

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

FORM S-3
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

PLURISTEM THERAPEUTICS INC.

(Exact Name of Registrant as Specified in Its Charter)

Nevada

(State or other jurisdiction of
incorporation or organization)

98-0351734

(I.R.S. Employer
Identification No.)

MATAM Advanced Technology Park,
Building No. 5
Haifa L3 31905 Israel

Tel: 011 972 74 710 8759

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

Nevada Agency And Transfer Company
50 West Liberty Street Suite 880
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(Name, address, including zip code, and telephone number,
including area code, of agent for service)

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Approximate date of commencement of proposed sale to the public: From time to time after the effective date of this registration statement, as determined by market and other conditions.

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

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

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

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

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

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

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

Large accelerated filer Accelerated filer

Non-accelerated filer (Do not check if a smaller reporting company) Smaller reporting company

Emerging growth company

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

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered(1)	Amount to be Registered(2)	Proposed Maximum Offering Price per Unit(2)(3)	Proposed Maximum Aggregate Offering Price(1)	Amount of Registration Fee(3)
Common Stock, \$0.0001 par value			(2)	
Warrants to purchase Common Stock			(2)	
Preferred Stock			(2)	
Units			(2)	
Total:	\$ 200,000,000(3)(4)	\$ 11,375(5)		

(1) There are being registered under this registration statement such indeterminate number of shares of common stock, number of warrants to purchase shares of common stock, number of shares of preferred stock and a combination of such securities, separately or as units, as may be sold by the registrant from time to time, which collectively shall have an aggregate initial offering price not to exceed \$200,000,000. The securities registered hereunder also include such indeterminate number of shares of common stock as may be issued upon conversion, exercise or exchange of warrants that provide for such conversion into, exercise for or exchange into shares of common stock. Separate consideration may or may not be received for securities that are issuable on exercise, conversion or exchange of other securities. In addition, pursuant to Rule 416 under the Securities Act of 1933, as amended, or the Securities Act, the shares of common stock being registered hereunder include such indeterminate number of shares of common stock as may be issuable with respect to the shares being registered hereunder as a result of stock splits, stock dividends, or similar transactions. The common stock to be issued pursuant to this registration statement includes the issuance of up to 3,219,983 shares of common stock issuable pursuant to currently outstanding warrants at an exercise price of \$5.00 per share through September 19, 2017, which warrants were issued under the Registrant's registration statement on Form S-3 declared effective on October 20, 2011 (Registration No. 333-177009), or the 2011 Registration Statement.

(2) Not required to be included in accordance with General Instruction II.D. of Form S-3 and Rule 457(o).

(3) The proposed maximum offering price per unit and the proposed maximum aggregate offering price per class of security will be determined from time to time by the registrant in connection with the issuance by the registrant of the securities registered hereunder.

(4) Estimated solely to calculate the registration fee in accordance with Rule 457(o) under the Securities Act. The aggregate maximum offering price of all securities issued pursuant to this registration statement will not exceed \$200,000,000. Pursuant to Rule 415(a)(6) under the Securities Act, \$165,750,000 of unsold securities are being moved to this registration statement from the Registrant's registration statement on Form S-3 declared effective on October 14, 2014 (Registration No. 333-199303), or the Prior Registration Statement.

(5) Calculated pursuant to Rule 457(o) based on the proposed maximum aggregate offering price. Pursuant to Rule 415(a)(6) under the Securities Act, a portion of \$11,805 of the filing fees paid in connection with the registration of the \$165,750,000 of unsold securities on the Prior Registration Statement will continue to be applied to such unsold securities included in this registration statement. An additional \$11,375 is being paid to register additional securities in connection with the filing of this Registration Statement.

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

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

PRELIMINARY PROSPECTUS (Subject to Completion)

Dated June 23, 2017



**\$200,000,000
Common Stock
Preferred Stock
Warrants
Units**

We may from time to time sell common stock, preferred stock and warrants to purchase common stock, and units of two or more of such securities, in one or more offerings for an aggregate initial offering price of \$200,000,000. We refer to the common stock, the preferred stock, the warrants to purchase common stock and the units collectively as the securities. This prospectus describes the general manner in which our securities may be offered using this prospectus. Other than in connection with the exercise of certain outstanding warrants, we will specify in an accompanying prospectus supplement the terms of the securities to be offered and sold. We may sell these securities to or through underwriters or dealers, directly to purchasers or through agents. We will set forth the names of any underwriters, dealers or agents in an accompanying prospectus supplement. You should carefully read this prospectus and any accompanying supplements before you decide to invest in any of these securities.

Our common stock is traded on the NASDAQ Capital Market, or Nasdaq, under the symbol "PSTI" and on the Tel Aviv Stock Exchange under the symbol "PLTR."

Investing in our securities involves risks. See "Risk Factors" on page 2 of this prospectus.

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

The date of this prospectus is , 2017.

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You should rely only on the information contained in this prospectus, any prospectus supplement and the documents incorporated by reference herein or therein, or to which we have referred you. We have not authorized anyone to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. This prospectus and any prospectus supplement do not constitute an offer to sell, or a solicitation of an offer to purchase, the securities offered by this prospectus and any prospectus supplement in any jurisdiction to or from any person to whom or from whom it is unlawful to make such offer or solicitation of an offer in such jurisdiction. You should not assume that the information contained in this prospectus, any prospectus supplement or any document incorporated by reference is accurate as of any date other than the date indicated in the applicable document.

Neither the delivery of this prospectus nor any distribution of securities pursuant to this prospectus shall, under any circumstances, create any implication that there has been no change in the information set forth or incorporated by reference into this prospectus or in our affairs since the date of this prospectus. Our business, financial condition, results of operations and prospects may have changed since that date.

Our name and logo and the names of our products are our trademarks or registered trademarks. Unless the context otherwise requires, references in this prospectus to "Pluristem," "we," "us," and "our" refer to Pluristem Therapeutics Inc. and its subsidiary as required by the context.

