PLURISTEM THERAPEUTICS INC
Form 424B5
October 31, 2017

Filed Pursuant to Rule 424(b)(5)
Registration No. 333-218916

PROSPECTUS SUPPLEMENT
(to the Prospectus dated June 30, 2017)

9,000,000 shares of Common Stock

We are offering 9,000,000 shares of our common stock, par value $0.00001 per share, pursuant to this prospectus supplement and the accompanying prospectus. The sales will be made in conjunction with a public offering we are conducting in Israel pursuant to our Israeli shelf registration statement.

We will sell to the investors the shares at a public offering price of NIS 5.90 (approximately $1.67 per share at an assumed conversion rate of USD $1 to NIS 3.528). We will pay all of the expenses incident to the registration, offering and sale of the shares under this prospectus supplement and the accompanying base prospectus.

Our common stock is listed on the NASDAQ Capital Market, or Nasdaq, under the symbol "PSTI" and on the Tel Aviv Stock Exchange under the symbol "PLTR." On October 27, 2017, the last reported sale price for our common stock on the Nasdaq was $1.97 per share. We have applied to list the shares of common stock offered by this prospectus supplement on Nasdaq.

Investing in our securities involves a high degree of risk. You should review carefully the risks and uncertainties referenced under the heading "Risk Factors" beginning on page S-3 of this prospectus supplement and on page 2 of the accompanying prospectus.

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

Leader Underwriters (1993) Ltd., or Leader, is acting as our advisor on this transaction. Leader is not purchasing or selling any of these securities nor is Leader required to arrange for the sale of any specific number or dollar amount of securities, but has agreed to use its best efforts to arrange for the sale of the securities offered in Israel and offered by this prospectus supplement. We have agreed to pay Leader the fees set forth in the table below.

	Per Share	Total
Offering price	$1.67	$15,051,000
Leader fees(1)	$0.10	$903,000
Proceeds to Pluristem, before expenses	$1.57	$14,148,000

(1) In addition to the Leader fees listed in the table above, we have agreed to reimburse Leader for certain of its expenses with respect to this offering as described under "Plan of Distribution".

Delivery of the shares is expected to be made on or about October 31, 2017.

The date of this prospectus supplement is October 30, 2017.

TABLE OF CONTENTS

Prospectus Supplement

	Page
About this Prospectus Supplement	S-ii
Prospectus Supplement Summary	S-1
Risk Factors	S-3
Cautionary Statement Regarding Forward-Looking Statements	S-4
Use of Proceeds	S-5
Dividend Policy	S-5
Dilution	S-5
Plan of Distribution	S-7
Legal Matters	S-8
Experts	S-8
Where You Can Find More Information	S-8
Incorporation of Certain Documents by Reference	S-9

Prospectus

	Page
About This Prospectus	1
Our Company	1
Risk Factors	2
Cautionary Note Regarding Forward-Looking Statements	2
Use of Proceeds	3
The Securities We May Offer	3
Description of Capital Stock	3
Description of Warrants	4
Description of Units	6
Plan of Distribution	7
Validity of Securities	10
Experts	10
Where You Can Find More Information	10
Incorporation of Documents by Reference	11

ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement and the accompanying prospectus are part of a "shelf" registration statement on Form S-3 (File No. 333-218916) declared effective by the Securities and Exchange Commission, or SEC, on June 30, 2017. Under this "shelf" registration process, we may, from time to time, sell any combination of the securities described in the accompanying prospectus in one or more offerings up to a total amount of $200,000,000. As of October 29, 2017, prior to the consummation of this offering, we were deemed to have sold $80,000,000 of securities under the foregoing "shelf" registration statement.

This document is in two parts. The first part is this prospectus supplement, which describes the specific terms of this offering and also adds to and updates information contained in the accompanying prospectus and the documents incorporated by reference into this prospectus supplement and the accompanying prospectus. The second part is the accompanying prospectus, which gives more general information about the shares of our common stock, the warrants to purchase common stock and other securities we may offer from time to time under our "shelf" registration statement, some of which does not apply to the common stock offered by this prospectus supplement.

