan balances and reserves for loan losses:

(In thousands of US\$)	September 30, 2013				
	Corporations	Banking and financial institutions	Middle-market companies	Sovereign	Total
Allowance for loan losses					
Generic allowance	30,512	34,832	6,713	1	72,058
Specific allowance	-	-	-	-	-
Total of allowance for loan losses	30,512	34,832	6,713	1	72,058
Loans					
Loans with generic allowance	3,287,922	2,325,016	577,260	367	6,190,565
Loans with specific allowance	-	-	-	-	-
Total loans	3,287,922	2,325,016	577,260	367	6,190,565

(In thousands of US\$)	December 31, 2012				
	Corporations	Banking and financial institutions	Middle-market companies	Sovereign	Total
Allowance for loan losses					
Generic allowance	32,488	28,836	10,887	765	72,976
Specific allowance	-	-	-	-	-
Total of allowance for loan losses	32,488	28,836	10,887	765	72,976
Loans					
Loans with generic allowance	2,741,251	2,192,023	681,912	100,370	5,715,556
Loans with specific allowance	-	-	-	-	-
Total loans	2,741,251	2,192,023	681,912	100,370	5,715,556

b) Reserve for losses on off-balance sheet credit risk:

(In thousands of US\$)	Three months ended September 30,	
	2013	2012
Balance at beginning of the period	12,389	9,986
	(5,136)	(3,609)

Reversal of provision for losses on off-balance
sheet credit risk

Balance at end of the period	7,253	6,377
------------------------------	-------	-------

(In thousands of US\$)	Nine months ended	
	September 30, 2013	2012
Balance at beginning of the period	4,841	8,887
Provision (reversal of provision) for losses on off-balance sheet credit risk	2,412	(2,510)
Balance at end of the period	7,253	6,377

The reserve for losses on off-balance sheet credit risk reflects the Bank's Management estimate of probable losses on off-balance sheet credit risk items such as: confirmed letters of credit, stand-by letters of credit, guarantees and credit commitments (see Note 15). The 2013's net increase in the reserve for losses on off-balance sheet credit risk was primarily due to changes in volume, composition, and risk profile of the portfolio.

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

10.**Deposits**

The remaining maturity profile of the Bank's deposits is as follows:

(In thousands of US\$)	September 30, 2013	December 31, 2012
Demand	47,155	131,875
Up to 1 month	1,631,125	1,194,102
From 1 month to 3 months	774,386	540,619
From 3 months to 6 months	286,043	281,120
From 6 months to 1 year	70,000	152,000
From 1 year to 2 years	6,000	7,000
From 2 years to 5 years	-	10,544
	2,814,709	2,317,260

The following table presents additional information about deposits:

(In thousands of US\$)	September 30, 2013	December 31, 2012
Aggregate amounts of time deposits of \$100,000 or more	2,767,554	2,185,277
Aggregate amounts of deposits in offices outside Panama	225,326	229,170
Interest expense paid to deposits in offices outside Panama	967	1,332

11.**Securities sold under repurchase agreements**

The Bank's financing transactions under repurchase agreements amounted to \$187.7 million and \$158.4 million as of September 30, 2013 and December 31, 2012, respectively.

During the nine months ended September 30, 2013 and 2012, interest expense related to financing transactions under repurchase agreements totaled \$1.0 million and \$1.5 million, respectively. These expenses are included in the interest expense – short-term borrowings and debt line in the consolidated statements of income.

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

12. Short-term borrowings and debt

The breakdown of short-term borrowings and debt, together with contractual interest rates, is as follows:

(In thousands of US\$)	September 30, 2013	December 31, 2012
Borrowings:		
At fixed interest rates	1,081,435	1,181,133
At floating interest rates	970,123	267,890
Total borrowings	2,051,558	1,449,023
Debt:		
At fixed interest rates	304,349	-
At floating interest rates	110,000	-
Total debt	414,349	-
Total short-term borrowings and debt	2,465,907	1,449,023
Average outstanding balance during the period	1,876,512	967,629
Maximum balance at any month-end	2,632,541	1,449,023
Range of fixed interest rates on borrowings and debt in U.S. dollars	<u>0.58% to 1.69</u> %	<u>0.75% to 1.92</u> %
Range of floating interest rates on borrowings and debt in U.S. dollars	0.71% to 1.37 %	<u>1.06% to 1.99</u> %
Fixed interest rate on borrowings in Euros	-	0.70 %
Fixed interest rate on borrowings in Mexican pesos	<u>4.63% to 4.64</u> %	-
Floating interest rate on borrowings in Mexican pesos	4.26 %	<u>5.14% to 5.25</u> %
Fixed interest rate on debt in Japanese yens	0.75 %	-
Fixed interest rate on debt in Swiss francs	0.80 %	-
Weighted average interest rate at end of the period	1.12 %	1.48 %
Weighted average interest rate during the period	1.26 %	1.79 %

The balances of short-term borrowings and debt by currency, is as follows:

(In thousands of US\$)	September 30, <u>2013</u>	December 31, <u>2012</u>
Currency		
U.S. dollar	2,333,500	1,365,500
Euro	-	39,633
Mexican peso	38,843	43,890
Japanese yen	5,088	-
Swiss franc	88,476	-
Total	2,465,907	1,449,023

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

13. Long-term borrowings and debt

Borrowings consist of long-term and syndicated loans obtained from international banks. Debt instruments consist of Euro-Notes and issuances in Latin America. The breakdown of borrowings and long-term debt (original maturity of more than one year), together with contractual interest rates, is as follows:

(In thousands of US\$)	September 30, 2013	December 31, 2012		
Borrowings:				
At fixed interest rates with due dates in June 2015	25,000	1,435		
At floating interest rates with due dates from October 2013 to August 2016	491,195	1,296,785		
Total borrowings	516,195	1,298,220		
Debt:				
At fixed interest rates with due dates from November 2014 to April 2017	444,645	453,373		
At floating interest rates with due dates from March 2015 to July 2016	177,325	153,947		
Total debt	621,970	607,320		
Total long-term borrowings and debt outstanding	1,138,165	1,905,540		
Average outstanding balance during the period	1,372,386	1,893,580		
Maximum outstanding balance at any month-end	1,893,149	2,152,584		
Fixed interest rates on d borrowings and debt in U.S. dollars	<u>1.50% to 3.75</u>	%	3.75	%
Range of floating interest rates on borrowings and debt in U.S. dollars	<u>0.53% to 1.80</u>	%	<u>0.68% to 2.40</u>	%
Range of fixed interest rates on borrowings and debt in Mexican pesos	-		<u>7.60% to 9.90</u>	%
Range of floating interest rates on borrowings and debt in Mexican pesos	<u>4.96% to 5.54</u>	%	<u>5.50% to 6.34</u>	%
Fixed interest rate on debt in Peruvian nuevos soles	6.50	%	6.50	%

Weighted average interest rate at the end of the period	3.11	%	2.92	%
Weighted average interest rate during the period	3.09	%	2.74	%

-37-

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

The balances of long-term borrowings and debt by currency, is as follows:

(In thousands of US\$)	September 30, <u>2013</u>	December 31, <u>2012</u>
<u>Currency</u>		
U.S. dollar	871,910	1,518,592
Mexican peso	222,090	338,760
Peruvian nuevo sol	44,165	48,188
Total	1,138,165	1,905,540

The Bank's funding activities include: (i) Euro Medium Term Note Program ("EMTN"), which may be used to issue notes for up to \$2.3 billion, with maturities from 7 days up to a maximum of 30 years, at fixed or floating interest rates, or at discount, and in various currencies. The notes are generally issued in bearer or registered form through one or more authorized financial institutions; (ii) Short-and Long-Term Notes "Certificados Bursatiles" Program (the "Mexico Program") in the Mexican local market, registered with the Mexican National Registry of Securities maintained by the National Banking and Securities Commission in Mexico ("CNBV", for its acronym in Spanish), for an authorized aggregate principal amount of 10 billion Mexican pesos with maturities from one day to 30 years; (iii) a Program in Peru to issue corporate bonds under a private offer in Peruvian nuevos soles ("PEN"), offered exclusively to institutional investors domiciled in the Republic of Peru, for an maximum aggregate limit of the equivalent of \$300 million, with different maturities and interest rate structures.