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the SEC using a "shelf" registration process. Under this shelf registration process, we may, from time to time, sell any combination of the securities described in this prospectus in one or more offerings up to a total dollar amount of \$200,000,000. This prospectus describes the securities we may offer and the general manner in which our securities may be offered by this prospectus. Each time we sell securities (other than in connection with the exercise of certain outstanding warrants), we will provide a prospectus supplement that will contain specific information about the terms of that offering. We may also add, update or change in the prospectus supplement any of the information contained in this prospectus. To the extent there is a conflict between the information contained in this prospectus and the prospectus supplement, you should rely on the information in the prospectus supplement, provided that if any statement in one of these documents is inconsistent with a statement in another document having a later date - for example, a document incorporated by reference in this prospectus or any prospectus supplement - the statement in the document having the later date modifies or supersedes the earlier statement.

OUR COMPANY

This summary highlights information contained in the documents incorporated herein by reference. Before making an investment decision, you should read the entire prospectus, and our other filings with the SEC, including those filings incorporated herein by reference, carefully, including the sections entitled "Risk Factors" and "Cautionary Note Regarding Forward-Looking Statements."

We are a leading developer of placenta-based cell therapy product candidates for the treatment of multiple ischemic, inflammatory and hematologic conditions. Our lead indications are critical limb ischemia, or CLI, recovery after surgery for femoral neck fracture, and acute radiation syndrome, or ARS. Pivotal, multinational clinical trials are planned for our PLX-PAD product candidate in CLI and femoral neck fracture, and for our PLX-R18 product candidate in the hematologic component of ARS. Each of these indications is a severe unmet medical need.

PLX cells are derived from a class of placental cells that are harvested from donated placentas at the time of full term delivery of a live baby. PLX cell products require no tissue matching prior to administration. They are produced using our proprietary three-dimensional expansion technology. Our manufacturing facility complies with the U.S. Food and Drug Administration's, or FDA's current Good Manufacturing Practice requirements and has been approved by the European, Japanese and Israeli regulatory authorities for production of PLX-PAD for late stage trials and marketing. We expect to have in-house production capacity to grow clinical-grade PLX cells in commercial quantities.

Our goal is to make significant progress with our robust clinical pipeline and our anticipated pivotal trials in order to ultimately bring innovative, potent therapies to patients who need new treatment options. We intend to shorten the time to commercialization of our first product candidate, PLX-PAD, by leveraging the unique accelerated regulatory pathways that exist in Europe and Japan to bring innovative products that address life-threatening diseases to the market efficiently. We believe that these accelerated pathways create substantial opportunities for us and for the cell therapy industry as a whole. We are pursuing these accelerated pathways for PLX-PAD in CLI and femoral neck fracture. Our second product candidate, PLX R18, is under development in the United States for ARS via the Animal Rule regulatory pathway, which may result in approval without the prior performance of human efficacy trials. We expect to demonstrate a real-world impact and value from our pipeline, technology platform and commercial-scale manufacturing capacity.

We were incorporated as a Nevada corporation in 2001. We have a wholly owned subsidiary in Israel called Pluristem Ltd. Our executive offices are located at MATAM Advanced Technology Park, Building No. 5, Haifa, Israel, our telephone number is 011 972 74 710 8759 and our website address is www.pluristem.com. This reference to our website is an inactive textual reference only, and is not a hyperlink. The information on our website is not incorporated by reference in this prospectus and should not be considered to be part of this prospectus. You should not consider the contents of our website in making an investment decision with respect to the securities.

RISK FACTORS

An investment in our securities involves significant risks. You should carefully consider the risk factors below as well as risk factors contained in any prospectus supplement and in our filings with the SEC, including our Annual Report on Form 10-K for the fiscal year ended June 30, 2016 as well as all of the information contained in this prospectus, any prospectus supplement and the other documents incorporated by reference herein or therein, before you decide to invest in our securities. Our business, prospects, financial condition and results of operations may be materially and adversely affected as a result of any of such risks. The value of our securities could decline as a result of any of these risks. You could lose all or part of your investment in our securities. The risks and uncertainties we have described are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also affect our business, prospects, financial condition and results of operations.

Although we have entered into a term sheet with Innovative Medical Management Co. Ltd., there can be no assurance that a definitive agreement will be signed or that such proposed investment will be made.

We have signed a binding term sheet with Innovative Medical Management Co. Ltd., or Innovative Medical, related to Innovative Medical's proposed investment of approximately \$30,000,000. Although the term sheet provided that definitive agreements would be executed by December 26, 2016, we announced on December 23, 2016, that, due to a recently adopted Chinese policy relating to outbound investments by Chinese companies, we agreed to extend the time of execution of the definitive agreements relating to Innovative Medical's proposed investment. As a result of this recently adopted Chinese policy, we now plan to continue the discussions with respect to the definitive agreements until we have received further clarification about such policies, which we initially expected to receive during the first half of 2017. We now do not expect the needed clarifications regarding the agreement with Innovative Medical to be provided by the end of the first half of 2017. Thus, it is possible that the definitive agreements will not be executed, or that they may be executed on terms and conditions that are materially different than those set forth in the term sheet. There can be no assurance that we will execute the definitive agreements or that Innovative Medical's proposed investment will be made.

Although we have entered into a term sheet with Sosei Corporate Venture Capital Ltd. there can be no assurance that a definitive agreement will be signed or that such proposed joint venture will be formed.

We have signed a binding term sheet with Sosei Corporate Venture Capital Ltd., or Sosei CVC, for the establishment of for the establishment of a new Japanese corporation, or NewCo, for the clinical development and commercialization of our PLX-PAD cell therapy product in Japan. While the parties have executed a term sheet and we believe such definitive agreements will be finalized in the coming months, there is no guarantee that we will be successful in executing agreements by then. It is possible that the definitive agreements will not be executed, or that they may be executed on terms and conditions that are materially different than those set forth in the term sheet. There can be no assurance that we will execute the definitive agreements or that the proposed joint venture with Sosei CVC will be completed.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING INFORMATION

