

Biostage, Inc.
Form S-1
August 15, 2017

As filed with the Securities and Exchange Commission on August 15, 2017

Registration No. 333-

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM S-1

REGISTRATION STATEMENT

UNDER

THE SECURITIES ACT OF 1933

Biostage, Inc.

(Exact name of registrant as specified in its Charter)

Delaware	3841	45-5210462
(State or other jurisdiction of	(Primary Standard Industrial	(I.R.S.
incorporation or organization)	Classification Code Number)	Employer
		Identification
		No.)

84 October Hill Road, Suite 11, Holliston, Massachusetts 01746

(774) 233-7300

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

James McGorry
Chief Executive Officer
Biostage, Inc.
84 October Hill Road, Suite 11, Holliston, Massachusetts 01746
(774) 233-7300

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

With copies to:

Josef B. Volman, Esq.

Chad J. Porter, Esq.

Burns & Levinson LLP
125 Summer Street
Boston, MA 02110
(617) 345-3000

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, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

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

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting 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. (check one)

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

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Title of Each Class of Securities to be Registered	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee
Common stock, par value \$0.01 per share	\$ 10,000,000	(1)(2) \$ 1,159
Subscription rights	—	(3) N/A

(1) The shares are being offered and sold pursuant to subscription rights distributed without consideration to the holders of the Company's common stock as of the effective date.

(2) Includes an indeterminate number of shares per Rule 416.

(3) The over-subscription privileges described herein may be deemed not to be exempt from registration under Section 3(a)(9).

SUBJECT TO COMPLETION, DATED AUGUST 15, 2017

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

SUBSCRIPTION RIGHTS TO PURCHASE SHARES OF COMMON STOCK

We are conducting a rights offering in which we are distributing at no charge to the holders of our common stock and holders of warrants to purchase our common stock rights to purchase up to _____ shares of our common stock, par value \$0.01 per share. Holders of our common stock and warrants to purchase our common stock will receive one right for each share of our common stock owned (and each share of common stock underlying such holder's warrant) at the effective date of the close of business on _____, 2017, or the basic subscription privilege.

The cash exercise price of each basic subscription privilege is \$ _____, which we refer to as the subscription price. Rights holders who fully exercise their basic subscription privilege will be entitled to subscribe for additional shares of our common stock that remain unsubscribed as a result of any unexercised basic subscription privileges on a pro rata basis, which we refer to as the over-subscription privilege. We refer to the basic subscription privilege and over-subscription privilege collectively as rights. A rights holder may only exercise rights in the aggregate for book-entry of whole numbers of shares of our common stock; no fractional shares of our common stock will be issued in this offering.

The rights are exercisable beginning on the date of this prospectus and will expire if they are not exercised by _____, Eastern time, on _____, 2017, the expiration date, unless we extend the offering period. You should carefully consider whether to exercise your rights before the expiration date. Rights that are not exercised by the expiration date will expire and will have no value. All exercises of basic subscription privileges and over-subscription privileges are irrevocable.

We have also entered into a backstop agreement, or the Backstop Agreement, with First Pecos, LLC. Pursuant to the Backstop Agreement, First Pecos, LLC and its affiliates, whom we sometimes collectively refer to as the backstop provider, has agreed to purchase, an aggregate number of shares of our common stock equal to (i) 10.0 million, minus (ii) the aggregate proceeds of this offering, at the subscription price, subject to the terms and conditions of the

Backstop Agreement.

Our common stock is listed on the NASDAQ Capital Market under the symbol “BSTG.” On August 14, 2017, the closing price for our common stock, as reported on the NASDAQ Capital Market, was \$0.42 per share.

The exercise of your rights and investment in our shares involves a high degree of risk. You should carefully read the Risk Factors beginning on page 7, as well as the risk factors in any document we incorporate by reference into this prospectus before you make a decision as to the exercise of your rights.

	Per Unit	Total (1)
Subscription price	\$	\$
Estimated expenses	\$	\$
Proceeds to us	\$	\$

(1) Assumes the rights offering is fully subscribed.

None of our board of directors or officers is making any recommendation regarding whether you should exercise your rights.

NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED OF THESE SECURITIES OR DETERMINED IF THIS PROSPECTUS IS ACCURATE, TRUTHFUL OR COMPLETE. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

It is anticipated that delivery of the common stock purchased in this offering will be made on or about _____, 2017.

The date of this prospectus is _____, 2017.

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We have not authorized anyone to provide any information or to make any representations other than those contained in this prospectus or in any prospectus supplement or free writing prospectuses prepared by or on behalf of us or to which we have referred you. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. This prospectus is an offer to sell only the shares offered hereby, and only under circumstances and in jurisdictions where it is lawful to do so. The information contained in this prospectus or in any applicable prospectus supplement or free writing prospectus is current only as of its date, regardless of its time of delivery or any sale of our securities. Our business, financial condition, results of operations and prospects may have changed since that date.

For investors outside the United States: We have not done anything that would permit this offering or possession or distribution of this prospectus in any jurisdiction where action for that purpose is required, other than in the United States. Persons outside the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the offering of the securities and the distribution of this prospectus outside the United States.

ABOUT THIS PROSPECTUS

You should rely only on the information contained in this prospectus and any prospectus supplement or free writing prospectus authorized by us. We have not authorized any other person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. The information in this prospectus is accurate only as of the date it is presented. You should read this prospectus and any prospectus supplement or free writing prospectus that we have authorized for use in connection with this offering, in their entirety before investing in our securities.

We are offering to sell, and seeking offers to buy, the securities offered by this prospectus only in jurisdictions where offers and sales are permitted. The distribution of this prospectus and the offering of the securities offered by this prospectus in certain jurisdictions may be restricted by law. This prospectus does not constitute, and may not be used in connection with, an offer to sell, or a solicitation of an offer to buy, any securities offered by this prospectus in any jurisdiction in which it is unlawful for such person to make such an offer or solicitation.

QUESTIONS AND ANSWERS RELATING TO THE RIGHTS OFFERING

The following are examples of what we anticipate will be common questions about this offering. The following questions and answers do not contain all of the information that may be important to you and may not address all of the questions that you may have about this offering. This prospectus and the documents we incorporate by reference contain more detailed descriptions of the terms and conditions of this offering and provide additional information about us and our business, including potential risks related to our business, this offering and our common stock.

What are we offering you?

We are issuing to the holders of our common stock and holders of warrants to purchase our common stock as of the close of business on _____, 2017, which we refer to as the **effective date**, rights to subscribe for an aggregate of up to _____ shares of our common stock. Each holder, who we refer to as a **rights holder** or you, is being issued one right for each share of our common stock owned (and each share of common stock underlying such holder's warrant) on the effective date (1 for 1), which we refer to as the **basic subscription privilege**. Each basic subscription privilege entitles you to purchase _____ shares of our common stock at a cash price of \$ _____ per whole share, which we refer to as the **subscription price**. Your basic subscription privilege may only be exercised in the aggregate for whole numbers of shares of our common stock; no fractional shares of our common stock will be issued in this offering. Any fractional shares will be rounded down to the nearest whole share of common stock and any excess subscription payments will be returned by the subscription agent.

What is the over-subscription privilege?

If you purchase *all* of the shares of our common stock available to you pursuant to your basic subscription privilege, you may also choose to purchase your pro-rata share of any shares of our common stock that our other stockholders and warrant holders do not purchase through the full exercise of their basic subscription privileges, which we refer to as the **over-subscription privilege**. You should indicate on your rights certificate, or the form provided by your nominee if your shares are held in the name of a nominee, how many additional shares of our common stock you would like to purchase pursuant to your over-subscription privilege.

The over-subscription privilege allows you to subscribe for additional shares of our common stock. If sufficient shares of our common stock are available, we will seek to honor your over-subscription request in full, so long as it does not exceed your pro rata share and the other ownership thresholds described in this prospectus are not exceeded.

To properly exercise your over-subscription privilege, you must deliver the subscription payment related to your over-subscription privilege before this offering expires. Because we will not know the total number of unsubscribed shares of our common stock before this offering expires, if you wish to maximize the number of shares you purchase pursuant to your over-subscription privilege, you will need to deliver payment in an amount equal to the aggregate subscription price for the maximum number of shares that may be available to you (i.e., the aggregate payment for both your basic subscription privilege and for any additional shares you desire to purchase pursuant to your over-subscription request). Any excess subscription payments received by the subscription agent will be returned, without interest or penalty, as soon as practicable.

We refer to the basic subscription privilege and the over-subscription privilege collectively as the **rights**.

Why are we conducting this offering?

We are conducting this offering in order to raise additional capital and to improve and strengthen our balance sheet and liquidity position. We intend to use the net proceeds of this offering and the commitment of one of our investors to purchase up to \$10.0 million of our common stock, or the **Backstop Commitment**, for research and development, including funding pre-clinical and clinical trials relating to the Cellframe™ technology, business development, sales and marketing, capital expenditures, working capital and other general corporate purposes.

Our board of directors considered and evaluated a number of factors relating to this offering, including:

- § our current capital resources and our future need for additional liquidity and capital;
- § our need for increased financial flexibility in order to enable us to achieve our business plan;
- § the size and timing of this offering;
- § the potential dilution to our current stockholders if they choose not to participate in this offering;
- § alternatives available for raising capital, including debt and other forms of equity raises;
- § the potential impact of this offering on the public float for our common stock; and
- § the fact that existing stockholders and warrant holders would have the opportunity to participate on a pro rata basis to purchase additional shares of our common stock, subject to certain restriction.

How was the subscription price determined?

The \$ subscription price was set by our board of directors as a result of negotiations with First Pecos, LLC as the participant in the backstop. The subscription price represents a % discount to the volume weighted average price of our common stock on Nasdaq over the trading days ending on and including the effective date. The factors considered by our board of directors and the process our board of directors undertook to review, consider and approve the subscription price are discussed in “The Rights Offering—Reasons for the Rights Offering” and “Determination of the Offering Price.”

Am I required to exercise the rights I receive in this offering?

No. You may exercise any number of your rights or you may choose not to exercise any of your rights. However, if you choose not to exercise your rights or you exercise less than your full amount of rights and other stockholders and warrant holders fully exercise their rights, the percentage of our common stock owned by other stockholders and warrant holders will increase relative to your ownership percentage, and your voting and other rights in Biostage will likewise be diluted.

What are the rights?

The rights give holders of our common stock and holders of warrants to purchase our common stock as of the effective date the opportunity to purchase shares of our common stock for every right held at a subscription price of \$ per whole share, however (a) rights may be exercised in aggregate only to purchase whole book-entry shares of our common stock and (b) the total subscription price payable upon any exercise of rights will be rounded to the nearest whole cent.

You will receive one right for each one of our shares of common stock you owned (and each share of common stock underlying warrants you owned) as of the effective date. For example, if you owned 100 shares of our common stock as of the effective date and no warrants to purchase common stock, your rights would entitle you to purchase a total of shares of our common stock for a total subscription price of \$ (after rounding to the nearest whole cent and not including any over-subscription privileges). Subject to the limitations described in this prospectus, you may exercise some or all of your rights, or you may choose not to exercise any rights at all.

May I transfer my rights if I do not want to purchase any shares?

No. You may not sell, transfer, or assign your rights to anyone. Rights will not be listed on NASDAQ or any other stock exchange or market. Rights certificates may be completed only by the stockholder or warrant holder who receives the certificate. The shares of our common stock issuable upon exercise of the rights will be listed on NASDAQ.

How do I exercise my rights if my shares of common stock are held in the name of a broker, dealer, custodian bank or other nominee?

If you hold your shares of our common stock in the name of a broker, dealer, custodian bank or other nominee who uses the services of The Depository Trust Company, or **DTC**, DTC will credit one right to your nominee record holder for each share of our common stock that you beneficially owned as of the effective date. If you are not contacted by your nominee, you should contact your nominee as soon as possible.

If I hold my shares in the name of a broker, dealer, custodian bank or other nominee, how do I pay the subscription price for my rights?

You must have sufficient funds in your account, and your broker, dealer, custodian bank or other nominee will charge your account for your subscription price. Your broker will then pay money on your account to DTC. After the offering, DTC will credit funds to our transfer agent who will ultimately wire the proceeds of this offering to us.

How do I exercise my rights if my shares of common stock and/or warrants are held in my name?

If you hold your shares of our common stock and/or warrants in your name and you wish to participate in this offering, you must deliver a properly completed and duly executed rights certificate to the subscription agent and deliver all other required subscription documents, together with payment of the full subscription price, to the subscription agent before _____ Eastern time on _____, 2017, which we refer to as the **expiration date**.

If you send an uncertified check, payment will not be deemed to have been delivered to the subscription agent until the check has cleared. In certain cases, you may be required to provide signature guarantees.

Please follow the delivery instructions on the rights certificate. Do not deliver documents to us. You are solely responsible for completing delivery to the subscription agent of your rights certificate, all other required subscription documents and subscription payment. You should allow sufficient time for delivery of your subscription materials to the subscription agent so that the subscription agent receives them by the expiration date. See "To whom should I send my forms and payment?" below.

If you send a payment that is insufficient to purchase the number of shares of our common stock you requested, or if the number of shares of our common stock you requested is not specified in the forms, the payment received will be applied to exercise your rights to the fullest extent possible based on the amount of the payment received pursuant to your rights. Any payment that is received but not so applied will be refunded to you without interest (subject to the rounding of the amount so applied to the nearest whole cent).

If I hold my shares and/or warrants in my own name and not through a broker, dealer, custodian bank or other nominee, what form of payment is required to purchase shares of common stock?

As described in the instructions accompanying the rights certificate, payments submitted to the subscription agent must be made in U.S. currency. Checks or bank drafts drawn on U.S. banks should be payable to ..