Some borrowing agreements include various events of default and covenants related to minimum capital adequacy ratios, incurrence of additional liens, and asset sales, as well as other customary covenants, representations and warranties. As of September 30, 2013, the Bank was in compliance with all covenants.

The future remaining maturities of long-term borrowings and debt outstanding as of September 30, 2013, are as follows:

(In thousands of US\$)

Due in: Outstanding

2013	25,369
2014	331,992
2015	177,325
2016	203,000
2017	400,479
	1,138,165

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

14. Earnings per share

The following table presents a reconciliation of the income and share data used in the basic and diluted earnings per share (“EPS”) computations for the dates indicated:

(In thousands of US\$, except per share amounts)

	Three months ended September 30		Nine months ended September 30	
	2013	2012	2013	2012
Net income from continuing operations attributable to Bladex stockholders for both basic and diluted EPS	22,826	13,140	60,847	69,045
Net loss from discontinued operations	-	(130)	(4)	(591)
Net income attributable to Bladex stockholders for both basic and diluted EPS	22,826	13,010	60,843	68,454
Basic earnings per share from continuing operations	0.59	0.35	1.59	1.83
Diluted earnings per share from continuing operations	0.59	0.34	1.58	1.83
Basic loss per share from discontinued operations	-	(0.00)	(0.00)	(0.02)
Diluted loss per share from discontinued operations	-	(0.00)	(0.00)	(0.02)
Basic earnings per share	0.59	0.34	1.59	1.81
Diluted earnings per share	0.59	0.34	1.58	1.81
Weighted average common shares outstanding - applicable to basic	38,459	38,031	38,364	37,716
Effect of dilutive securities ⁽¹⁾ :				
Stock options and restricted stock units plans	213	215	96	97
Adjusted weighted average common shares outstanding applicable to diluted EPS	38,672	38,246	38,460	37,813

(1) As of September 30, 2013 and 2012, the computation of earnings per share did not exclude any weighted-average options.

15. Financial instruments with off-balance sheet credit risk

In the normal course of business, to meet the financing needs of its customers, the Bank is party to financial instruments with off-balance sheet credit risk. These financial instruments involve, to varying degrees, elements of credit and market risk in excess of the amount recognized in the consolidated balance sheet. Credit risk represents the possibility of loss resulting from the failure of a customer to perform in accordance with the terms of a contract.

The Bank's outstanding financial instruments with off-balance sheet credit risk were as follows:

(In thousands of US\$)	September 30, 2013	December 31, 2012
Confirmed letters of credit	164,812	106,415
Stand-by letters of credit and guarantees - Commercial risk	80,126	25,167
Credit commitments	98,500	103,294
	343,438	234,876

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

As of September 30, 2013, the remaining maturity profile of the Bank's outstanding financial instruments with off-balance sheet credit risk is as follows:

(In thousands of US\$)	
Maturities	Amount
Within 1 year	224,266
From 1 to 2 years	95,655
From 2 to 5 years	22,895
After 5 years	622
	343,438

As of September 30, 2013 and December 31, 2012 the breakdown of the Bank's off-balance sheet exposure by country risk is as follows:

(In thousands of US\$)	September 30, 2013	December 31, 2012
Country:		
Argentina	25,817	-
Bolivia	-	820
Brazil	17,500	23,630
Chile	6,084	6,084
Colombia	59,430	9,098
Costa Rica	1,174	1,000
Dominican Republic	108	1,535
Ecuador	81,748	79,760
El Salvador	2,062	625
Germany	36	-
Guatemala	42,484	180
Honduras	412	562
Mexico	18,516	27,289

Netherlands	17,833	-
Panama	33,720	58,219
Paraguay	57	-
Peru	23,409	2,843
Switzerland	1,000	-
United Kingdom	70	-
Uruguay	10,946	-
Venezuela	1,032	23,231
	343,438	234,876

Letters of credit and guarantees

The Bank, on behalf of its client base, advises and confirms letters of credit to facilitate foreign trade transactions. When confirming letters of credit, the Bank adds its own unqualified assurance that the issuing bank will pay and that if the issuing bank does not honor drafts drawn on the credit, the Bank will. The Bank provides stand-by letters of credit and guarantees, which are issued on behalf of institutional customers in connection with financing between its customers and third parties. The Bank applies the same credit policies used in its lending process, and once issued the commitment is irrevocable and remains valid until its expiration. Credit risk arises from the Bank's obligation to make payment in the event of a customer's contractual default to a third party. Risks associated with stand-by letters of credit and guarantees are included in the evaluation of the Bank's overall credit risk.

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

Credit commitments

Commitments to extend credit are binding legal agreements to lend to customers. Commitments generally have fixed expiration dates or other termination clauses and require payment of a fee to the Bank. As some commitments expire without being drawn down, the total commitment amounts do not necessarily represent future cash requirements.

16. Derivative financial instruments for hedging purposes

As of September 30, 2013 and December 31, 2012, quantitative information on derivative financial instruments held for hedging purposes is as follows:

(In thousands of US\$)	September 30, 2013			December 31, 2012		
	Nominal Amount	Fair Value ⁽¹⁾ Asset	Liability	Nominal Amount	Fair Value ⁽¹⁾ Asset	Liability
Fair value hedges:						
Interest rate swaps	544,472	4,533	3,782	480,000	8,319	6,600
Cross-currency interest rate swaps	255,426	2,677	5,337	236,866	3,525	4,665
Cash flow hedges:						
Interest rate swaps	343,000	-	965	-	-	-
Cross-currency interest rate swaps	126,308	5,038	-	42,001	7,333	23
Forward foreign exchange	111,711	1,945	202	75,733	62	411
Net investment hedges:						
Forward foreign exchange	5,473	-	334	6,196	-	48
Total	1,386,390	14,193	10,620	840,796	19,239	11,747
Net gain on the ineffective portion of hedging activities ⁽²⁾		299		440		

(1)

The fair value of assets and liabilities is reported within the derivative financial instruments used for hedging - receivable and payable lines in the consolidated balance sheets, respectively.

- (2) Gains and losses resulting from ineffectiveness and credit risk in hedging activities are reported within the derivative financial instruments and hedging line in the consolidated statements of income.