Generally, when we refer to this prospectus supplement, we are referring to both parts of this document combined together with all documents incorporated by reference. To the extent there is a conflict between the information contained in this prospectus supplement, on the one hand, and the information contained in the accompanying prospectus or any document incorporated by reference therein, on the other hand, you should rely on the information in this prospectus supplement.

You should read this prospectus supplement, the accompanying prospectus, and the documents incorporated by reference in this prospectus supplement and the accompanying prospectus before making an investment decision. You should also read and consider the information in the documents referred to in the sections of this prospectus supplement entitled "Where You Can Find More Information" and "Incorporation of Certain Documents by Reference."

You should rely only on the information contained in or incorporated by reference into this prospectus supplement or contained in or incorporated by reference into the accompanying prospectus to which we have referred you. We have not authorized anyone to provide you with information that is different. If anyone provides you with different or inconsistent information, you should not rely on it. The information contained in, or incorporated by reference into, this prospectus supplement and contained in, or incorporated by reference into, the accompanying prospectus is accurate only as of the respective dates thereof, regardless of the time of delivery of this prospectus supplement and the accompanying prospectus or of any sale of securities.

We are offering to sell, and are seeking offers to buy, the shares only in jurisdictions where such offers and sales are permitted. The distribution of this prospectus supplement and the accompanying prospectus and the offering of the shares in certain states or jurisdictions or to certain persons within such states and jurisdictions may be restricted by law. Persons outside the United States who come into possession of this prospectus supplement and the accompanying prospectus must inform themselves about and observe any restrictions relating to the offering of the shares and the distribution of this prospectus supplement and the accompanying prospectus outside the United States. This prospectus supplement and the accompanying prospectus do 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 supplement and the accompanying prospectus by any person in any state or jurisdiction in which it is unlawful for such person to make such an offer or solicitation.

In this prospectus supplement and the accompanying prospectus, unless otherwise indicated, the terms "Pluristem," "we," "us" and "our" mean Pluristem Therapeutics Inc. and its wholly-owned Israeli subsidiary, Pluristem Ltd., as required by the context.

PROSPECTUS SUPPLEMENT SUMMARY

This summary contains basic information about us and this offering. Because it is a summary, it does not contain all of the information that you should consider before investing. Before you decide to invest in our securities, you should read this entire prospectus supplement and the accompanying prospectus carefully, including the sections entitled "Risk Factors," and our consolidated financial statements and the related notes and other documents incorporated by reference herein and in the accompanying prospectus.

Our Company

Pluristem Therapeutics Inc. is 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. A pivotal, multinational clinical trial is currently being conducted with our PLX-PAD product candidate in CLI. In addition, pivotal, multinational clinical trials are planned for our PLX-PAD product candidate in femoral neck fractures. The National Institutes of Health's National Institute of Allergy and Infectious Diseases recently completed a dose selection trial with PLX-R18 in the hematologic component of ARS and a pivotal study is planned under the U.S. Food and Drug Administration, or FDA, animal rule once funding will be secured for this project. 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 healthy delivery. 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 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 product candidates, by leveraging unique accelerated regulatory pathways that exist in the United States, 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. PLX R18 is also under development in a Phase I trial in the United States for incomplete hematopoietic recovery following hematopoietic cell transplantation.

Corporate Information

We were incorporated in Nevada in 2001, and have a wholly-owned subsidiary in Israel called Pluristem Ltd. We operate in one segment and our operations are focused on the research, development, clinical trials and manufacturing of cell therapeutics and related technologies. Our executive offices are located at MATAM Advanced Technology Park, Building No. 5, Haifa, Israel, our telephone number is 011-972-74-710-8600 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 supplement and should not be considered to be part of this prospectus supplement.