The statements contained in this prospectus, any prospectus supplement and the documents we incorporate by reference herein or therein that are not historical facts are "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995 and other federal securities laws. Such forward-looking statements may be identified by, among other things, the use of forward-looking terminology such as "believes," "intends," "plans," "expects," "may," "will," "should," or "anticipates" or the negative thereof or other variations thereon or comparable terminology, and similar expressions are intended to identify forward-looking statements. We remind readers that forward-looking statements are merely predictions and therefore inherently subject to uncertainties and other factors and involve known and unknown risks that could cause the actual results, performance, levels of activity, or our achievements, or industry results, to be materially different from any future results, performance, levels of activity, achievements or industry results, expressed or implied by such forward-looking statements. The factors discussed herein, including those risks described under the heading "Risk Factors" herein and in the documents we incorporate by reference, as well as those discussed elsewhere in this prospectus and any prospectus supplement could cause actual results and developments to be materially different from those expressed in or implied by such statements. In addition, historic results of scientific research, clinical and preclinical trials do not guarantee that the conclusions of future research or trials would not suggest different conclusions. Also, historic results referred to this prospectus, any prospectus supplement and the documents we incorporate by reference may be interpreted differently in light of additional research, clinical and preclinical trials results. Except as required by law we undertake no obligation to publicly update such forward-looking statements to reflect subsequent events or circumstances.

USE OF PROCEEDS

Unless we otherwise indicate in an applicable prospectus supplement, we currently intend to use the net proceeds from the sale of the securities for research and product development activities, clinical trial activities, investment in capital equipment and for working capital and other general corporate purposes.

We may set forth additional information on the use of net proceeds from the sale of securities we offer under this prospectus in a prospectus supplement relating to the specific offering. Pending the application of the net proceeds, we intend to invest any proceeds in a variety of capital preservation instruments such as bank deposits or investment-grade, interest-bearing securities subject to any investment policies our investment committee may determine from time to time.

THE SECURITIES WE MAY OFFER

The descriptions of the securities contained in this prospectus, together with any applicable prospectus supplement, summarize the material terms and provisions of the various types of securities that we may offer. We will describe in any applicable prospectus supplement relating to any securities the particular terms of the securities offered by that prospectus supplement. If we so indicate in any applicable prospectus supplement, the terms of the securities may differ from the terms we have summarized below. We may also include in any prospectus supplement information, where applicable, about material U.S. federal income tax consequences relating to the securities, and the securities exchange or market, if any, on which the securities will be listed.

We may sell from time to time, in one or more offerings, one or more of the following securities:

common stock;

preferred stock;

warrants to purchase common stock; and

units of two or more of the securities mentioned above.

The total initial offering price of all securities that we may issue in these offerings will not exceed \$200,000,000.

DESCRIPTION OF CAPITAL STOCK

The following summary is a description of the material terms of our share capital. We encourage you to read our Certificate of Incorporation, as amended, and Amended and Restated By-laws which have been filed with the SEC, as well as the applicable provisions of the Nevada Revised Statutes.

Our authorized capital stock currently consists of 200,000,000 shares of common stock, of which there were 96,171,868 shares outstanding as of March 31, 2017, and 10,000,000 shares of “blank check” preferred stock, none of which are outstanding. The following statements set forth the material terms of our capital stock; however, reference is made to the more detailed provisions of, and these statements are qualified in their entirety by reference to, our Articles of Incorporation and Bylaws, copies of which are referenced as exhibits herein, and the provisions of Nevada General Corporation Law. Except for our ability to issue additional securities, including preferred stock with terms that may be determined at a later date by our Board, there are no provisions in our Articles of Incorporation or Bylaws that would delay, defer or prevent a change in our control.

Common Stock

Except as otherwise required by applicable law and subject to the preferential rights of any outstanding preferred stock, all voting rights are vested in and exercised by the holders of common stock with each share of our common stock being entitled to one vote. In the event of liquidation, holders of the common stock are entitled to share ratably in the distribution of assets remaining after payment of liabilities, if any. Holders of the common stock have no cumulative voting rights and no preemptive or other rights to subscribe for shares. Holders of common stock are entitled to such dividends as may be declared by the Board of Directors out of funds legally available therefor.

Blank Check Preferred Stock

Our Board of Directors is empowered, without further action by stockholders, to issue from time to time one or more series of preferred stock, with such designations, rights, preferences and limitations as the Board may determine by resolution. The rights, preferences and limitations of separate series of preferred stock may differ with respect to such matters among such series as may be determined by the Board, including, without limitation, the rate of dividends, method and nature of payment of dividends, terms of redemption, amounts payable on liquidation, sinking fund provisions (if any), conversion rights (if any) and voting rights. Certain issuances of preferred stock may have the effect of delaying or preventing a change in control of our company that some stockholders may believe is not in their interest.

Transfer Agent

American Stock Transfer and Trust Company, LLC is the registrar and transfer agent for our common shares. Their address is 6201 15th Avenue, 2nd Floor, Brooklyn, NY 11219, telephone: (718) 921-8261, (800) 937-5449.

Nevada Anti-Takeover Law

Nevada revised statutes sections 78.378 to 78.3793 provide state regulation over the acquisition of a controlling interest in certain Nevada corporations unless the articles of incorporation or bylaws of the corporation provide that the provisions of these sections do not apply. This statute currently does not apply to our Company because in order to be applicable we would have to have as shareholders a specified number of Nevada residents and we would have to do business in Nevada directly or through an affiliate.

DESCRIPTION OF WARRANTS

The following description, together with the additional information we may include in any applicable prospectus supplement, summarizes the material terms and provisions of the warrants that we may offer under this prospectus and the related warrant agreements and warrant certificates. While the terms summarized below will apply generally to any warrants that we may offer, we will describe the particular terms of any series of warrants (and any securities issuable upon exercise of such warrants) in more detail in the applicable prospectus supplement. If we so indicate in a prospectus supplement, the terms of any warrants offered under that prospectus supplement may differ from the terms we describe below. Specific warrant agreements will contain additional important terms and provisions and will be incorporated by reference as an exhibit to the registration statement.

General

We may issue warrants for the purchase of common stock in one or more series. We may issue warrants independently or together with common stock, and the warrants may be attached to or separate from the common stock.

We will evidence each series of warrants by warrant certificates that we will issue under a separate agreement or by warrant agreements that we will enter into directly with the purchasers of the warrants. If we evidence warrants by warrant certificates, we will enter into a warrant agreement with a warrant agent. We will indicate the name and address of the warrant agent, if any, in the applicable prospectus supplement relating to a particular series of warrants.