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

The gains and losses resulting from activities of derivative financial instruments and hedging recognized in the consolidated statements of income are presented below:

Three months ended September 30, 2013

(In thousands of US\$)

	Gain (loss) recognized in OCI (effective portion)	Classification of gain (loss)	Gain (loss) reclassified from accumulated OCI to the statements of income (effective portion)	Gain (loss) recognized on derivatives (ineffective portion)
Derivatives – cash flow hedge				
Interest rate swaps	(173))		
Cross-currency interest rate swaps	2,826	Gain (loss) on foreign currency exchange	-	-
		Interest income – loans	(8))
				-
Forward foreign exchange	1,588	Interest income – loans	(736))
		Interest expense - borrowings	-	-
		Gain (loss) on foreign currency exchange	1,412	-
Total	4,241		668	-
Derivatives – net investment hedge				
Forward foreign exchange	(105))		
		Gain (loss) on foreign currency exchange	-	-
Total	(105))	-	-

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Three months ended September 30, 2012

(In thousands of US\$)	Gain (loss) recognized in OCI (effective portion)	Classification of gain (loss)	Gain (loss) reclassified from accumulated OCI to the statements of income (effective portion)	Gain (loss) recognized on derivatives (ineffective portion)
<u>Derivatives – cash flow hedge</u>				
Interest rate swaps	-			
Cross-currency interest rate swaps	996	Gain (loss) on foreign currency exchange	1,167	-
		Interest income – loans	(349)	-
Forward foreign exchange	(2,060)	Interest expense - borrowings	259	-
		Gain (loss) on foreign currency exchange	(578)	-
Total	(1,064)		499	-
<u>Derivatives – net investment hedge</u>				
Forward foreign exchange	(30)	Gain (loss) on foreign currency exchange	-	-
Total	(30)		-	-

-42-

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

Nine months ended September 30, 2013

(In thousands of US\$)

	Gain (loss) recognized in OCI (effective portion)	Classification of gain (loss)	Gain (loss) reclassified from accumulated OCI to the statements of income (effective portion)	Gain (loss) recognized on derivatives (ineffective portion)
Derivatives – cash flow hedge				
Interest rate swaps	(921))		
Cross-currency interest rate swaps	(2,374))	-	-
		Gain (loss) on foreign currency exchange		
		Interest income – loans	(8)) -
		Interest income – loans	(766)) -
Forward foreign exchange	1,648	)	31	-
		Interest expense – borrowings		
		Gain (loss) on foreign currency exchange	(80)) -
Total	(1,647)	)	(823)) -
Derivatives – net investment hedge				
Forward foreign exchange	246)	-	-
		Gain (loss) on foreign currency exchange		
Total	246)	-	-

Nine months ended September 30, 2012

(In thousands of US\$)

Gain (loss)
reclassified
from
accumulated
Gain (loss)

	Gain (loss) recognized in OCI (effective portion)	Classification of gain (loss)	OCI to the statements of income (effective portion)	recognized on derivatives (ineffective portion)
Derivatives – cash flow hedge				
Interest rate swaps	217			
Cross-currency interest rate swaps	2,412	Gain (loss) on foreign currency exchange	1,637	-
Forward foreign exchange	(3,181)	Interest income – loans) Interest expense – borrowings Gain (loss) on foreign currency exchange	(375 771 (2,273)))) - - -
Total	(552)	)	(240)) -
Derivatives – net investment hedge				
Forward foreign exchange	165	Gain (loss) on foreign currency exchange	-	-
Total	165		-	-

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

The Bank recognized in earnings the gain (loss) on derivative financial instruments and the gain (loss) of the hedged asset or liability related to qualifying fair value hedges, as follows:

Three months ended September 30, 2013

(In thousands of US\$)

	Classification in statements of <u>income</u>	Gain (loss) on <u>derivatives</u>	Gain (loss) on <u>hedged item</u>	Net gain <u>(loss)</u>
<u>Derivatives - fair value hedge</u>				
Interest rate swaps	Interest income – securities available-for-sale	(885)	1,479	594
	Interest income – loans	(18)	143	125
	Interest expense – borrowings and debt	802	(4,054)	(3,252)
	Derivative financial instruments and hedging (ineffectiveness)	1,964	(1,527)	437
Cross-currency interest rate swaps	Interest income – loans	(249)	559	310
	Interest expense – borrowings and debt	1,704	(3,094)	(1,390)
	Derivative financial instruments and hedging (ineffectiveness)	(3,556)	2,559	(997)
	Gain (loss) on foreign currency exchange	(654)	606	(48)
		(892)	(3,329)	(4,221)

Three months ended September 30, 2012

(In thousands of US\$)

	Classification in statements of <u>income</u>	Gain (loss) on <u>derivatives</u>	Gain (loss) on <u>hedged item</u>	Net gain <u>(loss)</u>
<u>Derivatives - fair value hedge</u>				
Interest rate swaps	Interest income – securities available-for-sale	(714)	1,279	565
	Interest expense – borrowings and debt	506	(143)	363

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	Derivative financial instruments and hedging (ineffectiveness)	(72) -	(72)
Cross-currency interest rate swaps	Interest income – loans	(68) 167	99
	Interest expense – borrowings and debt	2,193	(2,763)	(570)
	Derivative financial instruments and hedging (ineffectiveness)	(1,788	) -	(1,788)
	Gain (loss) on foreign currency exchange	7,686	(7,612)	74
		7,743	(9,072)	(1,329)

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

Nine months ended September 30, 2013

(In thousands of US\$)	<u>Classification in statements of income</u>	<u>Gain (loss) on derivatives</u>	<u>Gain (loss) on hedged item</u>	<u>Net gain (loss)</u>
<u>Derivatives - fair value hedge</u>				
Interest rate swaps	Interest income – securities available-for-sale	(2,415)	3,684	1,269
	Interest income – loans	(23)	217	194
	Interest expense – borrowings and debt	2,314	(12,151)	(9,837)
	Derivative financial instruments and hedging (ineffectiveness)	(4,467)	4,615	148
Cross-currency interest rate swaps	Interest income – loans	(505)	1,107	602
	Interest expense – borrowings and debt	5,435	(9,617)	(4,182)
	Derivative financial instruments and hedging (ineffectiveness)	(6,057)	6,207	150
	Gain (loss) on foreign currency exchange	(430)	458	28
		(6,148)	(5,480)	(11,628)

Nine months ended September 30, 2012

(In thousands of US\$)	<u>Classification in statements of income</u>	<u>Gain (loss) on derivatives</u>	<u>Gain (loss) on hedged item</u>	<u>Net gain (loss)</u>
<u>Derivatives - fair value hedge</u>				
Interest rate swaps	Interest income – securities available-for-sale	(2,259)	3,675	1,416
	Interest expense – borrowings and debt	951	(4,056)	(3,105)
	Derivative financial instruments and hedging (ineffectiveness)	104	-	104
	Interest income – loans	(142)	349	207

Cross-currency interest rate
swaps

Interest expense – borrowings and debt	6,117	(10,504)	(4,387)
Derivative financial instruments and hedging (ineffectiveness)	436	-	436
Gain (loss) on foreign currency exchange	8,291	(8,449)	(158)
	13,498	(18,985)	(5,487)

For control purposes, derivative instruments are recorded at their nominal amount (“notional amount”) in memorandum accounts. Interest rate swaps are made either in a single currency or cross currency for a prescribed period to exchange a series of interest rate flows, which involve fixed for floating interest payments, and viceversa. The Bank also engages in certain foreign exchange trades to serve customers’ transaction needs and to manage the foreign currency risk. All such positions are hedged with an offsetting contract for the same currency. The Bank manages and controls the risks on these foreign exchange trades by establishing counterparty credit limits by customer and by adopting policies that do not allow for open positions in the credit and investment portfolio. The Bank also uses foreign currency exchange contracts to hedge the foreign exchange risk associated with the Bank’s equity investment in a non-U.S. dollar functional currency foreign subsidiary. Derivative and foreign exchange instruments negotiated by the Bank are executed mainly over-the-counter (OTC). These contracts are executed between two counterparties that negotiate specific agreement terms, including notional amount, exercise price and maturity.