Payments will be deemed to have been received upon clearance of any uncertified check. Please note that funds paid by uncertified check may take five or more business days to clear. Accordingly, rights holders who wish to pay the subscription price by means of uncertified check are urged to make payment sufficiently in advance of the expiration time to ensure that such payment is received and clears by such date.

How soon must I act to exercise my rights?

If your shares of our common stock are registered in your name and you elect to exercise any or all of your rights, the subscription agent must receive your properly completed and duly executed rights certificate or the transfer of your rights by DTC, as applicable, all other required subscription documents and full subscription payment, including final clearance of any uncertified check, before the expiration date. If you hold your shares in the name of a broker, dealer, custodian bank or other nominee, your nominee may establish an earlier deadline before the expiration date by which time you must provide the nominee with your instructions and payment to exercise your rights. Although our board of directors, or a committee thereof, may extend the expiration date, it currently does not intend to do so.

Although we will make reasonable attempts to provide this prospectus to our stockholders and warrant holders to whom rights are distributed, this offering and all rights will expire at the expiration date, whether or not we have been able to locate and deliver this prospectus to all such stockholders and warrant holders.

After I exercise my rights, can I change my mind?

No. Once you have exercised your rights, you may not revoke such exercise in whole or in part. Accordingly, any exercise of rights will constitute a binding commitment to purchase and pay for the shares of our common stock issuable upon such exercise, regardless of any changes in the value of such shares, in our business, financial condition, results of operations or future prospects or in your individual circumstances.

Can this offering be cancelled or extended?

Yes. We reserve the right to withdraw or terminate this offering at any time prior to the expiration date and for any reason. If we withdraw or terminate this offering, neither we nor the subscription agent will have any obligation with respect to rights that have been exercised except to return, without interest or deduction, any subscription payments the subscription agent received from you. If we were to cancel this offering, any money received from subscribing stockholders and warrant holders would be returned promptly, without interest or penalty, and we would not be obligated to issue shares of our common stock to holders who have exercised their rights prior to termination. In addition, we may extend the period for exercising the rights.

Has our board of directors made a recommendation to our stockholders and warrant holders regarding the exercise of rights under this offering?

No. Our board of directors has not made, nor will they make, any recommendation to you regarding the exercise of rights in this offering. We cannot predict the price at which our shares of common stock will trade after this offering. You should make an independent investment decision about whether or not to exercise your rights. Stockholders and warrant holders who exercise rights risk losing the 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 or sell your rights, you will lose any value represented by your rights, and if you do not exercise your rights in full, your percentage ownership interest and related rights in Biostage will be diluted.

Are there any risks associated with this offering?

Stockholders and warrant holders who exercise their rights will incur investment risk on new money invested. The stock market and, in particular, our common stock price, has experienced significant volatility recently. As a result, the market price for our common stock may be volatile. This offering will increase the number of outstanding shares

of our common stock (assuming the exercise of the rights in full) by approximately % and the trading volume in our common stock may fluctuate more than usual and cause significant price variations to occur. The market price of our common stock will depend on many factors, which may change from time to time, including our financial condition, performance, creditworthiness and prospects, future sales of our securities and other factors. Volatility in the market price of our common stock may prevent you from being able to sell our common stock when you want or at prices you find attractive. You should make your decision based on your assessment of our business and financial condition, our prospects for the future, the terms of this offering and the information contained in, or incorporated by reference into, this prospectus or any free writing prospectus. **You should carefully consider the risks, among other things, described under the heading “Risk Factors” and in the documents incorporated by reference into this prospectus before exercising your rights and investing in shares of our common stock.**

When will I receive my shares of common stock purchased in this offering?

Stockholders whose shares are held of record by Cede & Co., or **Cede**, the nominee of DTC, or by any other depository or nominee on their behalf or their broker-dealers' behalf will have any shares that they acquire credited to the account of Cede or such other depository or nominee. With respect to all other stockholders and warrant holders, you must provide a brokerage account for your shares acquired in this offering, as we will not issue physical certificates for shares purchased in this offering, unless required to do so by law. Whether your shares are held through DTC or directly with our transfer agent Computershare, shares of common stock acquired in this offering will be issued as soon as possible following the conclusion of the offering.

Is there a backstop purchaser?

Yes. On _____, 2017, we entered into a Backstop Agreement with First Pecos, LLC and certain of its affiliates, whom we collectively refer to as the **backstop provider**, pursuant to which we have agreed to issue and sell to the backstop provider, and the backstop provider agreed to purchase, an aggregate number of shares of our common stock equal to (i) \$10.0 million, minus (ii) the aggregate proceeds of this offering, subject to the terms and conditions of the Backstop Agreement. See “Backstop Agreement” for additional details on the Backstop Commitment, including the fees to be paid by us and our expense reimbursement obligation.

Why is there a backstop provider?

We obtained the commitment of the backstop provider to act as the backstop purchaser under the Backstop Agreement to increase the likelihood that we would receive \$10.0 million of gross proceeds, less fees and expenses of this offering and the Backstop Commitment.

Is the backstop provider receiving any compensation for its participation in the Backstop Commitment?

No. The backstop provider is not receiving compensation for its participation in the Backstop Commitment.

What effects will this offering have on our outstanding common stock?

After giving effect to this offering, assuming that it is fully subscribed, we will have approximately _____ shares of common stock outstanding, representing an increase of approximately _____ % in our outstanding shares as of the effective date. If you fully exercise the rights that we distribute to you, your proportional interest in us (assuming the exercise of all outstanding warrants) will remain the same. If you do not exercise any rights, or you exercise less than all of your rights, your interest in us will be diluted, as you will own a smaller proportional interest in us compared to your interest prior to this offering.

If all of our stockholders and warrant holders exercise the rights issued to them, and this offering is therefore fully subscribed, the beneficial ownership percentage of our stockholders will not change. Assuming that no holders exercise their rights in this offering, the backstop providers would acquire approximately _____ shares of our common stock, following which (1) the backstop providers would beneficially own approximately _____ % of our

outstanding common stock and (2) all other holders would beneficially own approximately % of our outstanding common stock. All ownership percentages described in this paragraph are based upon our outstanding common stock and the beneficial ownership of our holders as of the effective date.

The number of shares of our common stock outstanding listed in each case above assumes that (1) all of the other shares of our common stock issued and outstanding on the effective date will remain issued and outstanding and owned by the same persons as of the closing of this offering and (2) we will not issue any shares of common stock in the period between the effective date and the closing of this offering.

Are there any conditions to the backstop providers' obligations under the Backstop Agreement?

Yes. The obligations of the backstop providers to consummate the transactions under the Backstop Agreement are subject to the satisfaction or waiver of specified conditions, including, but not limited to, compliance with covenants and the accuracy of representations and warranties provided in the Backstop Agreement, consummation of this offering, the receipt of all required regulatory approvals, and no material adverse effect with respect to our financial condition, business, properties, assets, liabilities or results of operations.

When do the backstop providers' obligations under the Backstop Agreement expire?

The Backstop Agreement may be terminated by us, on the one hand, or the backstop providers, on the other hand, if the transactions contemplated by the Backstop Agreement have not been consummated by , 2017.

How much will we receive from this offering and how will such proceeds be used?

We estimate that the net proceeds from this offering and the Backstop Commitment will be approximately \$ million, after deducting expenses related to this offering.

We intend to use the net proceeds for research and development, including funding pre-clinical and clinical trials relating to the Cellframe™ technology, business development, sales and marketing, capital expenditures, working capital and other general corporate purposes.

If my exercise of rights is not valid or if this 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 the completion of this offering. If your exercise of rights is deemed not to be valid or this offering is not completed, all subscription payments received by the subscription agent will be returned as soon as practicable following the expiration of this offering, without interest or penalty. If you own shares through a nominee, it may take longer for you to receive your subscription payments because the subscription agent will return payments through the record holder of your shares.

What fees or charges apply if I purchase shares in this offering?

We are not charging any fee or sales commission to issue rights to you or to issue shares of our common stock to you if you exercise your rights. If you exercise your rights through a broker, dealer, custodian bank or other nominee, you are responsible for paying any fees your nominee may charge you.

What are the U.S. federal income tax considerations of exercising my rights?

U.S. Holders (as defined herein) generally will not recognize gain or loss on the receipt, exercise or expiration of rights. See “U.S. Federal Income Tax Considerations” for a more complete discussion, including additional qualifications and limitations. In addition, you should consult your own tax advisor as to the tax consequences to you of the receipt, exercise and expiration of the rights in light of your particular circumstances.

To whom should I send my forms and payment?

If your shares of our common stock and/or warrants are held in the name of a broker, dealer, custodian bank or other nominee, then you should deliver all required subscription documents and subscription payments pursuant to the instructions provided by your nominee.

If your shares of our common stock and/or warrants are held in your name, then you should send your rights certificate to the subscription agent, and send all other required subscription documents and subscription payments by mail or overnight courier to the appropriate address listed below:

If delivering by first class mail:

If delivering by overnight courier:

You and, if applicable, your nominee are solely responsible for instructing DTC to transfer your rights to the subscription agent or completing delivery to the subscription agent of your rights certificate, as applicable, as well as completing delivery of all other required subscription documents and subscription payments. You should allow sufficient time for delivery of your subscription materials to the subscription agent and clearance of payments before the expiration of this offering. If you hold your shares of our common stock and/or warrants through a broker, dealer, custodian bank or other nominee, your nominee may establish an earlier deadline before the expiration date.

Whom should I contact if I have other questions?

If you have any questions regarding this offering, completion of the rights certificate or any other subscription documents or submitting payment in this offering, please contact _____ at _____.

PROSPECTUS SUMMARY

The following summary highlights information contained elsewhere in this prospectus. It may not contain all of the information that is important to you. You should read the entire prospectus carefully, especially the discussion regarding the risks of investing in our common stock under the heading “Risk Factors,” before investing in our common stock. All references to “Company” “we,” “our” or “us” refer solely to Biostage, Inc. and its subsidiaries and not to the persons who manage us or constitute our Board of Directors.

About Biostage, Inc.

We are a biotechnology company developing bioengineered organ implants based on our novel Cellframe technology. Our Cellframe technology is comprised of a biocompatible scaffold that is seeded with the recipient’s own stem cells. This technology is being developed to treat life-threatening conditions of the esophagus, trachea or bronchus with the objective of dramatically improving the treatment paradigm for those patients.

We believe that our Cellframe technology will provide surgeons with new ways to address damage to the esophagus, bronchus, and trachea due to congenital abnormalities, cancer, infection or trauma. Products being developed based on our Cellframe technology for those indications are called Cellspan products.

We announced favorable preliminary pre-clinical results of large-animal studies for the esophagus, trachea and bronchus in November 2015. Since then, the Cellspan esophageal implant product candidates have been our lead development product candidates. We are pursuing two development programs that address conditions of the esophagus: esophageal atresia in pediatric patients and esophageal cancer in adult patients. Our Cellspan esophageal product candidates are each intended to provide a surgical solution to stimulate regeneration of a segment of the esophagus missing due to a congenital abnormality or following surgical removal to establish or reestablish the organ’s continuity and integrity.

Approximately one in 2,500 babies in the U.S. is born with esophageal atresia, a congenital condition where the child’s esophagus is underdeveloped and does not extend completely from the mouth to the stomach. When a long segment of the esophagus is lacking, the current standard of care is a series of surgical procedures where surgical sutures are applied to both ends of the esophagus in an attempt to stretch them together so they can be connected at a later date. This process can take weeks and the procedure is plagued by serious complications and may carry high rates of failure. Such approach also requires, in time, at least two separate surgical interventions. Other options include the use of the child’s stomach that would be pulled up, or a piece of the patient’s intestine that would be moved to the gap, to allow a connection to the mouth. We are working to develop a Cellspan esophageal implant product candidate to address newborns’ esophageal atresia, to provide a simpler, more effective and potentially organ-sparing solution.

A portion of all patients diagnosed with esophageal cancer are treated via a surgical procedure known as an esophagectomy. The current standard of care for an esophagectomy requires a complex surgical procedure that involves moving the patient's stomach or a portion of their colon into the chest to replace the portion of esophagus resected by the removal of the tumor. These current procedures have high rates of complications, and can lead to a severely diminished quality of life and require costly ongoing care. Our Cellspan esophageal implants aim to simplify the procedure, reduce complications, result in a better quality of life and reduce the overall cost of these patients to the healthcare system.

In May 2016, we reported an update of recent results from pre-clinical large-animal studies. We disclosed that the study had demonstrated in a predictive large-animal model the ability of Biostage Cellspan organ implants to successfully stimulate the regeneration of sections of esophagus that had been surgically removed for the study. Cellspan esophageal implants, consisting of a proprietary biocompatible synthetic scaffold seeded with the recipient animal's own stem cells, were surgically implanted in place of the esophagus section that had been removed.

Study animals were returned to a solid diet two weeks after implantation surgery. The scaffolds, which are intended to be in place only temporarily, were later retrieved via the animal's mouth in a non-surgical endoscopic procedure. After two and a half months post-surgery, a complete epithelium and other specialized esophagus tissue layers were regenerated. Animals in the study demonstrated weight gain and appear healthy and free of any significant side effects, including two that are now more than one year post implantation, and are receiving no specialized care.

In November 2016, we were granted Orphan Drug Designation for our Cellspan esophageal implant by the FDA to restore the structure and function of the esophagus subsequent to esophageal damage due to cancer, injury or congenital abnormalities. Orphan drug status provides market exclusivity in the U.S. for seven years from the date of the product's approval for marketing. This exclusivity is in addition to any exclusivity we may obtain due to our patents. Additionally, orphan designation provides certain incentives, including tax credits and a waiver of the Biologics License Application or BLA fee. We also intend to apply for orphan drug designation for our Cellspan esophageal implant in Europe in the near term. Orphan drug status in Europe provides market exclusivity there for ten years from the date of the product's approval for marketing.