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

the offering price and aggregate number of warrants offered;

the currency for which the warrants may be purchased or exercised;

if applicable, the terms of the common stock with which the warrants are issued and the number of warrants issued with such common stock;

if applicable, the date on and after which the warrants and the related common stock will be separately transferable;

the number of shares of common stock or other securities purchasable upon the exercise of one warrant and the price at which these shares may be purchased upon such exercise;

the manner in which the warrants may be exercised, which may include by cashless exercise;

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

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

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

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

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

the material United States federal income tax consequences of holding or exercising the warrants;

the terms of the common stock issuable upon exercise of the warrants; and

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

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

Exercise of Warrants

Each warrant will entitle the holder to purchase the number of shares of common stock that we specify in the applicable prospectus supplement at the exercise price that we describe in the applicable prospectus supplement. Unless we otherwise specify in the applicable prospectus supplement, holders of the warrants may exercise the warrants at any time up to 5:00 P.M., Eastern U.S. time, on the expiration date that we set forth in the applicable prospectus supplement. After the close of business on the expiration date, unexercised warrants will become void.

Holders of the warrants may exercise the warrants by delivering to the warrant agent or us the warrant certificate or warrant agreement representing the warrants to be exercised together with specified information, and by paying the required amount to the warrant agent or us in immediately available funds, as provided in the applicable prospectus supplement. We will set forth on the reverse side of the warrant certificate or in the warrant agreement and in the applicable prospectus supplement the information that the holder of the warrant will be required to deliver to the warrant agent or us in connection with such exercise.

Upon receipt of the required payment and the warrant certificate or the warrant agreement, as applicable, properly completed and duly executed at the corporate trust office of the warrant agent, if any, at our offices or at any other office indicated in the applicable prospectus supplement, we will issue and deliver the common stock or other securities purchasable upon such exercise. If fewer than all of the warrants represented by the warrant certificate or warrant agreement are exercised, then we will issue a new warrant certificate or warrant agreement for the remaining amount of warrants.

Enforceability of Rights by Holders of Warrants

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

Outstanding Warrants

The shares of common stock registered under the registration statement of which this prospectus is a part include 3,219,983 shares of common stock issuable upon exercise of warrants that were issued under our registration statement on Form S-3 declared effective on October 20, 2011 (Registration No. 333-177009). Such warrants were issued on September 19, 2012, have an exercise price of \$5.00 per share and expire on September 19, 2017.

No prospectus supplement will be delivered in connection with the issuance of these shares of common stock pursuant to the exercise of such warrants.

DESCRIPTION OF UNITS

We may issue, in one or more series, units consisting of common stock, preferred stock and/or warrants for the purchase of common stock and/or preferred stock, in any combination. While the terms we have summarized below will apply generally to any units that we may offer under this prospectus, we will describe the particular terms of any series of units in more detail in the applicable prospectus supplement. The terms of any units offered under a prospectus supplement may differ from the terms described below.

We will file an exhibits to a prospectus supplement, or will incorporate by reference from reports that we file with the SEC, the form of unit agreement that describes the terms of the series of units we are offering, and any supplemental agreements, before the issuance of the related series of units. The following summaries of material terms and provisions of the units are subject to, and qualified in their entirety by reference to, all the provisions of the unit agreement and any supplemental agreements applicable to a particular series of units. We urge you to read the applicable prospectus supplement related to the particular series of units that we may offer under this prospectus and the complete unit agreement and any supplemental agreements that contain the terms of the units.

Each unit will be issued so that the holder of the unit is also the holder of each security included in the unit. Thus, the holder of a unit will have the rights and obligations of a holder of each included security. The unit agreement under which a unit is issued may provide that the securities included in the unit may not be held or transferred separately, at any time or at any time before a specified date.

We will describe in the applicable prospectus supplement the terms of the series of units, including:

the designation and terms of the units, including whether and under what circumstances the securities comprising the units may be held or transferred separately; and
any provisions for the issuance, payment, settlement, transfer or exchange of the units or the securities comprising the units.

The provisions described in this section, as well as those described under "Description of Capital Stock" and "Description of Warrants" will apply to each unit and to any common stock, preferred stock or warrant included in each unit, respectively.

We may issue units in such amounts and in such distinct series as we determine.

PLAN OF DISTRIBUTION

We may sell the securities being offered hereby in one or more of the following ways from time to time:

through agents to the public or to investors;
to one or more underwriters or distributors for resale to the public or to investors;
in "at the market offerings," within the meaning of Rule 415(a)(4) of the Securities Act, to or through a market maker or into an existing trading market, on an exchange or otherwise;
directly to investors in privately negotiated transactions;
directly to a purchaser pursuant to what is known as an "equity line of credit" as described below;
through a combination of these methods of sale; or
upon exercise of outstanding warrants.

The securities that we distribute by any of these methods may be sold, in one or more transactions, at:

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

The accompanying prospectus supplement will describe the terms of the offering of our securities, including:

the name or names of any agents or underwriters;

any securities exchange or market on which the common stock may be listed;

the purchase price and commission, if any, to be paid in connection with the sale of the securities being offered and the proceeds we will receive from the sale;

any over-allotment options pursuant to which underwriters may purchase additional securities from us;

any underwriting discounts or agency fees and other items constituting underwriters' or agents' compensation;

any public offering price; and

any discounts or concessions allowed or reallocated or paid to dealers.

If underwriters are used in the sale, they will acquire the securities for their own account and may resell the securities from time to time in one or more transactions, including negotiated transactions, at a fixed public offering price or at varying prices determined at the time of the sale. The obligations of the underwriters to purchase the securities will be subject to the conditions set forth in the applicable underwriting agreement. We may offer the securities to the public through underwriting syndicates represented by managing underwriters or by underwriters without a syndicate. Subject to certain conditions, the underwriters will be obligated to purchase all the securities offered by the prospectus supplement. We may change from time to time the public offering price and any discounts or concessions allowed or reallocated or paid to dealers.

If we use a dealer in the sale of the securities being offered pursuant to this prospectus or any prospectus supplement, we will sell the securities to the dealer, as principal. The dealer may then resell the securities to the public at varying prices to be determined by the dealer at the time of resale. The names of the dealers and the terms of the transaction will be specified in a prospectus supplement.