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

The maximum length of time over which the Bank has hedged its exposure to the variability in future cash flows on forecasted transactions is 7.74 years.

The Bank estimates that approximately \$710 thousand of losses reported in OCI as of September 30, 2013 related to forward foreign exchange contracts are expected to be reclassified into interest income as an adjustment to yield of hedged loans during the rest of 2013.

Types of Derivatives and Foreign Exchange Instruments

Interest rate swaps are contracts in which a series of interest rate flows in a single currency are exchanged over a prescribed period. The Bank has designated a portion of these derivative instruments as fair value hedges and a portion as cash flow hedges. Cross currency swaps are contracts that generally involve the exchange of both interest and principal amounts in two different currencies. The Bank has designated a portion of these derivative instruments as fair value hedges and a portion as cash flow hedges. Forward foreign exchange contracts represent an agreement to purchase or sell foreign currency at a future date at agreed-upon terms. The Bank has designated these derivative instruments as cash flow hedges and net investment hedges.

In addition to hedging derivative financial instruments, the Bank has derivative financial instruments held for trading purposes that have been disclosed in Note 5.

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

17. Accumulated other comprehensive income (loss)

As of September 30, 2013 and 2012 the breakdown of accumulated other comprehensive income (loss) related to investment securities available-for-sale and derivative financial instruments, and foreign currency translation is as follows:

(In thousands of US\$)	<u>Securities available- for-sale</u>	<u>Derivative financial instruments</u>	<u>Foreign currency translation adjustment, net of hedges</u>	Total
Balance as of January 1, 2013	933	(368)	(1,295)	(730)
Net unrealized gains (loss) arising from the period	(492)	233	-	(259)
Reclassification adjustment for (gains) loss included in net income ⁽¹⁾	(117)	165	-	48
Foreign currency translation adjustment, net	-	-	(1)	(1)
Other comprehensive income (loss) from the period	(609)	398	(1)	(212)
Balance as of March 31, 2013	324	30	(1,296)	(942)
Net unrealized gains (loss) arising from the period	(12,856)	(2,996)	-	(15,852)
Reclassification adjustment for (gains) loss included in net income ⁽¹⁾	(677)	252	24	(401)
Foreign currency translation adjustment, net	-	-	(207)	(207)
Other comprehensive loss from the period	(13,533)	(2,744)	(183)	(16,460)
Balance as of June 30, 2013	(13,209)	(2,714)	(1,479)	(17,402)
Net unrealized gains (loss) arising from the period	765	(887)	-	(122)
Reclassification adjustment for (gains) loss included in net income ⁽¹⁾	(517)	992	-	475
Foreign currency translation adjustment, net	-	-	(84)	(84)
Other comprehensive income (loss) from the period	248	105	(84)	269
Balance as of September 30, 2013	(12,961)	(2,609)	(1,563)	(17,133)
Balance as of January 1, 2012	(1,728)	(640)	(744)	(3,112)
Net unrealized gains arising from the period	7,710	140	-	7,850

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Reclassification adjustment for gains included in net income (1)	(3,841)	(926)	-	(4,767)
Foreign currency translation adjustment, net	-	-	(92)	(92)
Other comprehensive income (loss) from the period	3,869	(786)	(92)	2,991
Balance as of March 31, 2012	2,141	(1,426)	(836)	(121)
Net unrealized gains (loss) arising from the period	(611)	372	-	(239)
Reclassification adjustment for (gains) loss included in net income (1)	(1,934)	1,665	-	(269)
Foreign currency translation adjustment, net	-	-	5	5
Other comprehensive income (loss) from the period	(2,545)	2,037	5	(503)
Balance as of June 30, 2012	(404)	611	(831)	(624)
Net unrealized gains (loss) arising from the period	1,328	(1,064)	-	264
Reclassification adjustment for gains included in net income (1)	-	(502)	-	(502)
Foreign currency translation adjustment, net	-	-	(336)	(336)
Other comprehensive income (loss) from the period	1,328	(1,566)	(336)	(574)
Balance as of September 30, 2012	924	(955)	(1,167)	(1,198)

(1) Reclassification adjustments include amounts recognized in net income during the current period that had been part of other comprehensive income (loss) in this and previous periods.

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

The following table presents amounts reclassified from other comprehensive income to the net income of the period:

Three months ended September 30, 2013
(In thousands of US\$)

<u>Details about accumulated other comprehensive income components</u>	Amount reclassified from accumulated other comprehensive income	<u>Affected line item in the statement where net income is presented</u>
Realized gains (losses) on securities available-for-sale:	-	Interest income – securities available-for-sale
	-	Net gain on sale of securities available-for-sale
	517	Derivative financial instruments and hedging
	517	
Gain (loss) on derivative financial instruments:		
Forward foreign exchange	(745)	) Interest income - loans
	-	Interest expense - borrowings
	(247)	) Net gain (loss) on foreign currency exchange
	(992))
Loss on foreign currency translation adjustment	-	Net gain (loss) from discontinued operations

Three months ended September 30, 2012
(In thousands of US\$)

<u>Details about accumulated other comprehensive income components</u>	Amount reclassified from accumulated other comprehensive income	<u>Affected line item in the statement where net income is presented</u>
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Realized gains (losses) on securities
available-for-sale:

- Interest income – securities available-for-sale
- Net gain on sale of securities
- available-for-sale
- Net gain (loss) on foreign currency
- exchange

Gain (loss) on derivative financial instruments:

Forward foreign exchange

(348
260
590
502

) Interest income - loans
Interest expense - borrowings
Net gain (loss) on foreign currency
exchange

Loss on foreign currency translation adjustment

-

Net gain (loss) from discontinued operations

-48-

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

Nine months ended September 30, 2013
(In thousands of US\$)

<u>Details about accumulated other comprehensive income components</u>	<u>Amount reclassified from accumulated other comprehensive income</u>	<u>Affected line item in the statement where net income is presented</u>
Realized gains (losses) on securities available-for-sale:		
	1	Interest income – securities available-for-sale
	793	Net gain on sale of securities available-for-sale
	517	Net gain (loss) on foreign currency exchange
	1,311	
Gain (loss) on derivative financial instruments:		
Forward foreign exchange	(774)	) Interest income - loans
	31	Interest expense - borrowings
	(666)	) Net gain (loss) on foreign currency exchange
	(1,409))
Loss on foreign currency translation adjustment	(24)	) Net gain (loss) from discontinued operations

Nine months ended September 30, 2012
(In thousands of US\$)

<u>Details about accumulated other comprehensive income components</u>	<u>Amount reclassified from accumulated other comprehensive income</u>	<u>Affected line item in the statement where net income is presented</u>
Realized gains (losses) on securities available-for-sale:		

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	-	Interest income – securities available-for-sale
	5,775	Net gain on sale of securities available-for-sale
	-	Net gain (loss) on foreign currency exchange
	5,775	
Gain (loss) on derivative financial instruments:		
Forward foreign exchange	(473)	) Interest income - loans
	772	Interest expense - borrowings
	(536)	) Net gain (loss) on foreign currency exchange
	(237))
Loss on foreign currency translation adjustment	-	Net gain (loss) from discontinued operations

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

18. Offsetting of financial assets and liabilities

In the ordinary course of business, the Bank enters into derivative financial instrument transactions and securities sold under repurchase agreements under industry standards agreements. Depending on the collateral requirements stated in the contracts, the Bank and counterparties can receive or deliver collateral based on the fair value of the financial instruments transacted between parties. Collateral typically consists of cash deposits and securities. The master netting agreements include clauses that, in the event of default, provide for close-out netting, which allows all positions with the defaulting counterparty to be terminated and net settled with a single payment amount.