The Offering

Shares of common stock offered by us	9,000,000 shares of common stock
Offering price per share	NIS 5.90 (approximately $1.67 per share at an assumed conversion rate of USD $1 to NIS 3.528)
Common stock to be outstanding after this offering	107,947,746 shares of common stock.
Use of proceeds	We intend to use the net proceeds from this offering for research and product development activities, clinical trial activities, investment in capital equipment and for working capital and other general corporate purposes. See "Use of Proceeds" for more information.
Risk factors	See "Risk Factors" beginning on page S-3 of this prospectus supplement and on page 2 of the accompanying prospectus, as well as those risk factors that are incorporated by reference in this prospectus supplement and the accompanying prospectus, for a discussion of factors to consider carefully before deciding to purchase shares of our common stock.
Nasdaq Capital Market symbol	PSTI.

Unless we indicate otherwise, all information in this prospectus supplement is based on 98,947,746 shares of common stock outstanding as of October 26, 2017 and assumes no exercise of outstanding options or warrants to purchase additional shares and excludes as of such date:

- 921,450 shares of common stock issuable upon the exercise of outstanding stock options as of October 26, 2017at a weighted-average exercise price of $2.29 per share;
- 3,304,570 shares of common stock reserved for future issuances under our stock option plans as of October 26, 2017;
- 11,885,240 shares of common stock issuable upon the exercise of outstanding warrants as of October 26, 2017 at a weighted-average exercise price of $1.90 per share; and
- 5,583,326 shares of common stock issuable upon the vesting of outstanding restricted stock units as of October 26, 2017.

RISK FACTORS

Investing in our securities involves significant risks. You should carefully consider the risk factors below, in the accompanying prospectus and in our filings with the SEC, including our Annual Report on Form 10-K for the fiscal year ended June 30, 2017, as well as all of the information contained in this prospectus supplement, in the accompanying prospectus 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.

You will experience immediate and substantial dilution in the net tangible book value per share of the common stock you purchase.

Since the price per share of our common stock being offered is higher than the net tangible book value per share of our common stock, you will suffer substantial dilution in the net tangible book value of the common stock you purchase in this offering. If you purchase shares in this offering, you will incur an immediate and substantial dilution in net tangible book value of $1.26 per share. See the section entitled "Dilution" on page S-5 in this prospectus supplement for a more detailed discussion of the dilution you will incur if you purchase shares in this offering.

Our management will have broad discretion over the use of the proceeds we receive from this offering and may invest or spend the proceeds of this offering in ways with which you may not agree or in ways which may not yield a significant return, if any.

We intend to use the net proceeds from this offering for research and product development activities, clinical trial activities, investment in capital equipment and for working capital and other general corporate purposes. Our management will have significant flexibility in applying the net proceeds of this offering. The actual amounts and timing of expenditures will vary significantly depending on a number of factors, including the amount of cash used in our operations and our research and development efforts. Management's failure to use these funds effectively would have an adverse effect on the value of our common stock and could make it more difficult and costly to raise funds in the future.

Future sales of our shares may cause the prevailing market price of our shares to decrease.

We have issued a substantial number of shares issued or issuable upon exercise of warrants and options to purchase our shares that are eligible for, or may become eligible for, unrestricted resale. Any sales or registration of such shares in the public market or otherwise could reduce the prevailing market price for our shares, as well as make future sales of equity securities by us less attractive or even not feasible. The sale of shares issued upon the exercise of our options and warrants, could also further dilute the holdings of our then existing shareholders.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

The statements contained in this prospectus supplement, the accompanying 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. Such forward-looking statements include, among other statements, statements regarding the following:

- the expected development and potential benefits from our products in treating various medical conditions;
- the clinical trials to be conducted according to our license agreement with CHA Biotech Co. Ltd.;
- our plan to execute our strategy independently, using our own personnel, and through relationships with research and clinical institutions or in collaboration with other companies;
- the prospects of entering into additional license agreements, or other forms of cooperation with other companies and medical institutions;
- our pre-clinical and clinical trials plans, including timing of initiation, enrollment and conclusion of trials;
- achieving regulatory approvals, including under accelerated paths;
- receipt of future funding from the Israel Innovation Authority;
- our marketing plans, including timing of marketing our first product candidate, PLX-PAD;
- developing capabilities for new clinical indications of placenta expanded (PLX) cells and new products;
- our estimations regarding the size of the global market for our product candidates;
- our expectations regarding our production capacity;
- our expectation to demonstrate a real-world impact and value from our pipeline, technology platform and commercial-scale manufacturing capacity;
- our expectations regarding our short- and long-term capital requirements;
- the proposed joint venture to be established with Sosei Corporate Venture Capital Ltd. for the clinical development and commercialization of Pluristem's PLX-PAD cell therapy product in Japan and the plan to enter into definitive agreements;
- our outlook for the coming months and future periods, including but not limited to our expectations regarding future revenue and expenses; and

· information with respect to any other plans and strategies for our business.

The factors discussed herein, including those risks described under the heading "Risk Factors" herein, in the accompanying prospectus and in the documents we incorporate by reference 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 supplement, the accompanying prospectus 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

The net proceeds from this offering will be approximately $13,674,000 based on the public offering price of NIS 5.90 per share (approximately $1.67 per share at an assumed conversion rate of USD $1 to NIS 3.528), after deducting Leader's fees and the other estimated offering expenses that are payable by us.

We intend to use the net proceeds from this offering for research and product development activities, clinical trial activities, investment in capital equipment and for working capital and other general corporate purposes. Pending the application of the net proceeds, we intend to invest the net proceeds in bank deposits or investment-grade, interest-bearing securities subject to any investment policies our investment committee may determine from time to time.

We have not yet determined the amount of net proceeds to be used specifically for any of the foregoing purposes. Accordingly, our management will have significant discretion and flexibility in applying the net proceeds from this offering.

DIVIDEND POLICY

We have never declared or paid any cash dividends on our common stock. We intend to retain any future earnings to finance the growth and development of our business and do not anticipate paying any cash dividends in the foreseeable future. Any dividends paid will be solely at the discretion of our board of directors.

DILUTION

Purchasers of common stock in this offering will incur immediate and substantial dilution in the net tangible book value per share of common stock. Our historical net tangible book value as of June 30, 2017 was approximately $0.31 per share of our common stock. Net tangible book value per share represents the sum of total tangible assets minus the sum of total liabilities, divided by 96,938,789 shares of common stock, which was the number of shares of our common stock outstanding as of June 30, 2017.

Dilution in net tangible book value per share represents the difference between the amount per share paid by purchasers in this offering and the net tangible book value per share of our common stock immediately after this offering. After giving effect to the sale of shares of common stock in this offering at an offering price of $1.67 per share, and after deducting the Leader fees and other estimated offering expenses payable by us, our as adjusted net tangible book value as of June 30, 2017, would have been approximately $0.41 per share of common stock. This represents an immediate increase in net tangible book value of $0.10 per share of common stock to our existing stockholders and an immediate dilution in net tangible book value of $1.26 per share of common stock to investors participating in this offering. The following table illustrates this per share dilution:

Offering price per share		$1.67
Historical net tangible book value per share as of June 30,2017	$0.31	
Increase in net tangible book value per share attributable to this offering	$0.10	
As adjusted net tangible book value per share after this offering		$0.41
Dilution per share to new investors in this offering		$1.26

The foregoing illustration does not reflect potential dilution from the exercise of outstanding options or warrants to purchase shares of our common stock.