We are conducting Good Laboratory Practice or GLP studies to demonstrate that our technology, personnel, systems and practices are sufficient for advancing into clinical trials. GLP safety studies are required to advance to an Investigational New Drug or IND application with the FDA, which would seek approval to initiate clinical trials for Biostage Cellspan esophageal implants in humans.

In October 2016, we announced a regulatory update following our planned pre-Investigational New Drug, or pre-IND, meeting with the FDA, for the advancement of our lead product candidate, a Cellspan Esophageal Implant to be used to stimulate esophageal regeneration following surgery to address esophageal cancer in adults, into human clinical studies. We subsequently announced our expectation to file an IND application with the FDA in the third quarter of 2017 based on our election to extend the duration of our ongoing GLP animal studies following the feedback provided by the FDA.

On August 7, 2017, we announced the use of our Cellspan Esophageal Implant product candidate in a patient at a major U.S. hospital via an FDA-approved single-use expanded access application. The implant was surgically implanted in May 2017 into a 75-year old male patient with a life-threatening cancerous mass in his chest. The portion of the esophagus affected by the cancer was removed and the Cellspan Esophageal Implant was utilized to reconstruct the esophagus. The patient remains alive three months after the surgery.

In August 2017, we announced that we are reprioritizing our product development program based on greatest unmet medical need, analysis of existing surgical options, physician validation and investor preference. We believe that, of our two current programs, the Cellspan Esophageal Implant program to treat pediatric esophageal atresia provides a shorter time to a commercial product and the greater overall potential value. We also believe that the pediatric esophageal atresia program needs to advance in the first position with the FDA to ensure eligibility for the pediatric rare disease accelerated review voucher program. Receipt of such a voucher, if achieved, could potentially provide significant value to the company in the future. As a result, we are elevating the pediatric program to our lead program. We will continue to advance the Cellspan Esophageal Implant adult program, but will not file an IND for that product candidate at this time.

Our products are currently in development and have not yet received regulatory approval for sale anywhere in the world.

We have incurred substantial operating losses since inception, and as of June 30, 2017 have an accumulated deficit of approximately \$43.8 million. We expect to continue to incur operating losses and negative cash flows from operations for the remainder of 2017 and in future years. We believe that our cash at June 30, 2017 will be sufficient to meet the Company's obligations through the third quarter of 2017. Therefore, these conditions raise substantial doubt about the Company's ability to continue as a going concern. However, upon the expected closing of the financing arrangement with First Pecos, as described below, approximately \$3.1 million of gross proceeds will be received at closing, and First Pecos is committed to providing a backstop in up to two subsequent rights offerings to generate additional proceeds of up to \$14 million. Additionally, at June 30, 2017 there were approximately 22.6 million warrants outstanding. If in the future these warrants are exercised they would potentially provide up to an additional \$11.2 million of proceeds to the Company.

We will need to raise additional funds in future periods to fund our operations. In the event that we do not raise additional capital from outside sources in the near future, we may be forced to curtail or cease our operations. Cash requirements and cash resource needs will vary significantly depending upon the timing of clinical and animal studies and other resource needs that will be required to complete ongoing development and pre-clinical and clinical testing of products as well as regulatory efforts and collaborative arrangements necessary for our products that are currently under development. We will seek to raise necessary funds through a combination of public or private equity offerings, debt financings, other financing mechanisms, or strategic collaborations and licensing arrangements. We may not be able to obtain additional financing on terms favorable to us, if at all.

February 2017 Public Offering

On February 10, 2017, we completed a public offering of 20,000,000 shares of common stock at a purchase price of \$0.40 per share and the issuance of warrants to purchase 20,000,000 shares of common stock at an exercise price of \$0.40 per warrant for gross proceeds of \$8.0 million. Additionally, we issued to the placement agent warrants to purchase 1,000,000 shares of common stock to the placement agent for the offering at an exercise price of \$0.50 per warrant.

August 2017 Private Placement

On August 11, 2017, we entered into a Securities Purchase Agreement with the backstop party for the sale by us of 8,061,905 shares of our common stock at a purchase price of \$0.315 per share and 516 shares of our Series C Convertible Preferred Stock at a purchase price of \$1,000 per share for aggregate gross proceeds of approximately \$3.05 million. The shares of Series C Convertible Preferred Stock are subject to conversion limitations so that the holders thereof may not effect any conversion to the extent that following the conversion, the holders, together with their affiliates, would own more than 19.99% of our outstanding shares of common stock. We will enter into the Backstop Agreement with the backstop party, as described below under “The Backstop Agreement.”

Corporate Information

We were incorporated under the laws of the State of Delaware on May 3, 2012 by Harvard Bioscience, Inc., or **Harvard Bioscience**, to provide a means for separating its regenerative medicine business from its other businesses. On March 31, 2016, we changed our name from Harvard Apparatus Regenerative Technology, Inc. to Biostage, Inc. Our principal executive offices are located at 84 October Hill Road, Suite 11, Holliston, Massachusetts. Our telephone number is (774) 233-7300. We maintain a web site at <http://www.biostage.com>. The reference to our web site is intended to be an inactive textual reference only. The information contained on, or that can be accessed through, our web site is not a part of this prospectus.

THE RIGHTS OFFERING

The Rights Offering We are distributing at no charge to the holders of shares of our common stock and holders of warrants to purchase our common stock as of the close of business on _____, 2017, the **effective date**, one right for each share of our common stock owned of record (and each share of common stock underlying such holder's warrant) on the effective date.

The basic subscription privilege (as described below) and the over-subscription privilege (as described below) are collectively referred to as the **rights**.

Subscription Price If you validly exercise any of your rights, you will receive _____ shares of our common stock upon cash payment of \$ _____ per whole share, the **subscription price**, to our rights agent. The subscription price represents a _____ % discount to the volume weighted average price of our common stock on Nasdaq over the _____ consecutive trading days ending on and including the effective date.

Basic Subscription Privilege Each basic subscription privilege entitles you to purchase _____ new shares of our common stock for every share of common stock you owned of record (and each share of common stock underlying your warrants) on the effective date. You may exercise all or a portion of your basic subscription privilege or you may choose not to exercise any basic subscription privilege at all.

Over-Subscription Privilege If any rights holders do not exercise their basic subscription privilege in full, then rights holders who have exercised their basic subscription privilege in full (including subscription privileges acquired as a result of acquiring shares of our common stock between the effective date and expiration date) will be entitled to purchase a portion of the number of shares, if any, that are not purchased by other rights holders through the exercise of their basic subscription privilege at the subscription price, or the **over-subscription privilege**, subject to certain limitations. The maximum number of shares that a rights holder may purchase through the over-subscription privilege is the rights holder's pro rata share of the shares not purchased by other rights holders through exercises of their basic subscription privileges. See also "Certain Purchase Limitations."

If sufficient shares are available, we will seek to honor your over-subscription request in full, so long as it does not exceed your pro rata share or other ownership thresholds described in this prospectus.

Use of Proceeds Net proceeds of this offering (and the Backstop Commitment, to the extent exercised) will be used for research and development, including funding pre-clinical and clinical trials relating to the Cellframe™ technology, business development, sales and marketing, capital expenditures, working capital and other general corporate purposes.

Expiration Date The rights expire worthless if they are not validly exercised on or before _____ Eastern time on _____, 2017, or the **expiration date**, unless we extend the subscription period.

Transferability of Rights The rights granted to you are non-transferable and, therefore, you may not sell, transfer, or assign your rights to anyone.

**No Board
Recommendation**

Our board of directors is not making any recommendation to you with respect to this offering.

**Backstop
Commitment**

First Pecos, LLC and its affiliates has committed to purchase up to \$10.0 million of shares of common stock, at the subscription price, to the extent that the exercise of rights result in gross proceeds to us of less than \$10.0 million. We will not pay any fee to the backstop provider.

**U.S. Federal
Income Tax
Considerations**

We intend to take the position that the distribution of rights generally is a non-taxable distribution to holders of our common stock and that holders of shares of our common stock generally will not recognize any gain or loss upon the exercise of rights received in this offering. This position, however, is not binding on the Internal Revenue Service, or **IRS**, or the courts, and if this position is finally determined by the IRS or a court to be incorrect, the distribution of the rights, or the exercise thereof, could be taxable to holders of our common stock. You should refer to “U.S. Federal Income Tax Considerations” for a more complete discussion, including qualifications and limitations. In addition, you should consult your own tax advisor as to the tax consequences to you of the receipt, exercise and expiration of the rights in light of your particular circumstances.

**Amendment and
Extension;
Cancellation**

We may amend the terms of this offering. Our board of directors may decide to extend this offering for additional periods, although it does not currently intend to do so. We also reserve the right to withdraw this offering at any time prior to the expiration date and for any reason. If this offering is cancelled, all subscription payments received by the subscription agent will be returned, without interest or penalty, as soon as practicable to those persons who subscribed for shares in this offering.

No Revocation

All exercises of rights are irrevocable.

To exercise your rights, you must take the following steps:

**Procedures for
Exercising Rights**

If you hold your common stock and/or warrants through a broker, dealer, custodian bank or other nominee, then your nominee is the record holder of the rights you own. The record holder must exercise the rights on your behalf. If you wish to exercise your rights in this offering, you should contact your broker, dealer, custodian bank or nominee as soon as possible. You will not receive a subscription certificate from us. Please follow the instructions of your nominee. Your nominee may establish a submission deadline that may be before the expiration date

If you hold a subscription certificate and you wish to participate in this offering, you must properly complete and sign Form 1 of the subscription certificate for the subscription privilege, and if you wish to exercise a portion or all of your entitlement under the over-subscription privilege, Form 2 of the subscription certificate, and deliver the signed subscription certificate, together with payment of the subscription price, to the subscription agent before the expiration date or use the guaranteed delivery procedures described under “The Rights Offering—Guaranteed Delivery Procedures.” You may be required to provide signature guarantees.

Please follow the delivery instructions on the subscription certificate. Do not deliver documents to us. You are solely responsible for completing delivery to the subscription agent of your subscription documents, subscription certificate and payment. You should allow sufficient time for delivery of your subscription materials to the subscription agent so that the subscription agent receives them by the expiration date. If you cannot deliver your subscription certificate to the subscription agent prior to the expiration of this offering period, you may follow the guaranteed delivery procedures described under “The Rights Offering—Guaranteed Delivery Procedures.”

If you send a payment that is insufficient to exercise the number of rights you requested to exercise, or if such number is not specified in the forms, the payment received will be applied to

exercise your rights to the fullest extent possible based on the amount of the payment received, subject to the availability of shares under the over-subscription privilege and the elimination of fractional shares. If your payment for the number of rights you requested to exercise is greater than the amount you owe for your subscription, you will be deemed to have exercised your over-subscription privilege to purchase the maximum number of shares with your over-payment. Any excess subscription payments will be returned by the subscription agent, without interest or penalty, as soon as practicable following the expiration of this offering period.

**Outstanding Shares of
Common Stock**

39,033,865 shares outstanding as of August 9, 2017.

shares outstanding as of August 9, 2017, assuming all of the rights were exercised.

**NASDAQ Capital Market
symbol for common stock**

BSTG.

Subscription Agent

Questions

If you have any questions about the rights offering, please contact _____ at _____.

Risk Factors

Investing in our common stock involves a high degree of risk. **You should consider carefully the information discussed in “Risk Factors.”**

RISK FACTORS

Investing in our common stock involves a high degree of risk. You should carefully consider the risks described herein and in the documents incorporated by reference in this prospectus, as well as other information we include or incorporate by reference into this prospectus, before making an investment decision. In particular, you should consider the risk factors under the heading “Risk Factors” included in our most recent Annual Report on Form 10-K, as may be revised or supplemented by our subsequent Quarterly Reports on Form 10-Q or Current Reports on Form 8-K, each of which are on file with the SEC and are incorporated herein by reference, and which may be amended, supplemented or superseded from time to time by other reports we file with the SEC in the future. Our business, financial condition or results of operations could be materially adversely affected by the materialization of any of these risks. The trading price of our common stock could decline due to the materialization of any of these risks, and you may lose all or part of your investment. This prospectus and the documents incorporated herein by reference also contain forward-looking statements that involve risks and uncertainties. Actual results could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including the risks described herein and in the documents incorporated herein by reference.

Risks Related to this Offering

This offering may cause the price of our common stock to decline and it may not recover for a substantial period of time or at all.

The subscription price represents a % discount to the closing price of our common stock on , the effective date. The subscription price, together with the number of shares of our common stock we propose to issue and ultimately will issue if this offering and the Backstop Commitment are completed, may result in an immediate decrease in the market value of our common stock. If the market price of our common stock falls below the subscription price, participants in this offering will have committed to buy shares of our common stock in this 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. We cannot assure you that the market price of our shares of common stock will not decline prior to the expiration of this offering or that, after shares of our common stock are issued upon exercise of rights, a subscribing rights holder will be able to sell shares of our common stock purchased in this offering at a price greater than or equal to the subscription price.

The subscription price determined for this offering and the purchase price under the Backstop Agreement may not be indicative of the fair value of our common stock.

The subscription price was set by our board of directors and you should not consider the subscription price as an indication of the value of our common stock. The subscription price does not necessarily bear any relationship to the book value of our assets, net worth, expected cash flows, losses, financial condition or any other established criteria for fair value. The market price of our common stock could decline during or after this offering, and you may not be able to sell shares of our common stock purchased in this offering at a price equal to or greater than the subscription price, or at all.

Our common stock price may be volatile.

The trading price of our common stock may fluctuate substantially. The price of our common stock that will prevail in the market after this 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 securities of our competitors;
 - § changes in the expectations or recommendations of securities analysts;
 - § material announcements by us regarding our product candidates ;
 - § general economic conditions and trends;
 - § legislative or regulatory changes affecting our business; or
- § departures of key personnel.