We may sell the securities directly or through agents we designate from time to time. We will name any agent involved in the offering and sale of securities and we will describe any commissions we will pay the agent in the prospectus supplement. Unless the prospectus supplement states otherwise, any agent will act on a best-efforts basis for the period of its appointment.

We may also sell securities pursuant to an "equity line of credit". In such event, we will enter into a common stock purchase agreement with the purchaser to be named therein, which will be described in a Current Report on Form 8-K that we will file with the SEC. In that Form 8-K, we will describe the total amount of securities that we may require the purchaser to purchase under the purchase agreement and the other terms of purchase, and any rights that the purchaser is granted to purchase securities from us. In addition to our issuance of shares of common stock to the equity line purchaser pursuant to the purchase agreement, this prospectus (and the applicable prospectus supplement or post-effective amendment) also covers the resale of those shares from time to time by the equity line purchaser to the public. The equity line purchaser will be considered an "underwriter" within the meaning of Section 2(a)(11) of the Securities Act. Its resales may be effected through a number of methods, including without limitation, ordinary brokerage transactions and transactions in which the broker solicits purchasers and block trades in which the broker or dealer so engaged will attempt to sell the shares as agent, but may position and resell a portion of the block as principal to facilitate the transaction. The equity line purchaser will be bound by various anti-manipulation rules of the SEC and may not, for example, engage in any stabilization activity in connection with its resales of our securities and may not bid for or purchase any of our securities or attempt to induce any person to purchase any of our securities other than as permitted under the Securities Exchange Act of 1934, as amended, or the Exchange Act.

We may sell our securities directly or through agents we designate from time to time. We will name any agent involved in the offering and sale of our common stock, and we will describe any commissions we will pay the agent in the prospectus supplement. Unless the prospectus supplement states otherwise, our agent will act on a best-efforts basis for the period of its appointment.

We may provide underwriters and agents with indemnification against civil liabilities related to offerings pursuant to this prospectus, including liabilities under the Securities Act, or contribution with respect to payments that the underwriters or agents may make with respect to these liabilities. Underwriters and agents may engage in transactions with, or perform services for, us in the ordinary course of business. We will describe such relationships in the prospectus supplement naming the underwriter or agent and the nature of any such relationship.

Rules of the SEC may limit the ability of any underwriters to bid for or purchase securities before the distribution of the shares of common stock is completed. However, underwriters may engage in the following activities in accordance with the rules:

Stabilizing transactions — Underwriters may make bids or purchases for the purpose of pegging, fixing or maintaining the price of the shares, so long as stabilizing bids do not exceed a specified maximum.

Options to purchase additional stock and syndicate covering transactions — Underwriters may sell more shares of our common stock than the number of shares that they have committed to purchase in any underwritten offering. This creates a short position for the underwriters. This short position may involve either “covered” short sales or “naked” short sales. Covered short sales are short sales made in an amount not greater than the underwriters’ option to purchase additional shares in any *underwritten* offering. The underwriters may close out any covered short position either by exercising their option or by purchasing shares in the open market. To determine how they will close the covered short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market, as compared to the price at which they may purchase shares through their option. Naked short sales are short sales in excess of the option. The underwriters must close out any naked position by purchasing shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that, in the open market after pricing, there may be downward pressure on the price of the shares that could adversely affect investors who purchase shares in the offering.

Penalty bids — If underwriters purchase shares in the open market in a stabilizing transaction or syndicate covering transaction, they may reclaim a selling concession from other underwriters and selling group members who sold those shares as part of the offering.

Similar to other purchase transactions, an underwriter’s purchases to cover the syndicate short sales or to stabilize the market price of our common stock may have the effect of raising or maintaining the market price of our common stock or preventing or mitigating a decline in the market price of our common stock. As a result, the price of the shares of our common stock may be higher than the price that might otherwise exist in the open market. The imposition of a penalty bid might also have an effect on the price of shares if it discourages resales of the shares.

If commenced, the underwriters may discontinue any of these activities at any time.

Our common stock is traded on the NASDAQ Capital Market and on the Tel Aviv Stock Exchange. One or more underwriters may make a market in our common stock, but the underwriters will not be obligated to do so and may discontinue market making at any time without notice. We cannot give any assurance as to liquidity of the trading market for our common stock.

Any underwriters who are qualified market makers on the NASDAQ Capital Market may engage in passive market making transactions in that market in the common stock in accordance with Rule 103 of Regulation M, during the business day prior to the pricing of the offering, before the commencement of offers or sales of the common stock. Passive market makers must comply with applicable volume and price limitations and must be identified as passive market makers. In general, a passive market maker must display its bid at a price not in excess of the highest independent bid for such security; if all independent bids are lowered below the passive market maker’s bid, however, the passive market maker’s bid must then be lowered when certain purchase limits are exceeded.

In compliance with guidelines of the Financial Industry Regulatory Authority, or FINRA, the maximum commission or discount to be received by any FINRA member or independent broker dealer may not exceed 8% of the aggregate amount of the securities offered pursuant to this prospectus and any applicable prospectus supplement.

Exercise of Outstanding Warrants

We will sell and deliver shares of our common stock directly to those holders who validly exercise certain warrants that were registered under a previous registration statement. No prospectus supplement will be delivered in connection with such transactions. See "Description of Warrants – Outstanding Warrants" on page 5 of this prospectus.

VALIDITY OF THE SECURITIES

Zysman, Aharoni, Gayer and Sullivan & Worcester LLP, New York, New York, passed upon the validity of the securities offered hereby.

EXPERTS

The consolidated financial statements of Pluristem Therapeutics Inc. appearing in our Annual Report on Form 10-K for the fiscal year ended June 30, 2016 and the effectiveness of the internal control over financial reporting of Pluristem Therapeutics Inc. as of June 30, 2016, have been audited by Kost Forer Gabbay & Kasierer, a member of Ernst & Young Global, independent registered public accounting firm, as set forth in their reports thereon, included therein, and incorporated herein by reference. Such consolidated financial statements are incorporated herein by reference in reliance upon such reports given on the authority of such firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the reporting and information requirements of the Exchange Act and as a result file periodic reports and other information with the SEC. These periodic reports and other information will be available for inspection and copying at the SEC's public reference room and the website of the SEC referred to below.