The following tables summarize financial assets and liabilities that have been offset in the consolidated balance sheet or are subject to master netting agreements:

a) Derivative financial instruments - assets

September 30, 2013
(In thousands of US\$)

Description	<u>Gross amounts of assets</u>	<u>Gross amounts offset in the balance sheet</u>	<u>Net amount of assets presented in the balance sheet</u>	Gross amounts not offset in the balance sheet		<u>Net amount</u>
				<u>Financial instruments</u>	<u>Cash collateral received</u>	
Derivative financial instruments	14,193	-	14,193	-	(1,050)	13,143

December 31, 2012
(In thousands of US\$)

Gross amounts not offset in the

Description	<u>Gross amounts of assets</u>	<u>Gross amount offset in the balance sheet</u>	<u>Net amount of assets presented in the balance sheet</u>	balance sheet <u>Financial instruments</u>	<u>Cash collateral received</u>	<u>Net amount</u>
Derivative financial instruments	19,385	(27)	19,358	-	(2,950)	16,408

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

The following table presents the reconciliation of assets that have been offset or are subject to master netting agreements to individual line items in the balance sheet as of September 30, 2013 and December 31, 2012:

(In thousands of US\$)	September 30, 2013			December 31, 2012		
	<u>Gross amounts of assets</u>	<u>Gross amounts offset in the balance sheet</u>	<u>Net amount of assets presented in the balance sheet</u>	<u>Gross amounts of assets</u>	<u>Gross amounts offset in the balance sheet</u>	<u>Net amount of assets presented in the balance sheet</u>
Derivative financial instruments:						
Trading assets	-	-	-	146	(27)	119
Derivative financial instruments used for hedging - receivable	14,193	-	14,193	19,239	-	19,239
Total derivative financial instruments	14,193	-	14,193	19,385	(27)	19,358

b) Financial liabilities and derivative financial instruments - liabilities

September 30, 2013

(In thousands of US\$)	<u>Gross amounts of liabilities</u>	<u>Gross amounts offset in the balance sheet</u>	<u>Net amount of liabilities presented in the balance sheet</u>	Gross amounts not offset in the balance sheet		
				<u>Financial instruments</u>	<u>Cash collateral pledged</u>	<u>Net amount</u>
Securities sold under repurchase agreements	187,725	-	187,725	(182,119)	(5,606)	-
Derivative financial instrument	10,628	-	10,628	-	(4,730)	5,878

Total 198,353 - 198,353 (182,119) (10,336) 5,878

December 31, 2012

(In thousands of US\$)

Description	Gross amounts of liabilities	Gross amounts offset in the balance sheet	Net amount of liabilities presented in the balance sheet	Gross amounts not offset in the balance sheet		
				Financial instruments	Cash collateral pledged	Net amount
Securities sold under repurchase agreements	158,374	-	158,374	(157,705)	(669)	-
Derivative financial instrument	44,078	(27)	44,051	-	(10,849)	33,202
Total	202,452	(27)	202,425	(157,705)	(11,518)	33,202

-51-

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

The following table presents the reconciliation of liabilities that have been offset or are subject to master netting agreements to individual line items in the balance sheet as of September 30, 2013 and December 31, 2012:

Description	September 30, 2013			December 31, 2012		
	<u>Gross amounts of liabilities</u>	<u>offset in the balance sheet</u>	<u>Net amount of liabilities presented in the balance sheet</u>	<u>Gross amounts of liabilities</u>	<u>offset in the balance sheet</u>	<u>Net amount of liabilities presented in the balance sheet</u>
Securities sold under repurchase agreements	187,725	-	187,725	158,374	-	158,374
Derivative financial instruments:						
Trading liabilities	8	-	8	32,331	(27)	32,304
Derivative financial instruments used for hedging - payable	10,620	-	10,620	11,747	-	11,747
Total derivative financial instruments	10,628	-	10,628	44,078	(27)	44,051

19. Fair value of financial instruments

The Bank determines the fair value of its financial instruments using the fair value hierarchy established in ASC Topic 820 - Fair Value Measurements and Disclosure, which requires the Bank to maximize the use of observable inputs (those that reflect the assumptions that market participants would use in pricing the asset or liability developed based on market information obtained from sources independent of the reporting entity) and to minimize the use of unobservable inputs (those that reflect the reporting entity's own assumptions about the assumptions market participants would use in pricing the asset or liability developed based on the best information available in the circumstances) when measuring fair value. Fair value is used on a recurring basis to measure assets and liabilities in which fair value is the primary basis of accounting. Additionally, fair value is used on a non-recurring basis to evaluate assets and liabilities for impairment or for disclosure purposes. Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Depending on the nature of the asset or liability, the Bank uses some valuation techniques and assumptions when estimating fair value. The Bank applied the following fair value hierarchy:

Level 1 – Assets or liabilities for which an identical instrument is traded in an active market, such as publicly-traded instruments or futures contracts.

Level 2 – Assets or liabilities valued based on observable market data for similar instruments, quoted prices in markets that are not active; or other observable inputs that can be corroborated by observable market data for substantially the full term of the asset or liability.

-52-

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

Level 3 – Assets or liabilities for which significant valuation assumptions are not readily observable in the market; instruments measured based on the best available information, which might include some internally-developed data, and considers risk premiums that a market participant would require.

When determining the fair value measurements for assets and liabilities that are required or permitted to be recorded at fair value, the Bank considers the principal or most advantageous market in which it would transact and considers the assumptions that market participants would use when pricing the asset or liability. When possible, the Bank uses active and observable markets to price identical assets or liabilities. When identical assets and liabilities are not traded in active markets, the Bank uses observable market information for similar assets and liabilities. However, certain assets and liabilities are not actively traded in observable markets and the Bank must use alternative valuation techniques to determine the fair value measurement. The frequency of transactions, the size of the bid-ask spread and the size of the investment are factors considered in determining the liquidity of markets and the relevance of observed prices in those markets.

When there has been a significant decrease in the volume or level of activity for a financial asset or liability, the Bank uses the present value technique which considers market information to determine a representative fair value in usual market conditions.

A description of the valuation methodologies used for assets and liabilities measured at fair value on a recurring basis, including the general classification of such assets and liabilities under the fair value hierarchy is presented below:

Trading assets and liabilities and securities available-for-sale

Trading assets and liabilities are carried at fair value, which is based upon quoted prices when available, or if quoted market prices are not available, on discounted expected cash flows using market rates commensurate with the credit

quality and maturity of the security.