Your interest in us may be diluted as a result of this offering.

Stockholders who do not fully exercise their rights should expect that they will, at the completion of this offering and the Backstop Commitment, own a smaller proportional interest in us than would otherwise be the case had they fully exercised their rights. After giving effect to this offering, assuming that it is fully subscribed, we would have approximately _____ shares of common stock outstanding, representing an increase in outstanding shares of approximately _____.

There can be no guarantee that the stock purchase contemplated by the Backstop Agreement will be consummated if this offering is not fully subscribed.

The closing of the transactions contemplated by the Backstop Agreement is subject to satisfaction or waiver of conditions, including compliance with covenants and the accuracy of representations and warranties provided in the Backstop Agreement and consummation of this offering. As a result, we cannot guarantee that the transactions contemplated by the Backstop Agreement will be consummated if this offering is not fully subscribed. Failure to consummate the transactions contemplated by the Backstop Agreement could have adverse effects on our business and results of operations and financial condition.

You may not revoke your exercise of rights.

Once you have exercised your rights, you may not revoke such exercise in whole or in part. Accordingly, any exercise of rights will constitute a binding commitment to purchase and pay for the shares of our common stock issuable upon such exercise, regardless of any changes in the value of such shares, in our business, financial condition, results of operations or future prospects or in your individual circumstances.

You may not be able to resell any shares of our common stock that you purchase upon the exercise of rights immediately upon expiration of this offering.

If you exercise your rights, you may not be able to resell the common stock purchased by exercising your rights until you (or your broker or other nominee) have received a stock certificate or book-entry representing those shares. Although we will endeavor to issue the appropriate certificates and book-entries as soon as practicable after completion of this offering, there may be some delay between the expiration date and the time that we issue the new stock certificates and book-entries.

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

We will have broad discretion in determining how the net proceeds of this offering will be used. 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 this offering. You may not agree with the manner in which we choose to allocate and spend the net proceeds.

If we cancel this offering, neither we nor the subscription agent will have any obligation to you except to return your subscription payments.

We may withdraw or terminate this offering at any time and for any reason. If we withdraw or terminate this offering, neither we nor the subscription agent will have any obligation with respect to rights that have been exercised except to return, without interest or deduction, any subscription payments the subscription agent received from you.

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

Holders of shares of our common stock and holders of warrants to purchase our common stock who desire to purchase shares of our common stock in this offering must act on a timely basis to ensure that all required forms and payments are actually received by the subscription agent prior to the expiration date, unless extended. If you are a beneficial owner of shares of our common stock and/or warrants to purchase our common stock and you wish to exercise your rights, you must act promptly to ensure that your broker, custodian bank or other nominee acts for you and that all required forms and payments are actually received by your broker, custodian bank or other nominee in sufficient time to deliver such forms and payments to the subscription agent to exercise the rights granted in this offering that you beneficially own prior to the expiration date, unless extended. We will not be responsible if your broker, custodian or nominee fails to ensure that all required forms and payments are actually received by the subscription agent prior to the expiration date, unless 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 this 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 offering.

Any uncertified check used to pay for shares to be issued in this offering must clear before the expiration date, and the clearing process may require five or more business days. If you choose to exercise your 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, you will not have satisfied the conditions to exercise your right and will not receive the shares you wish to purchase.

This offering may limit our ability to use some or all of our net operating loss carryforwards in the future.

Under Section 382 of the Code, a corporation that undergoes an “ownership change” may be subject to limitations on its ability to utilize its pre-change net operating loss carryforwards to offset future taxable income. In general, an ownership change occurs if the aggregate stock ownership of certain stockholders (generally 5% stockholders, applying certain look-through and aggregation rules) increases by more than 50% over such stockholders’ lowest percentage ownership during the testing period (generally three years). This offering and the issuance of shares pursuant to exercised rights may cause an ownership change. Also, even if this offering and the issuance of shares

pursuant to exercised rights do not cause an ownership change, they could increase the likelihood that we may undergo an ownership change for purposes of Section 382 of the Code in the future. Limitations imposed on our ability to utilize net operating loss carryforwards could cause U.S. federal income taxes to be paid earlier than would be paid if such limitations were not in effect and could cause such net operating loss carryforwards to expire unused, in each case reducing or eliminating the benefit of such net operating loss carryforwards.

If the rights offering is not fully subscribed, the backstop provider will increase its ownership percentage and may become a majority owner of Biostage.

On August 14, 2017, the last practicable date before the filing of this prospectus, the backstop provider and its affiliates owned approximately 19.99% of our outstanding shares of common stock (excluding 1,638,095 shares of common stock underlying shares of our Series C Convertible Preferred Stock held by the backstop provider and its affiliates and warrants to purchase 9,700,000 shares of our common stock or common stock equivalents, which are subject to certain conversion and exercise limitations). As a stockholder and warrant holder as of the record date, the backstop provider will have the right to subscribe for and purchase shares of our common stock under the rights offering. To the extent the backstop provider participates in the rights offering and other stockholders and warrant holders do not, the backstop provider will increase its percentage of ownership and may become the owner of a majority of our shares of common stock.

We have received notices from NASDAQ of non-compliance with its continuing listing rules, and have not regained compliance.

On July 16, 2015, we received a notice from NASDAQ of non-compliance with its continuing listing rules, namely that the audit committee of our Board of Directors had two members following James McGorry's appointment as our President and Chief Executive Officer instead of the required minimum of three members. In accordance with NASDAQ continued listing rules, we were given until the earlier of our next annual shareholders' meeting or July 6, 2016 to add a third audit committee member. On March 10, 2016, Blaine McKee, Ph.D. was appointed as a member of the Board of Directors and its audit committee, and we regained compliance with that requirement.

On November 10, 2015, we received a notice from NASDAQ of non-compliance with its listing rules regarding the requirement that the listed securities maintain a minimum bid price of \$1 per share. Based upon the closing bid price for the 30 consecutive business days preceding the notice, the Company no longer met this requirement. However, the NASDAQ rules also provide the Company a period of 180 calendar days in which to regain compliance and, in some circumstances, a second 180-day compliance period. On November 25, 2015, we regained compliance with the minimum bid price requirement when the closing price of our common stock was at least \$1 per share for ten consecutive business days.

On November 18, 2016, we received a notice from NASDAQ of non-compliance with its listing rules regarding the minimum bid price requirement. On May 18, 2017, NASDAQ notified us that, based upon our continued non-compliance with the minimum bid price requirement as of May 17, 2017, as well as our non-compliance with the minimum \$2.5 million stockholders' equity requirement for continued listing on The Nasdaq Capital Market as of March 31, 2017, our common stock would be subject to delisting from Nasdaq unless we timely requested a hearing before the Nasdaq Hearings Panel, which we refer to as the Panel. We timely requested such a hearing.

On July 6, 2017, the Panel granted our request for continued listing on NASDAQ and accepted our plan to regain compliance with the continued listing requirements. Our continued listing is subject to a number of conditions, with the Panel's decision ultimately requiring that we evidence full compliance with all requirements for continued listing on The Nasdaq Capital Market, including the minimum bid price and million stockholders' equity requirements, by no later than November 13, 2017.

While we believe that the consummation of this offering will result in the Company regaining compliance with the stockholders' equity requirement, there can be no assurances that we will be able to evidence compliance with all applicable requirements for continued listing on The Nasdaq Capital Market within the extension of time that was granted by the Panel. The failure to meet continuing compliance standards subjects our common stock to a possible delisting. A delisting of our common stock would have an adverse effect on the market liquidity of our common stock and, as a result, the market price for our common stock could become more volatile. Further, a delisting also could make it more difficult for us to raise additional capital.

NOTE REGARDING FORWARD-LOOKING STATEMENTS¹

This prospectus (including any related prospectus supplement or free writing prospectus and documents incorporated by reference herein and therein) contains statements with respect to us which constitute “forward-looking statements” within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, and are intended to be covered by the “safe harbor” created by those sections. These statements relate to future events or to our future financial performance and involve known and unknown risks, uncertainties and other factors which may cause our actual results, performance or achievements to be materially different from any future results, performances or achievements expressed or implied by the forward-looking statements. Forward-looking statements may include, but are not limited to, statements relating to the regulatory approval of our Cellspan™ product candidates for the esophagus and airways or any other product candidates, by the FDA, EMA, MHRA or otherwise, which such approvals may not be obtained on a timely basis or at all; anticipated future earnings or other financial measures; success with respect to any clinical trials and other regulatory approval efforts and the number of patients who can be treated with our products or product candidates; commercialization efforts and marketing approvals of our products as well as the success thereof, including our Cellspan product candidates for the esophagus and airways; the continued availability of a market for our securities; our ability to raise sufficient capital to finance our planned operations, and our estimates concerning capital requirements and need for additional financing; our ability to continue as a going concern; the amount and timing of costs associated with our development of bioreactors, scaffolds and other devices and products; our failure to comply with regulations and any changes in regulations; our ability to access debt and equity markets; unpredictable difficulties or delays in the development of new technology; our collaborators not devoting sufficient time and resources to successfully carry out their duties or meet expected deadlines; our ability to attract and retain qualified personnel and key employees and retain senior management; the availability and price of acceptable raw materials and components from third-party suppliers; difficulties in obtaining or retaining the management and other human resource competencies that we need to achieve our business objectives; increased competition in the field of regenerative medicine and the financial resources of our competitors; our ability to obtain and maintain intellectual property protection for our device and product candidates; our inability to implement our growth strategy; and our liquidity.

In some cases, you can identify forward-looking statements by terms such as “believe,” “may,” “estimate,” “continue,” “anticipate,” “intend,” “should,” “could,” “would,” “target,” “seek,” “aim,” “believe,” “predicts,” “think,” “objectives,” “optimistic,” “strategy,” “potential,” “is likely,” “will,” “expect,” “plan” “project,” “permit” and similar expressions intended to identify forward-looking statements. These statements reflect our current views with respect to future events, are based on assumptions and are subject to risks and uncertainties. Given these uncertainties, you should not place undue reliance on these forward-looking statements. We discuss many of these risks in greater detail under the heading “Risk Factors” in our SEC filings, and under the caption “Risk Factors” in this prospectus.

You should read this prospectus and any related prospectus supplement and free writing prospectus and the documents that we incorporate by reference herein and therein and have filed as exhibits to the registration statement, of which this prospectus is part, completely and with the understanding that our actual future results may be materially different from what we expect. You should assume that the information appearing in this prospectus is accurate as of the date on the cover of this prospectus or prospectus supplement only. Our business, financial condition, results of operations and prospects may change. We may not update these

forward-looking statements, even though our situation may change in the future, unless we have obligations under the federal securities laws to update and disclose material developments related to previously disclosed information. We qualify all of the information presented in this prospectus and any related prospectus supplement or free writing prospectus, and particularly our forward-looking statements, by these cautionary statements.

¹ NTD: To update following update of business section

USE OF PROCEEDS

We estimate that the net proceeds from this offering and the Backstop Commitment will be approximately \$ million, after deducting expenses related to this offering.

We intend to use the net proceeds from this offering, together with other available funds, for research and development, including funding pre-clinical and clinical trials relating to the Cellframe™ technology, business development, sales and marketing, capital expenditures, working capital and other general corporate purposes.

Pending these uses, we intend to invest the net proceeds to us from this offering in a variety of capital preservation investments, including short-term, investment-grade and interest-bearing instruments. The precise amounts and timing of the application of proceeds will depend upon our funding requirements and the availability of other funds. We may find it necessary or advisable to use the net proceeds for other purposes, and we will have broad discretion in the application of the net proceeds and investors will be relying on the judgment of our management regarding the application of the net proceeds from this offering.

Based upon our historical and anticipated future growth and our financial needs, we may engage in additional financings of a character and amount that we determine as the need arises. We may raise additional capital through additional public or private financings, the incurrence of debt and other available sources.

PRICE RANGE OF OUR COMMON EQUITY

Our common stock trades on The NASDAQ Capital Market under the symbol “BSTG.” Prior to April 1, 2016, in connection with our name change, our common stock traded on The NASDAQ Capital Market under the symbol “HART” since October 21, 2013. The following table sets forth, for the quarters shown, the range of high and low sales prices of our common stock on the NASDAQ Capital Market.

	High	Low
Fiscal Year ending December 31, 2017		
Third Quarter (through August 14, 2017)	\$0.65	\$0.40
Second Quarter	\$0.49	\$0.22
First Quarter	\$0.95	\$0.29
Fiscal Year ended December 31, 2016		
First Quarter	\$2.60	\$1.08
Second Quarter	\$2.86	\$0.92
Third Quarter	\$1.22	\$0.90
Fourth Quarter	\$1.42	\$0.73
Fiscal Year ended December 31, 2015		
First Quarter	\$4.43	\$1.85
Second Quarter	\$3.83	\$1.36
Third Quarter	\$1.73	\$0.56
Fourth Quarter	\$3.47	\$0.53

The closing price of our common stock on the NASDAQ Capital Market on August 14, 2017 was \$0.42 per share. Immediately prior to this offering, we had 39,033,865 shares of common stock outstanding, which were held by approximately 181 stockholders of record as of August 14, 2017.

DIVIDEND POLICY

We have never declared or paid cash dividends on our common stock in the past and do not intend to pay cash dividends on our common stock in the foreseeable future. Any future determination to pay cash dividends will be at the discretion of our board of directors and will depend on our financial condition, results of operations, capital requirements and other factors our board of directors deems relevant.

THE RIGHTS OFFERING

Before deciding whether to exercise your subscription rights, you should carefully read this prospectus, including the information set forth under the heading “Risk Factors” and the information that is incorporated by reference into this prospectus.