We have filed a registration statement on Form S-3 under the Securities Act with the SEC with respect to the shares of our common stock, warrants, preferred stock and units offered through this prospectus. This prospectus is filed as a part of that registration statement and does not contain all of the information contained in the registration statement and exhibits. We refer you to our registration statement and each exhibit attached to it for a more complete description of matters involving us, and the statements we have made in this prospectus are qualified in their entirety by reference to these additional materials.

You may read and copy the reports and other information we file with the SEC at the SEC's Public Reference Room at 100 F Street, N.E., Washington D.C. 20549. You may also obtain copies of this information by mail from the public reference section of the SEC, 100 F Street, N.E., Washington, D.C. 20549, at prescribed rates. You may obtain information regarding the operation of the public reference room by calling the SEC at 1 (800) SEC-0330. The SEC also maintains a website that contains reports and other information about issuers, like us, who file electronically with the SEC. The address of that website is <http://www.sec.gov>. This reference to the SEC's website is an inactive textual reference only, and is not a hyperlink.

INCORPORATION OF DOCUMENTS BY REFERENCE

We are “incorporating by reference” certain documents we file with the SEC, which means that we can disclose important information to you by referring you to those documents. The information in the documents incorporated by reference is considered to be part of this prospectus. Statements contained in documents that we file with the SEC and that are incorporated by reference in this prospectus will automatically update and supersede information contained in this prospectus, including information in previously filed documents or reports that have been incorporated by reference in this prospectus, to the extent the new information differs from or is inconsistent with the old information.

We have filed or may file the following documents with the SEC. These documents are incorporated herein by reference as of their respective dates of filing:

- (a) Our Annual Report on Form 10-K for the year ended June 30, 2016 filed with the SEC on September 7, 2016;
- (b) Our Quarterly Reports on Form 10-Q for the quarters ended September 30, 2016, December 31, 2016 and March 31, 2017, as filed with the SEC on November 7, 2016, February 8, 2017 and May 8, 2017, respectively;
- (c) Our Current Reports on Form 8-K filed with the SEC on October 25, 2016, November 10, 2016, December 20, 2016, December 23, 2016, January 11, 2017, January 17, 2017, January 20, 2017, March 29, 2017, March 30, 2017, May 3, 2017, May 25, 2017, June 20, 2017 and June 23, 2017; and
- (d) The description of our common stock contained in the Registration Statement on Form 8-A filed on December 10, 2007, under the Exchange Act, including any amendment or report filed or to be filed for the purpose of updating such description.

All documents filed by us pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act (1) after the date of the filing of the registration statement of which this prospectus forms a part and prior to its effectiveness and (2) until all of the securities to which this prospectus relates has been sold or the offering is otherwise terminated, except in each case for information contained in any such filing where we indicate that such information is being furnished and is not to be considered “filed” under the Exchange Act, will be deemed to be incorporated by reference in this prospectus and any accompanying prospectus supplement and to be a part hereof from the date of filing of such documents.

We will provide a copy of the documents we incorporate by reference, at no cost, to any person who receives this prospectus. To request a copy of any or all of these documents, you should write or telephone us at MATAM Advanced Technology Park, Building No. 5, Haifa, L3 31905, Israel, Attention: Erez Egozi.

PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution.

The following table sets forth the various expenses to be incurred by Pluristem Therapeutics Inc., or we, us or our, in connection with the registration of the securities being registered hereby, all of which will be borne by the registrant. All amounts shown are estimates except the registration fee.

	Amount
Registration fee under Securities Act of 1933	\$ 11,375
Legal fees and expenses	\$ 10,000
Accountant's fees and expenses	\$ 4,000
Miscellaneous fees and expenses	\$ 1,500
Total	\$ 26,875

Item 15. Indemnification of Directors and Officers.

Under the Nevada Revised Statutes, director immunity from liability to a company or its shareholders for monetary liabilities applies automatically unless it is specifically limited by a company's Articles of Incorporation. Our Articles of Incorporation provide that we shall indemnify our officers, directors, employees and agents to the fullest extent permitted by the laws of the State of Nevada. In addition, our Articles of Incorporation provide that a director or officer of the company shall not be personally liable to the company or our stockholders for damages for breach of fiduciary duty as a director or officer, but such statement shall not eliminate or limit the liability of a director or officer for (i) acts or omissions which involve intentional misconduct, fraud or a knowing violation of the law or (ii) the unlawful payment of dividends. Any repeal or modification of the provisions described in this paragraph by stockholders of the company will be prospective only, and will not adversely affect any limitation on the personal liability of a director or officer of the company for acts or omissions prior to such repeal or modification.

Further, our Articles of Incorporation provide that every person who was or is a party to, or is threatened to be made a party to, or is involved in any such action, suit or proceeding, whether civil, criminal, administrative or investigative, by the reason of the fact that he or she, or a person with whom he or she is a legal representative, is or was a director of the company, or who is serving at the request of the company as a director or officer of another company, or is a representative in a partnership, joint venture, trust or other enterprise, shall be indemnified and held harmless to the fullest extent legally permissible under the laws of the State of Nevada from time to time against all expenses, liability and loss (including attorneys' fees, judgments, fines, and amounts paid or to be paid in a settlement) reasonably incurred or suffered by him or her in connection therewith. Such right of indemnification will be a contract right which may be enforced in any manner desired by such person. The expenses of officers and directors incurred in defending a civil suit or proceeding must be paid by the company as incurred and in advance of the final disposition of the action, suit, or proceeding, under receipt of an undertaking by or on behalf of the director or officer to repay the amount if it is ultimately determined by a court of competent jurisdiction that he or she is not entitled to be indemnified by the company. Such right of indemnification will not be exclusive of any other right of such directors, officers or representatives may have or hereafter acquire, and, without limiting the generality of such statement, they shall be entitled to their respective rights of indemnification under any bylaw, agreement, vote of stockholders, provision of law, or otherwise, as well as their rights under this paragraph above.

We have obtained directors and officers insurance for the benefit of our directors and officers.

Item 16. Exhibits and Financial Statement Schedules.