Securities available-for-sale are carried at fair value, based on quoted market prices when available, or if quoted market prices are not available, based on discounted expected cash flows using market rates commensurate with the credit quality and maturity of the security.

When quoted prices are available in an active market, available-for-sale securities and trading assets and liabilities are classified in level 1 of the fair value hierarchy. If quoted market prices are not available or they are available in markets that are not active, then fair values are estimated based upon quoted prices of similar instruments, or where these are not available, by using internal valuation techniques, principally discounted cash flows models. Such securities are classified within level 2 of the fair value hierarchy.

Investment funds

The investment funds invest in trading assets and liabilities that are carried at fair value, which is based upon quoted market prices when available. For financial instruments for which quoted prices are not available, the investment funds use independent valuations from pricing providers that use their own proprietary valuation models that take into consideration discounted expected cash flows, using market rates commensurate with the credit quality and maturity of the security. These prices are compared to independent valuations from counterparties.

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

The investment funds are not traded in an active market and, therefore, representative market quotes are not readily available. Their fair value is adjusted on a monthly basis based on its financial results, its operating performance, its liquidity and the fair value of its long and short investment portfolio that are quoted and traded in active markets. Such investments are classified within level 2 of the fair value hierarchy.

Derivative financial instruments

The valuation techniques and inputs depend on the type of derivative and the nature of the underlying instrument. Exchange-traded derivatives that are valued using quoted prices are classified within level 1 of the fair value hierarchy.

For those derivative contracts without quoted market prices, fair value is based on internal valuation techniques using inputs that are readily observable and that can be validated by information available in the market. The principal technique used to value these instruments is the discounted cash flows model and the key inputs considered in this technique include interest rate yield curves and foreign exchange rates. These derivatives are classified within level 2 of the fair value hierarchy.

The fair value adjustments applied by the Bank to its derivative carrying values include credit valuation adjustments (“CVA”), which are applied to over-the-counter derivative instruments, in which the base valuation generally discounts expected cash flows using the London Interbank Offered Rate (“LIBOR”) interest rate curves. Because not all counterparties have the same credit risk as that implied by the relevant LIBOR curve, a CVA is necessary to incorporate the market view of both, counterparty credit risk and the Bank’s own credit risk, in the valuation.

Own-credit and counterparty CVA is determined using a fair value curve consistent with the Bank’s or counterparty credit rating. The CVA is designed to incorporate a market view of the credit risk inherent in the derivative portfolio.

However, most of the Bank's derivative instruments are negotiated bilateral contracts and are not commonly transferred to third parties. Derivative instruments are normally settled contractually, or if terminated early, are terminated at a value negotiated bilaterally between the counterparties. Therefore, the CVA (both counterparty and own-credit) may not be realized upon a settlement or termination in the normal course of business. In addition, all or a portion of the CVA may be reversed or otherwise adjusted in future periods in the event of changes in the credit risk of the Bank or its counterparties or due to the anticipated termination of the transactions.

Transfer of financial assets

Gains or losses on sale of loans depend in part on the carrying amount of the financial assets involved in the transfer, and its fair value at the date of transfer. The fair value of instruments is determined based upon quoted market prices when available, or are based on the present value of future expected cash flows using information related to credit losses, prepayment speeds, forward yield curves, and discounted rates commensurate with the risk involved.

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

Financial instruments measured at fair value on a recurring basis by caption on the consolidated balance sheets using the fair value hierarchy are described below:

(In thousands of US\$)	September 30, 2013			Total carrying value in the consolidated balance sheets
	Quoted market prices in an active market (Level 1)	Internally developed models with significant observable market information (Level 2)	Internally developed models with significant unobservable market information (Level 3)	
Assets				
Trading assets				
Sovereign bonds	-	-	-	-
Cross-currency swaps	-	-	-	-
Future contracts	-	-	-	-
Total trading assets	-	-	-	-
Securities available-for-sale				
Corporate debt	171,701	-	-	171,701
Sovereign debt	157,848	-	-	157,848
Total securities available-for-sale	329,549	-	-	329,549
Investment funds	-	125,005	-	125,005
Derivative financial instruments used for hedging - receivable				
Interest rate swaps	-	4,533	-	4,533
Cross-currency interest rate swaps	-	7,715	-	7,715
Forward foreign exchange	-	1,945	-	1,945
Total derivative financial instruments used for hedging - receivable	-	14,193	-	14,193
Total assets at fair value	329,549	139,198	-	468,747
Liabilities				
Trading liabilities				
Interest rate swaps	-	-	-	-

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Cross-currency interest rate swaps	-	8	-	8
Total trading liabilities	-	8	-	8
Derivative financial instruments used for hedging – payable				
Interest rate swaps	-	4,747	-	4,747
Cross-currency interest rate swaps	-	5,337	-	5,337
Forward foreign exchange	-	536	-	536
Total derivative financial instruments used for hedging - payable	-	10,620	-	10,620
Total liabilities at fair value	-	10,628	-	10,628

Securities available-for-sale with fair value of \$6,482 thousand as of September 30, 2013 were transferred during 2013 from level 2 to level 1 of the fair value hierarchy, because quoted prices of those securities are now available in an active market.

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

(In thousands of US\$)	December 31, 2012			Total carrying value in the consolidated balance sheets
	Quoted market prices in an active market (Level 1)	Internally developed models with significant observable market information (Level 2)	Internally developed models with significant unobservable market information (Level 3)	
Assets				
Trading assets				
Sovereign bonds	5,146	-	-	5,146
Cross-currency swaps	49	-	-	49
Forward foreign exchange	-	50	-	50
Future contracts	20	-	-	20
Total trading assets	5,215	50	-	5,265
Securities available-for-sale				
Corporate debt	17,386	-	-	17,386
Sovereign debt	165,355	276	-	165,631
Total securities available-for-sale	182,741	276	-	183,017
Investment fund	-	105,888	-	105,888
Derivative financial instruments used for hedging - receivable				
Interest rate swaps	-	8,319	-	8,319
Cross-currency interest rate swaps	-	10,858	-	10,858
Forward foreign exchange	-	62	-	62
Total derivative financial instruments used for hedging - receivable	-	19,239	-	19,239
Total assets at fair value	187,956	125,453	-	313,409
Liabilities				
Trading liabilities				
Interest rate swaps	-	100	-	100
Cross-currency interest rate swaps	-	32,182	-	32,182
Forward foreign exchange	-	22	-	22
Total trading liabilities	-	32,304	-	32,304

Derivative financial instruments used for hedging – payable				
Interest rate swaps	-	6,600	-	6,600
Cross-currency interest rate swaps	-	4,688	-	4,688
Forward foreign exchange	-	459	-	459
Total derivative financial instruments used for hedging - payable	-	11,747	-	11,747
Total liabilities at fair value	-	44,051	-	44,051

ASC Topic 825 - Financial Instruments requires disclosure of fair value of financial instruments including those assets and liabilities for which the Bank did not elect the fair value option. Bank's management uses its best judgment in estimating the fair value of the Bank's financial instruments; however, there are limitations in any estimation technique. The estimated fair value amounts have been measured as of their respective period-end. As such, the estimated fair values of these financial instruments subsequent to the respective reporting dates may be different than the amounts reported at each period-end.

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

The following information should not be interpreted as an estimate of the fair value of the Bank. Fair value calculations are only provided for a limited portion of the Bank's financial assets and liabilities. Due to a wide range of valuation techniques and the degree of subjectivity used in making the estimates, comparison of fair value information of the Bank and other companies may not be meaningful for comparative analysis.