Reasons for the Rights Offering

We believe that our existing cash resources will be sufficient to fund our planned operations into the fourth quarter of 2017, and consequently we require additional funding to continue our anticipated operations and support our capital needs. This offering would allow us to raise equity capital in a cost-effective manner that allows all of our stockholders and warrant holders the opportunity to participate in the transaction on a pro-rata basis, and if all stockholders exercise their rights, our stockholders may avoid dilution of their ownership interest in us, subject to the treatment of fractional shares.

Our board of directors considered various factors in evaluating this offering and related transactions, including:

- § our current capital resources and our future need for additional liquidity and capital;
- § our need for increased financial flexibility in order to enable us to achieve our business plan;
- § the size and timing of this offering;
- § the potential dilution to our current stockholders if they choose not to participate in this offering;
- § alternatives available for raising capital, including debt and other forms of equity raises;
- § the potential impact of this offering on the public float for our common stock; and
- § the fact that existing stockholders and warrant holders would have the opportunity to participate on a pro rata basis to purchase additional shares of our common stock, subject to certain restriction.

The terms of the Backstop Commitment were reviewed, negotiated and approved by our board of directors, with advice from legal counsel.

The Backstop Agreement (and this offering) may be terminated by us at any time prior to the expiration date and for any reason.

Terms of the Offer

We are issuing to our stockholders and warrant holders as of the effective date rights to subscribe for an aggregate of up to _____ shares of our common stock. Each rights holder is being issued one basic subscription privilege for each share of our common stock owned (and each share of common stock underlying such holder's warrant) as of the close of business, on _____, 2017, the effective date (1 for 1).

Each basic subscription privilege entitles the rights holder to purchase _____ shares of our common stock, at a cash price of \$ _____ per whole share, which represents a _____ % discount to the closing price of our common stock on the effective date. Rights may only be exercised in the aggregate for whole numbers of shares of our common stock; no fractional shares of our common stock will be issued in this offering. Any fractional shares will be rounded down to the nearest whole share of common stock and any excess subscription payments will be returned by the subscription agent.

Rights holders who fully exercise their basic subscription privilege will be entitled to the over-subscription privilege which enables such rights holders to subscribe for additional shares of our common stock that remain unsubscribed as a result of any unexercised basic subscription privileges. If sufficient remaining shares are available, all over-subscription requests will be honored so long as no rights holder receives more than the rights holder's pro rata share of the shares not purchased by other rights holders through exercises of their basic subscription privileges and other ownership thresholds described herein are not exceeded.

Rights may be exercised at any time during the subscription period, which commences on _____, 2017, and ends at _____, Eastern time, on _____, 2017, or the expiration date, unless extended by us.

The rights will be evidenced by subscription certificates which will be mailed to stockholders and warrant holders, except as discussed below under “Foreign Stockholders.”

For purposes of determining the number of shares a rights holder may acquire in this offering, broker-dealers, trust companies, banks or others whose shares are held of record by Cede or by any other depository or nominee will be deemed to be the holders of the rights that are issued to Cede or the other depository or nominee on their behalf.

There is no minimum number of rights which must be exercised in order for this offering to close.

Over-Subscription Privilege

The over-subscription privilege allows rights holders that fully exercise their basic subscription privilege to purchase additional shares of our common stock that remain unsubscribed as a result of any unexercised basic subscription privileges. You should indicate on your subscription certificate that you submit with respect to the exercise of your rights how many additional shares of our common stock you are willing to acquire pursuant to the over-subscription privilege. If sufficient remaining shares are available, we will seek to honor over-subscription requests in full so long as no rights holder receives more than the rights holder’s pro rata share of the shares not purchased by other rights holders through exercises of their basic subscription privileges and other ownership thresholds described herein are not exceeded.

Banks, brokers, trustees and other nominee holders of rights will be required to certify to the subscription agent, before any over-subscription privileges may be exercised with respect to any particular beneficial owner, as to the aggregate number of rights exercised pursuant to the subscription right and the number of shares subscribed for pursuant to the over-subscription privileges by such beneficial owner.

We will not offer or sell in connection with this offering any shares of common stock that are not subscribed for pursuant to the basic subscription privileges or the over-subscription privileges. The backstop provider, however, has agreed to backstop this offering pursuant to the Backstop Commitment.

Expiration of this Offer

This offering will expire at _____, Eastern time, on _____, 2017, unless extended by us, and rights may not be exercised thereafter.

Subject to the terms of the Backstop Agreement, our board of directors may determine to extend the subscription period, and thereby postpone the expiration date, to the extent our board of directors determines that doing so is in the best interest of our stockholders.

Any extension of this offering will be followed as promptly as practicable by announcement thereof, and in no event later than 9:00 a.m., New York City time, on the next business day following the previously scheduled expiration date. Without limiting the manner in which we may choose to make such announcement, we will not, unless otherwise required by law, have any obligation to publish, advertise or otherwise communicate any such announcement other than by issuing a press release or such other means of announcement as we deem appropriate.

Transferability

The rights granted to you are non-transferable and, therefore, you may not sell, transfer, or assign your rights to anyone. The rights will not be listed on NASDAQ or any other stock exchange or market. The shares of our common stock issuable upon exercise of the rights will be listed on NASDAQ.

Determination of the Subscription Price

The \$ subscription price was set by our board of directors using the formula negotiated with the backstop provider in the Backstop Agreement. In approving the subscription price, our board of directors considered, among other things, the following factors:

- § the historical and current market price of our common stock;
- the % discount to the as compared to comparable precedent transactions, including the range of discounts to the market value (on an actual basis and a pro forma basis taking into account the Subscription Price and size of this offering) represented by the subscription prices in other rights offerings;
- § the subscription price represents a % discount to the closing price of our common stock on the effective date;
- § the backstop subscription price at which the backstop provider was willing to provide the Backstop Commitment;
- § the fact that rights holders will have an over-subscription privilege;
- § the low level of execution risk of raising capital in this offering with the Backstop Commitment;
- § the terms and expenses of this offering relative to other alternatives for raising capital, including fees payable and our ability to access capital through such alternatives;
- § the size of this offering; and
- § the general condition of the securities market.

Subscription Agent

will act as the subscription agent in connection with this offering. will receive for their administrative, processing, invoicing and other services fees estimated to be approximately \$, plus reimbursement for all out-of-pocket expenses related to this offering.

Completed subscription certificates must be sent together with full payment of the subscription price for all whole shares subscribed for through the exercise of the subscription privilege and the over-subscription privilege to the subscription agent by one of the methods described below. We will accept only properly completed and duly executed subscription certificates actually received at any of the addresses listed below, at or prior to the expiration date or by the close of business on the third business day after the expiration date following timely receipt of a notice of guaranteed delivery. See "Payment for Shares" below. In this prospectus, close of business means 5:00 p.m., New York City time, on the relevant date.

Subscription Certificate Delivery Method Address/Number

By Notice of Guaranteed Delivery: You may deliver the notice of guaranteed delivery to the subscription agent in the same manner as the rights certificate at the addresses set forth below. Eligible institutions only may also deliver the notice of

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guaranteed delivery to the subscription agent by facsimile at _____ ,
confirmation of faxes only: _____ . **This number is ONLY for
confirmation of a fax.**

By Overnight Courier:

By First Class Mail:

Delivery to an address other than one of the addresses listed above may not constitute valid delivery and, accordingly, may be rejected by us.

Any questions or requests for assistance concerning the method of subscribing for shares or for additional copies of this prospectus or subscription certificates or notices of guaranteed delivery may be directed to _____ at _____ ..

You may also contact your broker or nominees for information with respect to this offering.

Methods for Exercising Rights

Exercise of the Basic Subscription Privilege

Basic subscription privileges are evidenced by subscription certificates that, except as described below under “Foreign Stockholders,” will be mailed to rights holders or, if a rights holder’s shares are held by a depository or nominee on his, her or its behalf, to such depository or nominee. Basic subscription privileges may be exercised by completing and signing the subscription certificate that accompanies this prospectus and mailing it in the envelope provided, or otherwise delivering the completed and duly executed subscription certificate to the subscription agent, together with payment in full for the shares at the estimated subscription price by the expiration date. Basic subscription privileges may also be exercised by contacting your broker, trustee or other nominee, who can arrange, on your behalf, to guarantee delivery of payment and delivery of a properly completed and duly executed subscription certificate pursuant to a notice of guaranteed delivery by the close of business on the third business day after the expiration date. A fee may be charged by your broker, trustee or other nominee for this service. Completed subscription certificates and related payments must be received by the subscription agent on or before the expiration date (unless payment is effected by means of a notice of guaranteed delivery as described below under “Payment for Shares”) at the offices of the subscription agent at the address set forth above. All exercises of basic subscription privileges are irrevocable.

Exercise of the Over-Subscription Privilege

Rights holders who fully exercise all basic subscription privileges issued to them may participate in the over-subscription privilege by indicating on their subscription certificate the number of shares of our common stock they are willing to acquire. If sufficient remaining shares of our common stock are available after the primary subscription, we will seek to honor over-subscriptions requests in full so long as no rights holder receives more than the rights holder’s pro rata share of the shares not purchased by other rights holders through exercises of their basic subscription privileges and other ownership thresholds described herein are not exceeded. All exercises of over-subscription privileges are irrevocable.

Rights Holders Whose Shares are Held by a Nominee

Rights holders whose shares are held by a nominee, such as a bank, broker-dealer or trustee, must contact that nominee to exercise their rights. In that case, the nominee will complete the subscription certificate on behalf of the rights holder and arrange for proper payment by one of the methods set forth under “Payment for Shares” below.

Nominees

Nominees, such as brokers, trustees or depositories for securities, who hold shares for the account of others, should notify the respective beneficial owners of the shares as soon as possible to ascertain the beneficial owners' intentions and to obtain instructions with respect to the rights. If the beneficial owner so instructs, the nominee should complete the subscription certificate and submit it to the subscription agent with the proper payment as described under "Payment for Shares" below.

General

All questions as to the validity, form, eligibility (including times of receipt and matters pertaining to beneficial ownership) and the acceptance of subscription forms and the subscription price will be determined by us, which determinations will be final and binding. No alternative, conditional or contingent subscriptions will be accepted. We reserve the right to reject any or all subscriptions not properly submitted or the acceptance of which would, in the opinion of our counsel, be unlawful.

We reserve the right to reject any exercise of subscription rights if such exercise is not in accordance with the terms of this offering or not in proper form or if the acceptance thereof or the issuance of shares of our common stock thereto could be deemed unlawful. We reserve the right to waive any deficiency or irregularity with respect to any subscription certificate. Subscriptions will not be deemed to have been received or accepted until all irregularities have been waived or cured within such time as we determine in our sole discretion. We will not be under any duty to give notification of any defect or irregularity in connection with the submission of subscription certificates or incur any liability for failure to give such notification.

Foreign Stockholders

Subscription certificates will not be mailed to foreign stockholders. Foreign stockholders will receive written notice of this offering. The subscription agent will hold the rights to which those subscription certificates relate for these stockholders' accounts until instructions are received to exercise the rights, subject to applicable law.

Payment for Shares

Participating rights holders may choose between the following methods of payment:

A participating rights holder may send the subscription certificate together with payment for the shares acquired pursuant to the subscription privilege and any additional shares subscribed for pursuant to the over-subscription (1) privilege to the subscription agent based on the subscription price in the executed subscription certificate, must be received by the subscription agent at one of the subscription agent's offices set forth above (see "—Subscription Agent"), at or prior to the expiration date.

A participating rights holder may request an Eligible Guarantor Institution as that term is defined in Rule 17Ad-15 under the Securities Exchange Act of 1934, as amended, or the **Exchange Act**, to send a notice of guaranteed delivery or otherwise guaranteeing delivery of (a) payment of the full subscription price for the whole shares subscribed for pursuant to the subscription privilege and any additional shares subscribed for pursuant to the (2) over-subscription privilege and (b) a properly completed and duly executed subscription certificate. The subscription agent will not honor a notice of guaranteed delivery unless a properly completed and duly executed subscription certificate and full payment for the shares is received by the subscription agent at or prior to 5:00 p.m., Eastern time, on _____, 2017, unless this offering is extended by us.

Payments by a participating rights holder must be in U.S. dollars by personal check or bank draft drawn on a bank or branch located in the United States and payable to _____.. The subscription agent will deposit all funds received by it prior to the final payment date into a segregated account pending pro-ration and distribution of the shares.

The method of delivery of subscription certificates and payment of the subscription price to us will be at the election and risk of the participating rights holders, but, if sent by mail it is recommended that such certificates and payments be sent 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 date or the date guaranteed payments are due under a notice of guaranteed delivery (as applicable). Because uncertified personal checks may take at least five business days to clear, you are strongly urged to pay,

or arrange for payment, by means of certified or cashier's check or money order.

Whichever of the two methods described above is used, issuance of the shares purchased is subject to collection of checks and actual payment. If a participating rights holder who subscribes for shares pursuant to the subscription privilege or over-subscription privilege does not make payment of any amounts due by the expiration date, the date guaranteed payments are due under a notice of guaranteed delivery or within ten business days of the confirmation date, as applicable, the subscription agent reserves the right to take any or all of the following actions:

§ reallocate the shares to other participating rights holders in accordance with the Over-Subscription Privilege;
§ apply any payment actually received by it from the participating rights holder toward the purchase of the greatest whole number of shares which could be acquired by such participating rights holder upon exercise of the subscription and/or the over-subscription privilege; and/or
§ exercise any and all other rights or remedies to which it may be entitled, including the right to set off against payments actually received by it with respect to such subscribed for shares.