The exhibits to this Registration Statement are listed in the Exhibit Index following the signature page of this Registration Statement.

Item 17. *Undertakings.*

The undersigned registrant hereby undertakes:

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

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

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

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

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

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

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

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

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

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

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

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

- (i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424;
- (ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;
- (iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and
- (iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

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

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

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Haifa, Israel on the 23rd day of June, 2017.

PLURISTEM THERAPEUTICS INC.

By: /s/ Zami Aberman
Name: Zami Aberman
Title: Chairman and Co-Chief
Executive Officer

POWERS OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints each of Zami Aberman, Yaky Yanay and Erez Egozi and each of them acting singly, as his or her true and lawful attorney-in-fact and agent, each with full power of substitution, for the undersigned in any and all capacities, to sign any and all amendments to this registration statement (including post-effective amendments or any abbreviated registration statement and any amendments thereto filed pursuant to Rule 462(b) increasing the number of securities for which registration is sought), and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, with full power of each to act alone, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully for all intents and purposes as the undersigned might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or either of them, or his or their substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

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

Signature	Title	Date
<u>/s/ Zami Aberman</u> Zami Aberman	Co- Chief Executive Officer and Chairman of the Board (Principal Executive Officer)	June 23, 2017
<u>/s/ Yaky Yanay</u> Yaky Yanay	Co-Chief Executive Officer, President and Director (Principal Executive Officer)	June 23, 2017
<u>/s/ Erez Egozi</u> Erez Egozi	Chief Financial Officer and Treasurer (Principal Financial and Accounting Officer)	June 23, 2017
<u>/s/ Israel Ben-Yoram</u> Israel Ben-Yoram	Director	June 23, 2017
<u>/s/ Isaac Braun</u> Isaac Braun	Director	June 23, 2017
<u>/s/ Mark Germain</u> Mark Germain	Director	June 23, 2017
<u>/s/ Moria Kwait</u> Moria Kwait	Director	June 23, 2017
<u>/s/ Hava Meretzki</u> Hava Meretzki	Director	June 23, 2017
<u>/s/ Nachum Rosman</u> Nachum Rosman	Director	June 23, 2017
<u>/s/ Doron Shorrer</u> Doron Shorrer	Director	June 23, 2017

EXHIBIT INDEX

1.1** Form of Underwriting Agreement in connection with the offering of any securities.

4.1 Composite Copy of the Company's Articles of Incorporation, as amended on May 22, 2014 (incorporated by reference to Exhibit 4.1 of the Company's registration statement on Form S-8 filed with the SEC on June 5, 2014).

4.2 Amended and Restated By-laws of the Company (incorporated by reference to Exhibit 3.1 of the Company's Current Report on Form 8-K filed with the SEC on March 29, 2017).

4.3 Form of Warrant Agreement by and between Pluristem Therapeutics Inc. and American Stock Transfer & Trust Company, LLC (including the form of Warrant certificate) (incorporated by reference to Exhibit 4.2 of our Quarterly Report on Form 10-Q filed on February 9, 2011).

4.4** Form of Warrant Agreement, including form of Warrant.

5.1* Opinion of Zysman, Aharoni, Gayer and Sullivan & Worcester LLP.

23.1* Consent of Kost Forer Gabbay & Kasierer, A member of Ernst & Young Global.

23.2* Consent of Zysman, Aharoni, Gayer and Sullivan & Worcester LLP (contained in Exhibit 5.1)

24.1* Powers of Attorney (included in the signature pages hereto).

* Filed herewith.

** To be filed by amendment or incorporated by reference in connection with the offering of any securities, as appropriate.



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New York, NY 10019

T +212 660 5000
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www.zag-sw.com

June 23, 2017

Pluristem Therapeutics Inc.
MATAM Advanced Technology Park, Building No. 5
Haifa 31905 Israel

Re: Registration Statement on Form S-3

Ladies and Gentlemen:

This opinion is furnished to you in connection with a Registration Statement on Form S-3 (the “Registration Statement”) being filed by Pluristem Therapeutics Inc., a Nevada corporation (the “Company”), with the Securities and Exchange Commission (the “Commission”) under the Securities Act of 1933, as amended (the “Securities Act”), for the registration of (i) shares of common stock of the Company, \$0.00001 par value per share, (the “Shares”), warrants to purchase Shares (the “Warrants”), shares of preferred stock (the “Preferred Shares,” and, with the Shares and the Warrants, the “Securities”) and units of two or more of the Securities (the “Units”), for an aggregate initial offering price of \$200,000,000 and (ii) shares of Common Stock (the “Warrant Shares”) issuable upon the exercise of outstanding warrants (the “Outstanding Warrants”), including up to 3,219,983 shares of Common Stock issuable upon exercise of Outstanding Warrants at an exercise price of \$5.00 per share, all of which may be issued from time to time on a delayed or continuous basis pursuant to Rule 415 under the Securities Act.

We are acting as counsel for the Company in connection with the Registration Statement. We have examined signed copies of the Registration Statement and have also examined and relied upon minutes of meetings of the Board of Directors of the Company as provided to us by the Company, the Articles of Incorporation and By-Laws of the Company, each as restated and/or amended to date (collectively the “Charter Documents”), and such other documents as we have deemed necessary for purposes of rendering the opinions hereinafter set forth.

In our examination of the foregoing documents, we have assumed the genuineness of all signatures, the authenticity of all documents submitted to us as originals, the conformity to original documents of all documents submitted to us as copies, the authenticity of the originals of such latter documents and the legal competence of all signatories to such documents. Other than our examination of the documents indicated above, we have made no other examination in connection with this opinion.

The opinions rendered herein are limited to the Nevada Revised State Statutes and the federal laws of the United States. For purposes of our opinion, we have examined an official compilation of “Title 7 - Business Associations; Securities; Commodities, Chapter - 78 - Private Corporations” of the Nevada Revised Statutes. Such examination was limited to the provisions of such statute only, and did not include any annotations or commentary related thereto. We do not purport to be experts on the laws of the State of Nevada and our opinion is based upon such limited experience.