The following methods and assumptions were used by the Bank's management in estimating the fair values of financial instruments whose fair value are not measured on a recurring basis:

Financial instruments with carrying value that approximates fair value

The carrying value of certain financial assets, including cash and due from banks, interest-bearing deposits in banks, customers' liabilities under acceptances, accrued interest receivable and certain financial liabilities including customer's demand and time deposits, securities sold under repurchase agreements, accrued interest payable, and acceptances outstanding, as a result of their short-term nature, are considered to approximate fair value. These instruments are classified in Level 2.

Securities held-to-maturity

The fair value has been based upon current market quotations, where available. If quoted market prices are not available, fair value has been estimated based upon quoted price of similar instruments, or where these are not available, on discounted expected cash flows using market rates commensurate with the credit quality and maturity of the security. These securities are classified in Levels 1 and 2.

Loans

The fair value of the loan portfolio, including impaired loans, is estimated by discounting future cash flows using the current rates at which loans would be made to borrowers with similar credit ratings and for the same remaining maturities, considering the contractual terms in effect as of December 31 of the relevant period. These assets are classified in Level 2.

Short and long-term borrowings and debt

The fair value of short and long-term borrowings and debt is estimated using discounted cash flow analysis based on the current incremental borrowing rates for similar types of borrowing arrangements, taking into account the changes in the Bank's credit margin. These liabilities are classified in Level 2.

Commitments to extend credit, stand-by letters of credit, and financial guarantees written

The fair value of commitments is estimated using the fees currently charged to enter into similar agreements, taking into account the remaining terms of the agreements and the present creditworthiness of the counterparties. For loan commitments, fair value also considers the difference between current levels of interest rates and the committed rates. The fair value of guarantees and letters of credit is based on fees currently charged for similar agreements which consider the counterparty risks; which fair value is calculated based on the present value of the premium to be received or a specific allowance for off-balance sheet credit contingencies, whichever is greater. These commitments are classified in level 3 since the second quarter of 2013. Fair value of these instruments is provided for disclosure purposes only.

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

The following table provides information on the carrying value and estimated fair value of the Bank's financial instruments that are not measured on a recurring basis:

(In thousands of US\$)

	September 30, 2013				
	<u>Carrying Value</u>	<u>Fair Value</u>	<u>Quoted market prices in an active market (Level 1)</u>	<u>Internally developed models with significant observable market information (Level 2)</u>	<u>Internally developed models with significant unobservable market information (Level 3)</u>
Financial assets:					
Instruments with carrying value that approximates fair value	978,108	978,108	-	978,108	-
Securities held-to-maturity	31,924	31,879	17,169	14,710	-
Loans, net ⁽¹⁾	6,112,447	6,325,782	-	6,325,782	-
Financial liabilities:					
Instruments with carrying value that approximates fair value	3,070,959	3,071,204	-	3,071,204	-
Short-term borrowings and debt	2,465,907	2,471,407	-	2,471,407	-
Long-term borrowings and debt	1,138,165	1,159,227	-	1,159,227	-
Commitments to extend credit, standby letters of credit, and financial guarantees written	9,389	8,959	-	-	8,959

⁽¹⁾ The carrying value of loans is net of the Allowance for loan losses of \$72.1 million and unearned income and deferred fees of \$6.1 million for September 30, 2013.

(In thousands of US\$)

December 31, 2012
Carrying
Value Fair
Value

Quoted market
prices in an Internally developed
models with Internally developed
models with significant

			active market (Level 1)	significant observable market information (Level 2)	unobservable market information (Level 3)
Financial assets:					
Instruments with carrying value that approximates fair value	746,006	746,006	-	746,006	-
Securities held-to-maturity	34,113	34,149	19,444	14,705	-
Loans, net ⁽¹⁾	5,635,480	5,784,172	-	5,784,172	-
Financial liabilities:					
Instruments with carrying value that approximates fair value	2,494,734	2,494,824	-	2,494,824	-
Short-term borrowings	1,449,023	1,453,159	-	1,453,159	-
Long-term borrowings and debt	1,905,540	1,922,544	-	1,922,544	-
Commitments to extend credit, standby letters of credit, and financial guarantees written	5,781	4,841	-	4,841	-

⁽¹⁾ The carrying value of loans is net of the Allowance for loan losses of \$73.0 million and unearned income and deferred fees of \$7.1 million for December 31, 2012.

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

20. Litigation

Bladex is not engaged in any litigation that is material to the Bank's business or, to the best of the knowledge of the Bank's management that is likely to have an adverse effect on its business, financial condition or results of operations.

21. Capital adequacy

The Banking Law in the Republic of Panama requires banks with general banking license to maintain a total capital adequacy index that shall not be lower than 8% of total assets and off-balance sheet irrevocable contingency transactions, weighted according to their risk; and primary capital equivalent that shall not be less than 4% of its assets and off-balance sheet irrevocable contingency transactions, weighted according to their risk. As of September 30, 2013, the Bank's capital adequacy ratio is 14.41% which is in compliance with the capital adequacy ratios required by the Banking Law in the Republic of Panama.

22. Business segment information

The Bank's activities are operated and managed in two segments, Commercial and Treasury. The Asset Management unit was discontinued since the fourth quarter of 2012. The segment information reflects this operational and management structure, in a manner consistent with the requirements outlined in ASC Topic 280 - Segment Reporting. The segment results are determined based on the Bank's managerial accounting process, which assigns consolidated balance sheets, revenue and expense items to each reportable division on a systematic basis.

The Bank incorporates net operating income⁽³⁾ by business segment in order to disclose the revenue and expense items related to its normal course of business, segregating from the net income, the impact of reversals of reserves for loan losses and off-balance sheet credit risk, and recoveries on assets. In addition, the Bank's net interest income represents the main driver of net operating income; therefore, the Bank presents its interest-earning assets by business segment,

to give an indication of the size of business generating net interest income. Interest-earning assets also generate gains and losses on sales, such as for securities available-for-sale and trading assets and liabilities, which are included in net other income, in the Treasury segment. The Bank also discloses its other assets and contingencies by business segment, to give an indication of the size of business that generates net fees and commissions, also included in net other income, in the Commercial Segment.

The Bank believes that the presentation of net operating income provides important supplementary information to investors regarding financial and business trends relating to the Bank's financial condition and results of operations. These measures exclude the impact of reversals (provisions) for loan losses and reversals (provisions) for losses on off-balance sheet credit risk (together referred to as "reversal (provision) for credit losses") which Bank's management considers distort trend analysis.

Net operating income disclosed by the Bank should not be considered a substitute for, or superior to, financial measures calculated differently from similar measures used by other companies. These measures, therefore, may not be comparable to similar measurements used by other companies.

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

Commercial incorporates all of the Bank's financial intermediation and fees generated by the commercial portfolio. The commercial portfolio includes book value of loans, selected deposits placed, acceptances and contingencies. Operating income from the Commercial Segment includes net interest income from loans, fee income and allocated operating expenses.

Treasury incorporates deposits in banks and all of the Bank's trading assets, securities available-for-sale and held-to-maturity, and the balance of the investment funds. Operating income from the Treasury Segment includes net interest income from deposits with banks, trading securities and securities available-for-sale and held-to-maturity, net interest margin related to investment funds, derivative and hedging activities, net gain (loss) from investment funds trading, net gain from trading securities, net gain on sale of securities available-for-sale, net loss on foreign currency exchange, and allocated income and operating expenses. The Treasury segment information for 2012 includes the results of the investment funds, in order to conform to the presentation of this segment in 2013.