All questions concerning the timeliness, validity, form and eligibility of any exercise of rights will be determined by us, whose determinations will be final and binding. We may waive any defect or irregularity, or permit a defect or irregularity to be corrected within such time as we may determine, or reject the purported exercise of any right. Subscriptions will not be deemed to have been received or accepted until all irregularities have been waived or cured within such time as we determine. The subscription agent will not be under any duty to give notification of any defect or irregularity in connection with the submission of subscription certificates or incur any liability for failure to give such notification.

Participating rights holders will have no right to rescind their subscription after receipt of their payment for shares.

Delivery of Shares

Stockholders whose shares are held of record by Cede or by any other depository or nominee on their behalf or their broker-dealers' behalf will have any shares that they acquire credited to the account of Cede or the other depository or nominee. With respect to all other stockholders, we will credit your shares by book entry and only issue stock certificates if required by law. We will not credit the shares you purchase until you provide the subscription agent with information for your bank, broker or other nominee. If we are required to deliver a physical certificate for shares you acquire, the certificate will be mailed after payment for all the shares subscribed for has cleared, which may take up to 15 business days from the expiration date.

Termination

We may terminate this offering in the discretion of our board of directors. If this offering is terminated, all rights will expire without value and we will promptly arrange for the refund, without interest or penalty, of all funds received from rights holders. All monies received by the subscription agent in connection with this offering will be held by the subscription agent, on our behalf, in a segregated interest-bearing account at a negotiated rate. All such interest shall be payable to us even if we determine to terminate this offering and return your subscription payment.

No Recommendation to Stockholders

Our Board of Directors has not made, nor will it make, any recommendation to stockholders and warrant holders regarding the exercise of rights under this offering. We cannot predict the price at which our shares of common stock will trade after this offering. You should consult with your legal, tax and financial advisors prior to making your independent investment decision about whether or not to exercise your rights.

As of the effective date, the backstop provider and its affiliates beneficially owned approximately 19.99% of our common stock (excluding 1,638,095 shares of common stock underlying shares of our Series C Convertible Preferred Stock held by the backstop provider and its affiliates and warrants to purchase 9,700,000 shares of our common stock or common stock equivalents, which are subject to certain conversion and exercise limitations), and Leon Greenblatt III, a member of our board of directors, is a manager of the backstop provider. You should not view the intentions of the backstop provider as a recommendation or other indication by it regarding whether the exercise of the subscription rights is or is not in your best interests.

Stockholders and warrant holders who exercise 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 or sell your rights, you will lose any value represented by your rights, and if you do not exercise your rights in full, your percentage ownership interest in Biostage will be diluted. For more information on the risks of participating in this offering, see the section of this prospectus entitled “Risk Factors.”

Effect of This Offering on Existing Stockholders; Interests of Certain Stockholders, Directors and Officers

After giving effect to this offering, assuming that it is fully subscribed, we would have approximately _____ shares of common stock outstanding, representing an increase of approximately _____ % in our outstanding shares as compared to the effective date. If you fully exercise the rights that we distribute to you, your proportional interest in us (assuming the exercise of all outstanding warrants) will remain the same. If you do not exercise any rights, or you exercise less than all of your rights, your interest in us will be diluted, as you will own a smaller proportional interest in Biostage compared to your interest prior to this offering.

By virtue of the backstop provider's ownership, it is able to exert substantial influence over us, including our business strategy and policies, mergers or other business combinations, acquisition or disposition of assets, future issuances of our common stock, debt or other securities, the incurrence of debt or obtaining other sources of financing, and other matters relating to our business and operations. The backstop provider's interests may not always be consistent with our interests or with the interests of our other stockholders. To the extent that conflicts of interest may arise between us and the backstop provider and its affiliates, those conflicts may be resolved in a manner adverse to us or our other stockholders.

If the Backstop Commitment were fully exercised, the backstop provider would acquire _____ shares of our common stock, for an aggregate purchase price of \$10.0 million. In addition, the backstop provider will be entitled to registration rights with respect to any shares of our common stock it acquires under the Backstop Commitment. See "The Backstop Agreement—Registration Rights" for more information.

U.S. Federal Income Tax Considerations of the Rights Offering

U.S. Holders (as defined herein) generally will not recognize gain or loss on the receipt, exercise or expiration of the rights. See "U.S. Federal Income Tax Considerations" for a more complete discussion, including additional qualifications and limitations. In addition, you should consult your own tax advisors as to the tax consequences to you of the receipt, exercise and expiration of the rights in light of their particular circumstances.

Shares of Our Common Stock Outstanding After this Offering

As of the effective date, _____ shares of our common stock were issued and outstanding. Assuming no additional shares of common stock have been or will be issued by us after the effective date and prior to consummation of this offering and assuming it is fully subscribed, we expect approximately _____ shares of our common stock will be

outstanding immediately after completion of this offering.

Other Matters

The rights certificates are governed by Delaware law. We are not making this 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 rights holders who are residents of those states or other jurisdictions or who are otherwise prohibited by federal or state laws or regulations to accept or exercise the rights. We may delay the commencement of this offering in those states or other jurisdictions, or change the terms of this 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 rights in order to comply with state securities laws. We may decline to make modifications to the terms of this 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 rights, you will not be eligible to participate in this offering. However, we are not currently aware of any states or jurisdictions that would preclude participation in this offering.

THE BACKSTOP AGREEMENT

The Backstop Commitment

On _____, 2017, we entered into a backstop agreement with the backstop provider. The backstop provider agreed to purchase from us, an aggregate number of shares of our common stock equal to (x) \$10.0 million, minus (y) the aggregate proceeds of this offering, at a price per share equal to the subscription price, subject to the terms and conditions of the Backstop Agreement. The Backstop Commitment is scheduled to close not later than the third trading day following the expiration date.

Expense Reimbursement

Regardless of whether the transactions contemplated by the Backstop Agreement are consummated, we have agreed to reimburse the backstop provider for all reasonable out-of-pocket fees and expenses (including attorneys' fees and expenses) incurred by it in connection with the Backstop Agreement and the transactions contemplated thereby, other than if the Backstop Agreement is terminated due to a breach by the backstop provider.

Closing Conditions

The closing of the transactions contemplated by the Backstop Agreement is subject to the satisfaction or waiver of customary conditions, including:

- § receipt of all applicable regulatory approvals;
- § compliance with covenants;
- § the accuracy of representations and warranties set forth in the Backstop Agreement;
- § the absence of a material adverse effect on us or on the ability of the backstop provider to perform its obligations under the Backstop Agreement;
- § the effectiveness of the registration statement related to this offering;
- § consummation of this offering; and
- § approval for listing on the Nasdaq of shares of our common stock to be issued in this offering.

Termination

The Backstop Agreement may be terminated at any time prior to the closing of the transactions contemplated by the Backstop Agreement as follows:

§ by mutual written agreement of the backstop provider and us;

§ by any party, if the closing of the transactions contemplated by the Backstop Agreement does not occur by _____, § 2017;

§ by any party, if any governmental entity shall have taken action prohibiting any of the contemplated transactions; § and

by the backstop provider, if we breach any of our representations, warranties, covenants or agreements set forth in § the Backstop Agreement that would result in the applicable condition to closing not being satisfied, and such breach is not cured within 10 days of receipt of written notice by the backstop provider;

by us, if there is a breach of any of the backstop provider's representations, warranties, covenants or agreements set § forth in the Backstop Agreement that would result in the applicable condition to closing not being satisfied, and such breach is not cured within 10 days of receipt of written notice by us; or

§ by us, if we decide to withdraw or terminate the offering for any reason and at any time prior to the expiration date.

Indemnification

We agreed to indemnify the backstop provider and its affiliates and each of their respective officers, directors, partners, employees, agents and representatives for losses arising out of this offering and the related registration statement and prospectus (other than with respect to statements made in reliance on information provided to us in writing by the backstop provider for use herein) and claims, suits or proceedings challenging the authorization, execution, delivery, performance or termination of a rights offering, the Backstop Agreement and certain ancillary agreements and/or any of the transactions contemplated thereby, other than losses arising out of or related to any breach by the backstop provider of the Backstop Agreement.

The backstop providers agreed to indemnify us and our affiliates and each of our respective officers, directors, partners, employees, agents and representatives for losses arising out of or relating to statements or omissions in the registration statement or prospectus for this offering (or any amendment or supplement thereto) made in reliance on or in conformity with written information relating to the backstop provider furnished to us by or on behalf of the backstop provider expressly for use therein.

Registration Rights

The purchase of shares of our common stock by the backstop provider pursuant to the Backstop Agreement would be effected in a transaction exempt from the registration requirements of the Securities Act and would not be registered pursuant to the registration statement of which this prospectus forms a part. Under the Backstop Agreement, with respect to the shares of our common stock acquired by the backstop provider in this offering or in the Backstop Commitment, we agreed to file a resale registration statement, at our own expense, promptly following the sale of shares to the backstop provider pursuant to the Backstop Agreement (but in any event within ninety days thereafter), to register the resale of those shares by the backstop provider. In the event the number of shares available under the resale registration statement is insufficient, we will, to the extent necessary and permissible, amend the registration statement or file a new registration statement, so as to cover all registrable securities as soon as is practicable and permissible. We will use reasonable best efforts to keep the resale registration statement or a replacement registration statement effective pursuant to Rule 415 under the Securities Act and available for sales of all of the shares subject thereto at all times until the earlier of (i) the date as of which the backstop party may sell all of the registrable securities without restriction or limitation pursuant to Rule 144 under the Securities Act (or successor thereto) and (ii) the date on which the backstop party has sold all the registrable securities.

U.S. FEDERAL INCOME TAX CONSIDERATIONS

The following summary describes United States federal income tax considerations to U.S. Holders (defined below) relating to the receipt, exercise and expiration of the rights received by such U.S. Holders in this offering. It addresses only U.S. Holders that hold our common stock as capital assets within the meaning of Section 1221 of the Code. The following summary does not purport to be a complete analysis of all of the potential U.S. federal income tax considerations that may be relevant to particular holders of rights in light of their particular circumstances nor does it deal with persons that are subject to special tax rules, such as brokers, dealers in securities or currencies, financial institutions, insurance companies, tax-exempt entities or qualified retirement plans, holders of 4.99% or more of a class of our stock by vote or value (whether such stock is actually or constructively owned), regulated investment companies, common trust funds, holders subject to the alternative minimum tax, persons holding rights or shares of our common stock as part of a straddle, hedge or conversion transaction or as part of a synthetic security or other integrated transaction, traders in securities that elect to use a mark-to-market method of accounting for their securities holdings, holders that have a “functional currency” other than the United States dollar, U.S. expatriates, and persons that are not U.S. Holders. In addition, the discussion below does not address persons who hold an interest in a partnership or other entity that holds rights, tax consequences arising under the laws of any state, local or non-U.S. jurisdiction or other U.S. federal tax consequences (e.g., estate or gift tax) other than those pertaining to the income tax, or the consequences of the Medicare tax on net investment income.

The following is based on the Code, the Treasury regulations promulgated thereunder (the **Treasury Regulations**) and administrative rulings and court decisions, in each case as in effect on the date hereof, all of which are subject to change, possibly with retroactive effect.

As used herein, the term “U.S. Holder” means a beneficial holder of rights that is:

- § a citizen or individual resident of the United States;
- § a corporation (or an entity treated as a corporation for U.S. federal tax purposes) created or organized in or under the laws of the United States or any political subdivision thereof;
- § an estate, the income of which is subject to U.S. federal income taxation regardless of its source; or
- § a trust if (1) a U.S. court is able to exercise primary supervision over its administration and one or more U.S. persons, within the meaning of Section 7701(a)(30) of the Code, have authority to control all of its substantial § decisions, or (2) it was in existence on August 20, 1996, was treated as a U.S. person under the Code on the previous day and has properly elected under applicable Treasury Regulations to continue to be treated as a United States person.

The tax treatment of a partner in a partnership, or other entity treated as a partnership for U.S. federal tax purposes, may depend on both the partnership’s and the partner’s status. Partnerships that are beneficial owners of rights, and partners in such partnerships, are urged to consult their own tax advisors regarding the U.S. federal, state, local and non-U.S. tax consequences to them of the receipt, exercise and expiration of the rights.

This summary is of a general nature only. It is not intended to constitute, and should not be construed to constitute, legal or tax advice to any particular holder. Holders should consult their own tax advisors as to the tax consequences in their particular circumstances.

U.S. Federal Income Tax Characterization of the Rights Offering

We believe that the receipt of rights in this offering will be treated as a non-taxable transaction and not as a taxable distribution of property for U.S. federal income tax purposes. However, holders of our common stock should be aware that we can provide no assurance that the IRS will take a similar view or would agree with the tax consequences described in this summary.

Receipt of the Rights

A U.S. Holder generally will not recognize income, gain, deduction or loss on the receipt of rights in this offering. A U.S. Holder's tax basis in its rights will depend on the relative fair market value of the rights received by such U.S. Holder and such U.S. Holder's shares of our common stock at the time the rights are distributed. If the rights received by a U.S. Holder have a fair market value equal to at least 15% of the fair market value of such U.S. Holder's shares of our common stock on the date of the distribution, the U.S. Holder must allocate its adjusted tax basis in its shares of our common stock between its common stock and the rights in proportion to their then relative fair market values. If the rights received by a U.S. Holder have a fair market value that is less than 15% of the fair market value of such U.S. Holder's shares of our common stock on the date of distribution, the U.S. Holder's tax basis in its rights will be zero unless the U.S. Holder elects to allocate its adjusted tax basis in its shares of our common stock in the manner described in the previous sentence. A U.S. Holder makes this election by attaching a statement to its U.S. federal income tax return for the year in which rights are received. The election, once made, is irrevocable. A U.S. Holder making this election must retain a copy of the election and the tax return with which it was filed to substantiate the gain or loss, if any, recognized on any later disposition of shares of our common stock received upon exercise of its rights. The holding period for the rights received by a U.S. Holder in this offering will include the U.S. Holder's holding period for its shares of our common stock with respect to which the rights are received.