Based upon and subject to the foregoing, we are of the opinion that:

(1) With respect to the Shares, when (i) specifically authorized for issuance by the Company’s Board of Directors or an authorized committee thereof (the “Authorizing Resolutions”); (ii) the Registration Statement has become effective under the Securities Act; (iii) if necessary, an appropriate prospectus supplement with respect to the Shares has been prepared, filed and delivered in compliance with the Securities Act and the applicable rules promulgated thereunder; (iv) the terms of the sale of the Shares have been duly established in conformity with the Charter Documents and do not violate any applicable law or result in a default under or breach of any agreement or instrument binding on the Company and comply with any requirement or restriction imposed by any court or governmental body having jurisdiction over the Company; (v) the Shares have been issued and sold as contemplated by the Registration Statement and any prospectus supplement, if applicable; and (vi) the Company has received the consideration provided for in the Authorizing Resolutions and such consideration is not less than the par value of the Shares, the Shares will be validly issued, fully paid and nonassessable.

Zysman, Aharoni, Gayer and Sullivan & Worcester LLP
An International Joint Venture Law Firm

BOSTON NEW YORK TEL AVIV WASHINGTON, DC

(2) With respect to the Warrants, when (i) specifically authorized for issuance by the Authorizing Resolutions; (ii) the Registration Statement has become effective under the Securities Act; (iii) the warrant agreement or agreements relating to the Warrants have been duly authorized, executed and delivered; (iv) the terms of the Warrants and of their issuance and sale have been duly established in conformity with the warrant agreement or agreements and do not violate any applicable law or result in a default under or breach of any agreement or instrument binding upon the Company and comply with any requirement or restriction imposed by any court or governmental body having jurisdiction over the Company; (v) the Warrants have been duly executed and countersigned in accordance with the warrant agreement or agreements and issued and sold as contemplated by the Registration Statement; and (vi) the Company has received the consideration (if any separate consideration is given for the Warrants) provided for in the Authorizing Resolutions, the Warrants will constitute valid and legally binding obligations of the Company, subject to bankruptcy, insolvency, fraudulent transfer, reorganization, moratorium and similar laws of general applicability relating to or affecting creditors' rights and to general equity principles.

(3) With respect to the Units, when (i) at the time of execution, issuance and delivery of the Units and any agreement related thereto will have been duly authorized, executed and delivered by the Company and the other parties to such agreement and will be the valid and legally binding obligation of the parties thereto, enforceable against such parties in accordance with its terms; and (ii) all necessary conditions and actions with respect to the Securities of which the Units are comprised shall have been duly met or taken, as provided for in (1) and (2) above, as applicable, the Units will constitute valid and legally binding obligations of the Company, subject to bankruptcy, insolvency, fraudulent transfer, reorganization, moratorium and similar laws of general applicability relating to or affecting creditors' rights and to general equity principles.

(4) With respect to the Preferred Shares, when (i) the Board shall have duly adopted resolutions approving a certificate of designation (the "Certificate of Designation") setting forth the terms of a series of Preferred Shares, including, as applicable, designations and powers, preferences and relative, participating, optional or other special rights, and qualifications, limitations or restrictions thereof, including without limitation the dividend rate, conversion or exchange rights, redemption price and liquidation preference; (ii) the Certificate of Designation shall have been duly executed and filed with the Secretary of State of Nevada; (iii) specifically authorized for issuance by the Authorizing Resolutions; (iv) the Registration Statement has become effective under the Securities Act; (v) if necessary, an appropriate prospectus supplement with respect to the Preferred Shares has been prepared, filed and delivered in compliance with the Securities Act and the applicable rules promulgated thereunder; (vi) the terms of the sale of the Preferred Shares have been duly established in conformity with the Charter Documents and do not violate any applicable law or result in a default under or breach of any agreement or instrument binding on the Company and comply with any requirement or restriction imposed by any court or governmental body having jurisdiction over the Company; (vii) the Preferred Shares have been issued and sold as contemplated by the Registration Statement and any prospectus supplement, if applicable, and (viii) the Company has received the consideration provided for in the Authorizing Resolutions and such consideration is not less than the par value of the Preferred Shares, the Preferred Shares will be validly issued, fully paid and nonassessable.

(5) With respect to the Warrant Shares, when issued upon proper exercise of the Outstanding Warrants and receipt of the exercise price therefor by the Company, the Warrant Shares will be validly issued, fully paid and nonassessable.

The opinions set forth herein are rendered as of the date hereof, and we assume no obligation to update such opinions to reflect any facts or circumstances which may hereafter come to our attention or any changes in the law which may hereafter occur (which may have retroactive effect).

This opinion is rendered to you in connection with the filing of the Registration Statement. This opinion may not be relied upon for any other purpose, or furnished to, quoted or relied upon by any other person, firm or corporation for any purpose, without our prior written consent, except that (A) this opinion may be furnished or quoted to judicial or regulatory authorities having jurisdiction over you, and (B) this opinion may be relied upon by purchasers and holders of the Securities currently entitled to rely on it pursuant to applicable provisions of federal securities law.

[Remainder of page intentionally left blank]

We hereby consent to the filing of this opinion with the Commission as an exhibit to the Registration Statement in accordance with the requirements of Item 601(b)(5) of Regulation S-K under the Securities Act and to the reference to our firm in the prospectus forming a part of the Registration Statement. In giving such consent, we do not admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission.

Very truly yours,

/s/ Zysman, Aharoni, Gayer and Sullivan & Worcester LLP

Zysman, Aharoni, Gayer and Sullivan & Worcester LLP

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the reference to our firm under the caption "Experts" in the Registration Statement (Form S-3) and related Prospectus of Pluristem Therapeutics Inc., for the registration of Common Stock, Preferred Stocks, Warrants and Units of two or more of such securities, dated June 23, 2017, and to the incorporation by reference therein of our reports dated September 7, 2016, with respect to the consolidated financial of Pluristem Therapeutics Inc. and the effectiveness of internal control over financial reporting of Pluristem Therapeutics Inc., included in its Annual Report (Form 10-K) for the year ended June 30, 2016, filed with the Securities and Exchange Commission.

Haifa, Israel
June 23, 2017

/s/ Kost Forer Gabbay & Kasierer
Kost Forer Gabbay & Kasierer
A Member of Ernst & Young Global