The discussion and tables above are based on 96,938,789 shares outstanding as of June 30, 2017 and excludes as of that date:

- 992,850 shares of common stock issuable upon the exercise of outstanding stock options as of June 30, 2017, at a weighted-average exercise price of $2.57 per share;
- 3,648,755 shares of common stock reserved for future issuances under our stock option plans as of June 30, 2017;
- 15,748,964 shares of common stock issuable upon the exercise of outstanding warrants as of June 30, 2017 at a weighted-average exercise price of $2.51 per share; and
- 6,107,401 shares of common stock issuable upon the vesting of outstanding restricted stock units as of June 30, 2017.

To the extent that outstanding options or warrants outstanding as of June 30, 2017 have been or may be exercised or unvested restricted stock units have been or may be issued, investors purchasing our common stock in this offering may experience further dilution. In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our stockholders.

PLAN OF DISTRIBUTION

We have entered into a letter agreement, dated as of October 29, 2017, with Leader, pursuant to which Leader has agreed to act as our agent, distributor and advisor in connection with the offering of our shares in Israel. Leader is not purchasing or selling any shares offered by this prospectus supplement and the accompanying prospectus, but has assisted in the distribution of certain shares of common stock in the offering being conducted in Israel pursuant to applicable Israeli laws. Leader has agreed to use its best efforts to arrange for the sale of shares. The offering price of the shares offered by this prospectus supplement and the accompanying prospectus per share has been determined based upon arm's length negotiations between the purchasers and us pursuant to the public offering process conducted in Israel.

Commissions and Expenses

We have agreed to pay Leader an advisory fee equal to 3% of the total amount of funds raised in the offering, a management fee equal to 1% of the total amount of funds raised in the offering, an additional success fee that may be paid upon our discretion that shall not exceed 1% of the total amount of funds raised in the offering, a distribution fee equal to 1% of the total amount of funds raised in the offering and a fee of NIS 30,000 (approximately $8,500) for book running services. The following table shows per share and total cash placement agent's fees we will pay to Leader in connection with the sale of the shares pursuant to this prospectus supplement and the accompanying prospectus:

Leader fees	$903,000
Total	$903,000

We estimate the total offering expenses of this offering that will be payable by us, excluding Leader's fees, will be approximately $474,000, which includes legal and printing costs, various other fees and the reimbursement of Leader's expenses.

Our obligation to issue and sell shares to the purchasers is subject to the conditions set forth in the Israeli shelf filings, which may be waived by us at our discretion. A purchaser's obligation to purchase shares is subject to the conditions set forth in the Israeli shelf filing as well, which may also be waived. We currently anticipate that the delivery of the shares will occur on or about October 31, 2017. At the closing, The Depository Trust Company will credit the shares to the account of the Tel Aviv Stock Exchange which will, in conjunction with Leader, distribute the shares to the respective accounts of the purchasers.

Leader may be deemed to be an underwriter within the meaning of Section 2(a)(11) of the Securities Act of 1933, as amended, or the Securities Act, and any commissions received by them and any profit realized on the resale of the shares sold by them while acting as a principal might be deemed to be underwriting discounts or commissions under the Securities Act. As an underwriter, Leader would be required to comply with the requirements of the Securities Act and the Securities Exchange Act of 1934, as amended, or the Exchange Act, including, without limitation, Rule 10b-5 and Regulation M under the Exchange Act. These rules and regulations may limit the timing of purchases and sales of shares by Leader acting as principals. Under these rules and regulations, Leader:

- must not engage in any stabilization activity in connection with our securities; and
- must 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 Exchange Act, until they have completed their participation in the distribution.

Listing

Our shares of common stock are listed on the NASDAQ Capital Market under the trading symbol "PSTI" and on the Tel Aviv Stock Exchange under the trading symbol "PLTR."

Transfer Agent

The transfer agent for our common stock is American Stock Transfer and Trust Company, LLC.

Other

Leader or its affiliates may in the future provide investment banking, commercial banking and/or other services to us from time to time, for which it may in the future receive customary fees and expenses.