Exercise of the Rights

A U.S. Holder will not recognize gain or loss on the exercise of a right. The U.S. Holder's tax basis in the shares of our common stock received as a result of the exercise of a right will equal the sum of the exercise price paid for the shares of our common stock and the U.S. Holder's tax basis in the right determined as described under "Receipt of the Rights" above. The holding period for the shares of our common stock received as a result of the exercise of the right will begin on the exercise date.

A U.S. Holder that exercises rights should be aware that the exercise of such rights could result in a loss that would otherwise be recognized with respect to such U.S. Holder's other shares of our common stock to be disallowed under the "wash sale" rules. If the "wash sale" rules apply to a U.S. Holder's loss with respect to its other shares of our common stock, the U.S. Holder's tax basis in any shares of our common stock received as a result of the exercise of rights would be increased to reflect the amount of the disallowed loss. U.S. Holders are urged to consult their tax advisors regarding how the "wash sale" rules apply to them in light of their particular circumstances.

Expiration of the Rights

A U.S. Holder that allows a right to expire will not recognize gain or loss and will not allocate any tax basis to the right as described under “Receipt of the Rights” above.

The above summary is not intended to constitute a complete analysis of all tax consequences relating to the receipt, exercise and expiration of the rights. You should consult your own tax advisor concerning the tax consequences of your particular situation.

DESCRIPTION OF OUR CAPITAL STOCK

The following description of our common stock summarizes the material terms and provisions of the common stock we may offer under this prospectus. The following description of our capital stock does not purport to be complete and is subject to, and qualified in its entirety by, our amended and restated certificate of incorporation, or our Charter, and our second amended and restated bylaws, or our Bylaws, which are exhibits to the registration statement of which this prospectus forms a part, and by applicable law. The terms of our common stock and warrants to purchase our common stock may also be affected by Delaware law.

Authorized Capital Stock

Our authorized capital stock consists of 120,000,000 shares of common stock, par value \$0.01 per share, and 2,000,000 shares of undesignated preferred stock, par value \$0.01 per share, of which 1,000,000 shares were designated as Series B Convertible Preferred Stock and 4,000 shares were designated as Series C Convertible Preferred Stock. As of August 14, 2017, there were 39,033,865 shares of common stock outstanding and 516 shares of preferred stock outstanding, all of which were shares of Series Convertible Preferred Stock.

Common Stock

Holders of our common stock are entitled to one vote for each share held of record on all matters submitted to a vote of shareholders; provided, that, except as otherwise required by law, holders of common stock are not entitled to vote on any amendment to the Charter that changes the powers, preferences, rights or other terms of one or more series of undesignated preferred stock if the holders of the affected series are entitled to vote, separately or together, with the holders of one or more other such series, on such amendment pursuant to our Charter or Delaware General Corporation Law. Our Charter provides that our Board of Directors shall be divided into three classes, each consisting as nearly as reasonably may be possible of one-third of the total number of directors constituting the entire Board of Directors, with each class's term expiring on a staggered basis. Newly-created directorships and vacancies on our Board of Directors may only be filled by a majority of the members of the incumbent board then in office, though less than a quorum, and not by our stockholders. Directors may be removed from office only for cause by the affirmative vote of the holders of at least seventy-five percent (75%) of the outstanding shares entitled to be cast on the election of directors by the then-outstanding shares of all classes and series of capital stock, voting together as a single class. Holders of common stock have no preemptive, redemption or conversion rights and are not subject to future calls or assessments. No sinking fund provisions apply to our common stock. All outstanding shares are fully-paid and non-assessable. In the event of our liquidation, dissolution or winding up, after the satisfaction in full of the liquidation preferences of holders of any preferred stock, holders of common stock are entitled to ratable distribution of the remaining assets available for distribution to stockholders. Holders of common stock are entitled to receive proportionately any such dividends declared by our Board of Directors, out of legally available funds for dividends, subject to any preferences that may be applicable to any shares of preferred stock that may be outstanding at that time.

The rights, preferences and privileges of holders of common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of preferred stock that we may designate and issue in the future. To the extent our Shareholder Rights Agreement remains in effect at the time we sell any shares of common stock under this prospectus, such shares of common stock would also be accompanied by certain preferred stock purchase rights. See “Description of Capital Stock – Provisions of our Certificate of Incorporation and Bylaws and Delaware Anti-Takeover Law” for additional details regarding our Shareholder Rights Agreement.

Listing

Our common stock is listed on the NASDAQ Capital Market under the symbol “BSTG.” On August 14, 2017, the closing price for our common stock, as reported on the NASDAQ Capital Market, was \$0.42 per share. As of the close of business on August 14, 2017, there were approximately 181 stockholders of record of our common stock. Prior to our name change on March 31, 2016 from Harvard Apparatus Regenerative Technology, Inc. to Biostage, Inc., our common stock was listed on the NASDAQ Capital Market under the symbol “HART.”

On July 16, 2015, we received a notice from NASDAQ of non-compliance with its continuing listing rules, namely that the audit committee of our Board of Directors had two members following James McGorry's appointment as our President and Chief Executive Officer, instead of the required minimum of three members. In accordance with NASDAQ continued listing rules, we were given until the earlier of our next annual shareholders' meeting or July 6, 2016 to add a third audit committee member. On March 10, 2016, Blaine McKee, Ph.D. was appointed as a member of the Board of Directors and its audit committee, and we regained compliance with that requirement.

On November 10, 2015, we received a notice from NASDAQ of non-compliance with its listing rules regarding the requirement that the listed securities maintain a minimum bid price of \$1 per share. Based upon the closing bid price for the 30 consecutive business days preceding the notice, the Company no longer met this requirement. However, the NASDAQ rules also provide the Company a period of 180 calendar days in which to regain compliance and, in some circumstances, a second 180-day compliance period. On November 25, 2015, we regained compliance with the minimum bid price requirement when the closing price of our common stock was at least \$1 per share for ten consecutive business days.

On November 18, 2016, we received a notice from NASDAQ of non-compliance with its listing rules regarding the minimum bid price requirement. We subsequently obtained stockholder approval to effect a reverse stock split at the discretion of our board of directors. On May 18, 2017, we received a letter from NASDAQ stating that based upon our continued non-compliance with the minimum bid price requirement as of May 17, 2017, as well as our non-compliance with the minimum \$2.5 million stockholders equity requirement for continued listing on The Nasdaq Capital Market as of March 31, 2017, our common stock would be subject to delisting from NASDAQ unless we timely requested a hearing before the Nasdaq Hearings Panel (the "Panel").

We timely requested a hearing before the Panel, and as a result of that hearing, NASDAQ granted our request for continued listing. Our continued listing is subject to a number of conditions, with the Panel's decision ultimately requiring that we evidence full compliance with all requirements for continued listing on The Nasdaq Capital Market, including the \$1.00 bid price and \$2.5 million stockholders' equity requirements, by no later than November 13, 2017. We must also complete this rights offering prior to that date, and must submit updated financial projections to NASDAQ. There can be no assurances that the Company will be able to evidence compliance with all applicable requirements for continued listing on The Nasdaq Capital Market within the extension of time granted by the Panel.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is Computershare.

2013 Equity Incentive Plan

Under our 2013 Equity Incentive Plan, we can grant stock options to employees, directors and consultants. The 2013 Equity Incentive Plan also permits us to make grants of incentive stock options, non-qualified stock options, stock appreciation rights, deferred stock awards, restricted stock awards, unrestricted stock awards, performance shares and dividend equivalent rights. We currently have reserved 9,960,000 shares of common stock for the issuance of awards under the 2013 Equity Incentive Plan.

Employee Stock Purchase Plan

Under our employee stock purchase plan, participating employees can authorize us to withhold a portion of their base pay during consecutive six-month payment periods for the purchase of shares of our common stock. At the conclusion of the period, participating employees can purchase shares of our common stock at eight-five percent (85%) of the lower of the fair market value of our common stock at the beginning or end of the period. Shares are issued under the plan for the six-month periods ending June 30 and December 31. Under this plan, 150,000 shares of common stock are authorized for issuance of which 89,947 were issued as of August 14, 2017.

Provisions of our Certificate of Incorporation and Bylaws and Delaware Anti-Takeover Law

Certain provisions of the Delaware General Corporation Law and of our Charter and Bylaws could have the effect of delaying, deferring or discouraging another party from acquiring control of us. These provisions, which are summarized below, are expected to discourage certain types of coercive takeover practices and inadequate takeover bids and, as a consequence, they might also inhibit temporary fluctuations in the market price of our common stock that often result from actual or rumored hostile takeover attempts. These provisions are also designed in part to encourage anyone seeking to acquire control of us to first negotiate with our Board of Directors. These provisions might also have the effect of preventing changes in our management. It is possible that these provisions could make it more difficult to accomplish transactions that stockholders might otherwise deem to be in their best interests. However, we believe that the advantages gained by protecting our ability to negotiate with any unsolicited and potentially unfriendly acquirer outweigh the disadvantages of discouraging such proposals, including those priced above the then-current market value of our common stock, because, among other reasons, the negotiation of such proposals could improve their terms.

Provisions of our Certificate of Incorporation and Bylaws

Our Charter, our Bylaws and Delaware law contain provisions that could discourage, delay or prevent a third party from acquiring us, even if doing so may be beneficial to our stockholders. In addition, these provisions could limit the price investors would be willing to pay in the future for shares of our common stock. The following are examples of such provisions in our Charter and Bylaws:

• only our Board of Directors, pursuant to a resolution adopted by a majority of our directors, may call special meetings of our stockholders;

• stockholders may not act by written consent and stockholder action must take place at the annual or special meeting of our stockholders;

• stockholder proposals and nominations of candidates for election as directors other than nominations made by or at the direction of our Board of Directors or a committee of our Board of Directors to be brought before any meeting of our stockholders must comply with advance notice procedures;

• our Board of Directors is classified into three classes, each consisting as nearly as reasonably may be possible of one-third of the total number of directors constituting the entire Board of Directors;

• our Board will fix the exact number of directors to comprise our Board of Directors;

subject to any rights that holders of any series of our undesignated preferred stock may have to elect directors and to fill vacancies on our Board of Directors, newly-created directorships and vacancies on our Board of Directors may only be filled by a majority of the members of the incumbent board then in office, even if less than a quorum is present, and not by our stockholders;

a director may be removed from office only for cause by the affirmative vote of holders of shares representing at least seventy-five percent (75%) of the votes entitled to be cast on such matter by the then-outstanding shares of all classes and series of our capital stock, voting together as a single class;

our Charter and Bylaws do not provide for cumulative voting in the election of directors;

our Bylaws may be further amended by either (i) the affirmative vote of at least a majority of our entire Board of Directors or (ii) the affirmative vote of the holders of at least seventy-five percent (75%) of the combined voting power of the outstanding shares of all classes and series of our capital stock entitled to vote on such amendment, voting together as a single class; and

our Board of Directors is authorized to issue, without further action by our stockholders, up to 2,000,000 shares of undesignated preferred stock with rights and preferences, including voting rights, designated from time to time by our Board of Directors.

We implemented a Stockholder Rights Plan (the “Rights Plan”) on October 31, 2013. In general terms, the Rights Plan worked by imposing a significant penalty upon any person or group that acquires twenty percent (20%) or more of our outstanding common stock, without the approval of our Board of Directors. In connection with the August 2017 Private Placement, our Board of Directors voted to terminate the Rights Plan.

Additionally, as required by the Delaware General Corporation Law, any amendment of our Charter must first be approved by a majority of our Board of Directors and, as required by our Charter, thereafter be approved by a majority of the outstanding shares entitled to vote on the amendment, and a majority of the outstanding shares of each class entitled to vote thereon, voting together as a single class, except that the amendment of the provisions relating to stockholder action, directors, limitation of liability, the amendment of our Bylaws and Charter, forum and transactions with Harvard Bioscience must be approved by not less than seventy-five percent (75%) of the outstanding shares entitled to vote on the amendment, and not less than seventy-five percent (75%) of the outstanding shares of each class entitled to vote thereon as a class. Our Bylaws may be amended by either (i) a vote of at least a majority of our entire Board of Directors or (ii) a vote of the holders of at least seventy-five percent (75%) of the combined voting power of the outstanding shares of all classes and series of our capital stock entitled to vote on such amendment, voting together as a single class.

Delaware Anti-Takeover Law

We are subject to the provisions of Section 203 of the Delaware General Corporation Law. In general, Section 203 prohibits a publicly-held Delaware corporation from engaging in a “business combination” with an “interested stockholder” for a three-year period following the time that this stockholder becomes an interested stockholder, unless the business combination is approved in a prescribed manner. A “business combination” includes, among other things, a merger, asset or stock sale or other transaction resulting in a financial benefit to the interested stockholder. An “interested stockholder” is a person who, together with affiliates and associates, owns, or did own within three years prior to the determination of interested stockholder status, fifteen percent (15%) or more of the corporation’s voting stock. Under Section 203, a business combination between a corporation and an interested stockholder is prohibited unless it satisfies one of the following conditions:

• before the stockholder became interested, the Board of Directors approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;

• upon consummation of the transaction which resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least eight-five percent (85%) of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the voting stock outstanding, shares owned by persons who are directors and also officers, and employee stock plans, in some instances; or

•

at or after the time the stockholder became interested, the business combination was approved by the Board of Directors of the corporation and authorized at an annual or special meeting of the stockholders by the affirmative vote of at least two-thirds of the outstanding voting stock which is not owned by the interested stockholder.