The following table provides certain information regarding the Bank's continuing operations by segment:

Business Segment Analysis ⁽¹⁾

<i>(In thousands of US\$)</i>	Three months ended		Nine months ended	
	September 30, 2013	2012	September 30, 2013	2012
COMMERCIAL				
Interest income	51,636	46,034	145,827	135,474
Interest expense	(20,197)	(18,580)	(58,585)	(54,171)
Net interest income	31,439	27,454	87,242	81,302
Net other income ⁽²⁾	4,098	2,829	10,156	8,253
Operating expenses	(10,423)	(9,595)	(30,655)	(26,917)
Net operating income ⁽³⁾	25,114	20,688	66,743	62,639

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Reversal of provision (provision) for loan and off-balance sheet credit losses	1,235	3,028	(1,491)	2,521
Net income attributable to Bladex stockholders	26,349	23,716	65,252	65,160
Commercial assets and contingencies (end of period balances):				
Interest-earning assets ^(4 y 6)			6,184,506	5,483,931
Other assets and contingencies ⁽⁵⁾			393,190	317,985
Total interest-earning assets, other assets and contingencies			6,577,696	5,801,916
TREASURY				
Interest income	4,367	1,620	9,544	7,386
Interest expense	787	(3,991)	(4,762)	(7,960)
Net interest income	5,154	(2,371)	4,782	(574)
Net other income (expense) ⁽²⁾	(9,156)	(4,397)	(669)	11,713
Operating expenses	(2,471)	(3,845)	(10,010)	(12,673)
Net operating income ⁽³⁾	(6,473)	(10,613)	(5,897)	(1,534)
Net income (loss)	(6,473)	(10,613)	(5,897)	(1,534)
Net income attributable to the redeemable noncontrolling interest	(2,950)	(37)	(1,492)	207
Net income (loss) attributable to Bladex stockholders	(3,523)	(10,576)	(4,405)	(1,741)
Treasury assets and contingencies (end of period balances):				
Interest-earning assets ⁽⁶⁾			1,377,183	865,559
Redeemable noncontrolling interest			(52,592)	(3,301)
Total interest-earning assets and third participation			1,324,591	862,258
TOTAL				
Interest income	56,003	47,654	155,371	142,860
Interest expense	(19,410)	(22,571)	(63,347)	(62,131)
Net interest income	36,593	25,083	92,024	80,729
Net other income ⁽²⁾	(5,058)	(1,568)	9,487	19,966
Operating expenses	(12,894)	(13,440)	(40,665)	(39,590)
Net operating income ⁽³⁾	18,641	10,075	60,846	61,105
Reversal of provision (provision) for loans and off-balance sheet credit losses	1,235	3,028	(1,491)	2,521
Net income – business segment	19,876	13,103	59,355	63,626
Net income (loss) attributable to the redeemable noncontrolling interest	(2,950)	(37)	(1,492)	207
Net income attributable to Bladex stockholders – business segment	22,826	13,140	60,847	63,419
Other income unallocated - gain on sale of premises and equipment	-	-	-	5,626
Discontinued operations (Note 3)	-	(130)	(4)	(591)
Net income attributable to Bladex stockholders	22,826	13,010	60,843	68,454
Total assets and contingencies (end of period balances):				
Interest-earning assets ^(4 y 6)			7,561,689	6,349,490
Other assets and contingencies ⁽⁵⁾			393,190	317,985
Redeemable noncontrolling interest			(52,592)	(3,301)
Total interest-earning assets, other assets and contingencies			7,902,287	6,664,174

(1) The numbers set out in these tables have been rounded and accordingly may not total exactly.

(2) Net other income excludes reversals (provisions) for loans and off-balance sheet credit losses, recoveries on assets, and gain on sale of premises and equipment.

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

(In thousands of US\$)	Three months ended		Nine months ended	
	September 30, 2013	2012	September 30, 2013	2012
<u>Reconciliation of Net other income:</u>				
Net other income – business segment	(5,058)	(1,568)	9,487	19,966
Reversal of provision (provision) for losses on off-balance sheet credit risk	5,136	3,609	(2,412)	2,510
Gain on sale of premises and equipment	-	-	-	5,626
Net other income – consolidated financial statements	78	2,041	7,075	28,102

(3) Net operating income refers to net income excluding reversals (provisions) for loans and off-balance sheet credit losses and recoveries on assets.

(4) Includes selected deposits placed, and loans, net of unearned income and deferred loan fees.

(5) Includes customers' liabilities under acceptances, letters of credit and guarantees covering commercial and country risk, and credit commitments.

(6) Includes cash and due from banks, interest-bearing deposits with banks, securities available-for-sale and held-to-maturity, trading securities and the balance of investment funds.

<u>Reconciliation of Total assets:</u>	September 30, 2013	September 30, 2012
Interest-earning assets – business segment	7,561,689	6,349,489
Allowance for loan losses	(72,058)	(82,976)
Customers' liabilities under acceptances	49,034	597
Accrued interest receivable	38,368	36,430
Equipment and leasehold improvements, net	10,949	12,108
Derivative financial instruments used for hedging - receivable	14,193	20,565
Other assets	11,289	15,839
Total assets – consolidated financial statements	7,613,464	6,352,052

Geographic information is as follows:

Three months ended September 30, 2013

(In thousands of US\$)	Panama	Brazil	United		Total
			<u>States of America</u>	<u>Cayman Islands</u>	
Interest income	49,214	-	5,070	1,719	56,003
Interest expense	(18,361)	-	(287)	(762)	(19,410)
Net interest income	30,853	-	4,783	957	36,593

Nine months ended September 30, 2013

(In thousands of US\$)	Panama	Brazil	United		Total
			<u>States of America</u>	<u>Cayman Islands</u>	
Interest income	138,601	33	14,504	2,233	155,371
Interest expense	(61,020)	-	(967)	(1,360)	(63,347)
Net interest income	77,581	33	13,537	873	92,024
Long-lived assets:					
Equipment and leasehold improvements, net	10,692	-	257	-	10,949

**Banco
Latinoamericano
de Comercio
Exterior, S. A.
and Subsidiaries**

**Notes to
consolidated
financial
statements
(Unaudited)**

(In thousands of US\$)	Three months ended September 30, 2012						
	Panama	Brazil	United		Total		
			States of America	Cayman Islands			
Interest income	42,718	23	4,857	56	47,654		
Interest expense	(22,186)	-	(355)	(30)	(22,571)		
Net interest income	20,532	23	4,502	26	25,083		
(In thousands of US\$)	Nine months ended September 30, 2012						
	Panama	Brazil	United		Total		
			States of America	Cayman Islands			
Interest income			129,070	117	13,063	610	142,860
Interest expense			(61,089)	-	(976)	(66)	(62,131)
Net interest income			67,981	117	12,087	544	80,729
Long-lived assets:							
Equipment and leasehold improvements, net			11,665	8	435	-	12,108
(In thousands of US\$)	December 31, 2012						
	Panama	Brazil	United		Total		
			States of America	Cayman Islands			
Long-lived assets:							
Equipment and leasehold improvements, net			12,397	8	403	-	12,808