Foreign Regulatory Restrictions on Purchase of Securities Offered Hereby Generally

No action has been or will be taken in any jurisdiction (except in the United States and Israel) that would permit a public offering of the securities offered by this prospectus supplement and accompanying prospectus, or the possession, circulation or distribution of this prospectus supplement and accompanying prospectus or any other material relating to us or the securities offered hereby in any jurisdiction where action for that purpose is required. Accordingly, the securities offered hereby may not be offered or sold, directly or indirectly, and neither of this prospectus supplement and accompanying prospectus nor any other offering material or advertisements in connection with the securities offered hereby may be distributed or published, in or from any country or jurisdiction except in compliance with any applicable rules and regulations of any such country or jurisdiction.

LEGAL MATTERS

The validity of the common stock offered hereby and certain other legal matters will be passed upon for us by Zysman, Aharoni, Gayer and Sullivan & Worcester LLP, New York, New York.

EXPERTS

The consolidated financial statements of Pluristem appearing in our Annual Report on Form 10-K for the year ended June 30, 2017, and the effectiveness of the internal control over financial reporting of Pluristem as of June 30, 2017, 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 (the report on the consolidated financial statements for the year ended June 30, 2017 contains an explanatory paragraph describing conditions that raise substantial doubt about the Company's ability to continue as a going concern as described in Note 1b to the consolidated financial statements), 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 file annual, quarterly and current reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the SEC's website at www.sec.gov. Copies of certain information filed by us with the SEC are also available on our website at www.pluristem.com. Our website is not a part of this prospectus supplement and is not incorporated by reference in this prospectus supplement. You may also read and copy any document we file at the SEC's Public Reference Room, 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the operation of the Public Reference Room. This reference to the websites is an inactive textual reference only, and is not a hyperlink.

This prospectus is part of a registration statement we filed with the SEC. This prospectus supplement and the accompanying prospectus omit some information contained in the registration statement in accordance with SEC rules and regulations. You should review the information and exhibits in the registration statement for further information on us and our consolidated subsidiaries and the securities we are offering. Statements in this prospectus supplement and the accompanying prospectus concerning any document we filed as an exhibit to the registration statement or that

we otherwise filed with the SEC are not intended to be comprehensive and are qualified by reference to these filings. You should review the complete document to evaluate these statements. You can obtain a copy of the registration statement from the SEC at the address listed above or from the SEC's website.

INCORPORATION OF CERTAIN 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 supplement. Statements contained in documents that we file with the SEC and that are incorporated by reference in this prospectus supplement 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 supplement, 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:

(1) Our Annual Report on Form 10-K filed with the SEC on September 7, 2017;

(2) Our Current Reports on Form 8-K filed with the SEC on July 7, 2017, August 21, 2017, September 18, 2017, October 19, 2017 and each report filed on October 30, 2017; and

(3) The description of our common stock contained in the Registration Statement on Form 8-A filed with the SEC 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 until all of the securities to which this prospectus supplement 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 supplement and the accompanying prospectus 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 supplement. 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.

PROSPECTUS

$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 June 30, 2017.

TABLE OF CONTENTS

ABOUT THIS PROSPECTUS	1
OUR COMPANY	1
RISK FACTORS	2
CAUTIONARY NOTE REGARDING FORWARD-LOOKING INFORMATION	2
USE OF PROCEEDS	3
THE SECURITIES WE MAY OFFER	3
DESCRIPTION OF CAPITAL STOCK	3
DESCRIPTION OF WARRANTS	4
DESCRIPTION OF UNITS	6
PLAN OF DISTRIBUTION	7
VALIDITY OF THE SECURITIES	10
EXPERTS	10
WHERE YOU CAN FIND MORE INFORMATION	10
INCORPORATION OF DOCUMENTS BY REFERENCE	11

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.

1

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 as 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 reallowed 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 reallowed 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.

8

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 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.

9,000,000 shares of Common Stock

PROSPECTUS SUPPLEMENT

October 30, 2017