Disclosure of SEC Position on Indemnification for Securities Act Liabilities

Insofar as indemnification for liabilities arising under the Securities Act may be permitted for directors, officers and persons controlling our company, we have been informed that in the opinion of the SEC such indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

PLAN OF DISTRIBUTION

We are making this offering directly to the holders of our common stock and holders of warrants to purchase our common stock on the effective date. We have not employed any brokers, dealers or underwriters in connection with this offering and will not pay any underwriting commissions, fees or discounts in connection with this offering. Some of our directors or officers may assist in this offering. These individuals will not receive any commissions or compensation other than their normal directors' fees or employment compensation.

We will bear all costs, expenses and fees in connection with this offering. We will pay the subscription agent a fee of \$ and reimburse the subscription agent for certain expenses incurred in connection with this offering. We estimate that our total expenses in connection with this offering, including fees to the subscription agent, will be approximately \$..

LEGAL MATTERS

Certain legal matters with respect to the validity of the securities offered by this prospectus will be passed upon for us by Burns & Levinson LLP, Boston, MA.

EXPERTS

The consolidated financial statements of Biostage, Inc. as of December 31, 2016 and 2015, and for each of the years in the two-year period ended December 31, 2016, have been incorporated by reference herein and in the registration statement in reliance upon the report of KPMG LLP, independent registered public accounting firm, incorporated by reference herein, and upon the authority of said firm as experts in accounting and auditing.

The audit report covering the December 31, 2016 consolidated financial statements contains an explanatory paragraph that states that the Company has suffered recurring losses from operations and will require additional financing to fund future operations which raise substantial doubt about its ability to continue as a going concern. The consolidated financial statements do not include any adjustments that might result from the outcome of that uncertainty.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the information requirements of the Exchange Act and, in accordance therewith, file annual, quarterly and special reports, proxy statements and other information with the SEC. You may read and copy any document we file at the SEC's Public Reference Room at 100 F Street, Washington, D.C. 20549. You may call the SEC at 1-800-SEC-0330 for further information on the operation of the Public Reference Room. These documents also may be accessed through the SEC's electronic data gathering, analysis and retrieval system, or EDGAR, via electronic means, including the SEC's home page on the Internet (*www.sec.gov*).

We post on our public website (*http://www.biostage.com*) our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act, as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. Our website and the information contained on that site, or connected to that site, are not incorporated into and are not a part of this prospectus.

We have the authority to designate and issue more than one class or series of stock having various preferences, conversion and other rights, voting powers, restrictions, limitations as to dividends, qualifications, and terms and conditions of redemption. See "Description of Capital Stock." We will furnish a full statement of the relative rights and preferences of each class or series of our stock which has been so designated and any restrictions on the ownership or transfer of our stock to any shareholder upon request and without charge. Written requests for such copies should be directed to Biostage, Inc., 84 October Hill Road, Suite 11, Holliston, Massachusetts 01746-1371, or by telephone request to (774) 233-7300.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to incorporate by reference the information and reports we file with them under File No. 001-35853, which means that we can disclose important information to you by referring you to those publicly available documents. The information incorporated by reference is an important part of this prospectus, and information that we file later with the SEC will automatically update and supersede the information already incorporated by reference. We are incorporating by reference the documents listed below, which we have already filed with the SEC, and all documents subsequently filed by us pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, except as to any portion of any future report or document that is not deemed filed under such provisions, prior to the termination of the offering:

- Our Annual Report on Form 10-K for the year ended December 31, 2016;
- Our Current Reports on Form 8-K filed with the SEC on March 16, 2017, April 27, 2017, May 22, 2017 and June 27, 2017;
- Our Definitive Proxy Statement on Schedule 14A filed with the SEC on March 24, 2017; and
- The description of our common stock contained in our registration statement on Form 10-12B filed with the SEC on July 31, 2013 and amended on September 20, 2013 and October 11, 2013.

Any statement contained in a document incorporated or deemed to be incorporated by reference in this prospectus is modified or superseded for purposes of the prospectus to the extent that a statement contained in this prospectus or in any other subsequently filed document that also is or is deemed to be incorporated by reference herein modifies or supersedes such statement.

Upon request, we will provide, without charge, to each person, including any beneficial owner, to whom a copy of this prospectus is delivered a copy of the documents incorporated by reference into this prospectus. You may request a copy of these filings, and any exhibits we have specifically incorporated by reference as an exhibit in this prospectus, at no cost by writing or telephoning us at the following address:

Biostage, Inc.

84 October Hill Road, Suite 11

Holliston, Massachusetts 01746-1371

Telephone: (774) 233-7300.

This prospectus is part of a registration statement we filed with the SEC. We have incorporated exhibits into this registration statement. You should read the exhibits carefully for provisions that may be important to you.

We also incorporate by reference any future filings, other than current reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items, made with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, in each case, other than those documents or the portions of those documents deemed to be furnished and not filed in accordance with SEC rules, until the offering of the securities under the registration statement of which this prospectus forms a part is terminated or completed.

Information in such future filings updates and supplements the information provided in this prospectus. Any statements in any such future filings will be deemed to modify and supersede any information in any document we previously filed with the SEC that is incorporated or deemed to be incorporated herein by reference to the extent that statements in the later filed document modify or replace such earlier statements.

Because we are incorporating by reference future filings with the SEC, this prospectus is continually updated and later information filed with the SEC may update and supersede some of the information included or incorporated by reference in this prospectus. This means that you must look at all of the SEC filings that we incorporate by reference to determine if any of the statements in this prospectus or in any document previously incorporated by reference have been modified or superseded.

You should rely only on the information incorporated by reference or provided in this prospectus or any prospectus supplement. We have not authorized anyone to provide you with different information. We are not making an offer of these securities in any state where the offer is not permitted. You should not assume that the information in this prospectus or in the documents incorporated by reference is accurate as of any date other than the date on the front of this prospectus or those documents.

Up to **Shares of Common Stock**

Issuable Upon Exercise of Rights to Subscribe for Such Shares at \$ per Share

PROSPECTUS

, 2017

PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

Item 13. Other Expenses of Issuance and Distribution.

The expenses payable by Biostage, Inc. (the “Registrant” or the “Company”) in connection with the issuance and distribution of the securities being registered are set forth below. Each item listed is estimated, except for the Securities and Exchange Commission (the “SEC”) registration fee.

Securities and Exchange Commission registration fee	\$1,159
Legal fees and expenses	*
Accounting fees and expenses	*
Subscription agent fees and expenses	*
Printing and engraving expenses	*
Other	*
Total	\$*

*To be provided by amendment.

Item 14. Indemnification of Directors and Officers.

As permitted by Section 102 of the Delaware General Corporation Law, we have adopted provisions in our Amended and Restated Certificate of Incorporation, or our Charter, and Second Amended and Restated Bylaws, or our Bylaws, that limit or eliminate the personal liability of our directors for a breach of their fiduciary duty of care as a director. The duty of care generally requires that, when acting on behalf of the corporation, directors exercise an informed business judgment based on all material information reasonably available to them. Consequently, a director will not be personally liable to us or our stockholders for monetary damages or breach of fiduciary duty as a director, except for liability for:

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

any act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;

any act related to unlawful stock repurchases, redemptions or other distributions or payments of dividends; or

any transaction from which the director derived an improper personal benefit.

These limitations of liability do not affect the availability of equitable remedies such as injunctive relief or rescission. Our Charter also authorizes us to indemnify our officers, directors and other agents to the fullest extent permitted under Delaware law.

As permitted by Section 145 of the Delaware General Corporation Law, our Charter and Bylaws provide that we will indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding by reason of the fact that such person, or a person of whom he or she is the legal representative, is or was our director or officer, or by reason of the fact that our director or officer is or was serving, at our request, as a director, officer, employee or agent of another corporation or of a partnership, joint venture, trust or other enterprise, including service with respect to employee benefit plans maintained or sponsored by us. We will indemnify such persons against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred in connection with such action if such person acted in good faith and in a manner reasonably believed to be in our best interests and, with respect to any criminal proceeding, had no reason to believe such person's conduct was unlawful. A similar standard is applicable in the case of derivative actions, except that indemnification only extends to expenses (including attorneys' fees) incurred in connection with the defense or settlement of such actions, and court approval is required before there can be any indemnification where the person seeking indemnification has been found liable to us. Any amendment of this provision will not reduce our indemnification obligations relating to actions taken before an amendment.

Our Charter, filed as an exhibit to our Registration Statement on Form 10-12B filed with the SEC on July 31, 2013, and our Bylaws, filed as an exhibit to our Current Report on Form 8-K filed with the SEC on March 31, 2016, provide for the indemnification provisions described above and elsewhere herein. In addition, we have entered into separate indemnification agreements, a form of which is attached as Exhibit 10.7 to our Registration Statement on Form 10-12B, filed with the Securities and Exchange Commission on July 31, 2013, with our directors and officers which may be broader than the specific indemnification provisions contained in the Delaware General Corporation Law.

These indemnification agreements generally require us, among other things, to indemnify our officers and directors against liabilities that may arise by reason of their status or service as directors or officers, subject to certain exceptions and limitations. These indemnification agreements also require us to advance any expenses incurred by the directors or officers as a result of any proceeding against them as to which they could be indemnified. In addition, we have obtained policies that insure our directors and officers and those of our subsidiaries against certain liabilities they may incur in their capacity as directors and officers. Under these policies, the insurer, on our behalf, may also pay amounts for which we have granted indemnification to the directors or officers. These indemnification provisions and the indemnification agreements may be sufficiently broad to permit indemnification of our officers and directors for liabilities, including reimbursement of expenses incurred, arising under the Securities Act.

Item 15. Recent Sales of Unregistered Securities.

Set forth below is information regarding the shares of common stock and preferred stock and the warrants issued, and options granted, by us in the three years preceding the filing of this registration statement that were not registered under the Securities Act. The offers, sales and issuances of the securities described below were exempt from registration under the Securities Act by virtue of Section 4(a)(2) of the Securities Act.

Aspire Capital, LLC Transaction

On December 15, 2015, we entered into a Common Stock Purchase Agreement (the “Purchase Agreement”) with Aspire Capital Fund, LLC, an Illinois limited liability company (“Aspire Capital”), which provided that, upon the terms and subject to the conditions and limitations set forth therein, Aspire Capital was committed to purchase up to an aggregate of \$15.0 million of shares of our common stock (the “Purchase Shares”) over the 30-month term set forth in the Purchase Agreement.

On December 15, 2015, we issued 150,000 shares of our common stock to Aspire Capital in consideration for entering into the Purchase Agreement (the “Commitment Shares”) and sold 500,000 shares to Aspire Capital for an aggregate purchase price of \$1,000,000 (the “Initial Purchase Shares”). Under the Purchase Agreement, the Purchase Shares could be sold by us to Aspire Capital on any business day in two ways: (1) through a regular purchase of up to 150,000 shares at a known price based on the market price of our common stock prior to the time of each sale, and (2) through

a VWAP purchase of a number of shares up to 30% of the volume traded on the purchase date at a price equal to the lesser of the closing sale price or 97% of the volume weighted average price for such purchase date.

On May 12, 2016, we issued 150,000 shares of common stock under this arrangement in exchange for gross proceeds of approximately \$371,000. We terminated the Aspire Purchase Agreement effective as of May 17, 2016.

May 2016 Offering

On May 15, 2016, we entered into a Securities Purchase Agreement (the “Purchase Agreement”) with certain investors (the “Investors”) for the sale by us of 2,836,880 registered shares of our common stock at a purchase price of \$1.7625 per share. Concurrently with the sale of the shares of our common stock, pursuant to the Purchase Agreement we also sold unregistered warrants to purchase 1,418,440 shares of our common stock. The aggregate gross proceeds for the sale of the shares of common stock and the warrants was approximately \$5.0 million. Subject to certain ownership limitations, the warrants will be initially exercisable commencing six months from the issuance date at an exercise price equal to \$1.7625 per share of common stock, subject to adjustments as provided under the terms of the warrants. The warrants are exercisable for five years from the initial exercise date. The closing of the sales of these securities under the Purchase Agreement occurred on May 19, 2016.

We entered into an engagement letter (the “Engagement Letter”) H.C. Wainwright & Co., LLC (“Wainwright”), pursuant to which Wainwright agreed to serve as exclusive placement agent for the issuance and sale of our shares of common stock and the warrants. Pursuant to the Engagement Letter, we granted to Wainwright unregistered warrants to purchase up to 5% of the aggregate number of shares sold in the transactions (the “Wainwright Warrants”). The Wainwright Warrants have substantially the same terms as the warrants.

August 2017 Private Placement

On August 11, 2017, we entered into a Securities Purchase Agreement (the “Purchase Agreement”) with the backstop party for the sale by us of 8,061,905 shares of our common stock at a purchase price of \$0.315 per share and 516 shares of our Series C Convertible Preferred Stock at a purchase price of \$1,000 per share for aggregate gross proceeds of approximately \$3.05 million. The shares of Series C Convertible Preferred Stock are subject to conversion limitations so that so that the holders thereof may not effect any conversion to the extent that following the conversion, the holders, together with their affiliates, would own more than 19.99% of our outstanding shares of common stock.

Backstop Agreement

The offer and sale of securities issuable under the Backstop Agreement was, and will be, made in a transaction exempt from the registration requirements of the Securities Act by virtue of the exemption in Section 4(2) of the Securities Act.

Item 16. Exhibits and Financial Statement Schedules.

A list of exhibits filed with this Registration Statement on Form S-1 is set forth on the Exhibit Index and is incorporated herein by reference.

Item 17. Undertakings.

(a) The undersigned Registrant hereby undertakes:

(1)

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

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

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

- (iii) To include any material information with respect to the plan of distribution not previously disclosed in this registration statement or any material change to such information in this registration statement;

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provided, however, that paragraphs (1)(i), (1)(ii) and (1)(iii) above do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the registrant pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.

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

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

That, for the purpose of determining liability of the registrant under the Securities Act to any purchaser in the (4) initial distribution of the securities, in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the unde