

The information in this preliminary prospectus supplement and the accompanying prospectus is not complete and may be changed. A registration statement relating to these securities has been declared effective by the Securities and Exchange Commission. This preliminary prospectus supplement and the accompanying prospectus are not an offer to sell these securities and are not soliciting an offer to buy these securities in any state or jurisdiction where the offer or sale is not permitted.

Subject to Completion. Dated January , 2011

PRELIMINARY PROSPECTUS SUPPLEMENT
(to prospectus dated January 11, 2011)

Filed pursuant to Rule 424(b)(5)
Registration No. 333-171334



Shares of Common Stock

Warrants to purchase up to Shares of Common Stock

Pluristem Therapeutics Inc. is offering up to shares of its common stock and warrants to purchase up to shares of its common stock at an exercise price of \$ per share of common stock. The shares of common stock and warrants will be sold in units, with each unit consisting of one share of common stock and a warrant to purchase shares of common stock. Each unit will be sold at a price of \$ per unit.

Our common stock is traded on the NASDAQ Capital Market under the symbol "PSTI." On January 25, 2011, the last reported sale price of our common stock on the NASDAQ Capital Market was \$3.96 per share. Our common stock also recently began to trade on the Tel Aviv Stock Exchange (TASE) under the symbol "PLTR."

This prospectus supplement is not complete without, and may not be utilized except in connection with, the accompanying prospectus dated January 11, 2011. Further, we incorporate important information into this prospectus supplement and the accompanying prospectus by reference.

There is no market through which the Warrants may be sold and purchasers may not be able to resell the Warrants purchased under this prospectus supplement. This may affect the pricing of the Warrants in the secondary market, the transparency and availability of trading prices, the liquidity of such Warrants, and the extent of issuer regulation. See "Risk Factors."

Investing in our securities involves a high degree of risk. See the "Risk Factors" section on page S-6 of this prospectus supplement and the corresponding sections in the accompanying prospectus and in our Annual Report on Form 10-K for the year ended June 30, 2010, and our subsequent filings with the Securities and Exchange Commission under the Securities Exchange Act of 1934, which are incorporated by reference into this prospectus supplement.

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

	<u>Per Unit</u>	<u>Total</u>
Public offering price	\$	\$
Underwriting discount	\$	\$
Offering proceeds to us, before expenses	\$	\$

We have granted the underwriters a 30-day option to purchase up to additional units on the same terms and conditions as are set forth above to cover over-allotments, if any.

The underwriters expect to deliver the units to purchasers on or about January , 2011. The underwriters are offering the units on a firm commitment basis, as set forth under "Underwriting."

Sole Book-Running Manager
Oppenheimer & Co.

Co-Lead Manager
Needham & Company, LLC

The date of this prospectus supplement is January , 2011.

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ABOUT THIS PROSPECTUS SUPPLEMENT

A registration statement on Form S-3 (File No. 333-171334), or the registration statement, utilizing a "shelf" registration process relating to the securities described in this prospectus supplement was initially filed with the Securities and Exchange Commission, or the SEC, on December 22, 2010, and was declared effective by the SEC on January 11, 2011. Under this "shelf" registration process, of which this offering is a part, we may, from time to time, sell up to an aggregate of \$75 million of our common stock, preferred stock, warrants and units. We have not yet sold any securities under the foregoing shelf registration.

This document is in two parts. The first part is this prospectus supplement, which describes the terms of this offering of our shares of common stock and warrants to purchase shares of our common stock, and also adds, updates and changes information contained in the accompanying prospectus and the documents incorporated therein by reference. The second part is the accompanying prospectus, which gives more general information, some of which may not apply to this offering. To the extent the information contained in this prospectus supplement differs or varies from the information contained in the accompanying prospectus or any document filed prior to the date of this prospectus supplement and incorporated herein by reference, the information in this prospectus supplement will govern. In addition, this prospectus supplement and the accompanying prospectus do not contain all of the information provided in the registration statement that we filed with the SEC. For further information about us, you should refer to that registration statement, which you can obtain from the SEC as described below under "Where You Can Find More Information."

You should rely only on the information contained in or incorporated by reference into this prospectus supplement and the accompanying prospectus. We have not, and the underwriters have not, authorized anyone to provide you with information that is different. This prospectus supplement is not an offer to sell or solicitation of an offer to buy our securities in any circumstances under which the offer or solicitation is unlawful. We are offering to sell, and seeking offers to buy, our securities only in jurisdictions where offers and sales are permitted. You should not assume that the information we have included in this prospectus supplement or the accompanying prospectus is accurate as of any date other than the date of this prospectus supplement or the accompanying prospectus, respectively, or that any information we have incorporated by reference is accurate as of any date other than the date of the document incorporated by reference, regardless of the time of delivery of this prospectus supplement or of any of our securities. Our business, financial condition, results of operations and prospects may have changed since those dates.

Unless the context otherwise requires, all references in this prospectus to "we," "our," "our company," "Pluristem," "PSTI," "us" and the "Company" refer to Pluristem Therapeutics Inc. and its subsidiary.

PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights information contained elsewhere or incorporated by reference into this prospectus supplement and the accompanying prospectus. This summary does not contain all of the information that you should consider before investing in our securities. You should carefully read the entire prospectus supplement and the accompanying prospectus, including the "Risk Factors" sections, starting on page S-6 of this prospectus supplement and page 3 of the accompanying prospectus, as well as the financial statements and the other information incorporated by reference herein, before making an investment decision.

Overview

We are a bio-therapeutics company dedicated to the commercialization of non-personalized (allogeneic) cell therapy products for the treatment of several severe degenerative, ischemic and autoimmune disorders. We are developing a pipeline of products, stored ready-to-use, that are derived from human placenta, a non-controversial, non-embryonic, adult stromal cell source. The placental adherent stromal cells (ASCs) are grown in the Company's proprietary PluriX™ three-dimensional bioreactor, which imitates the natural microstructure of the body.

Pluristem's first product in development, PLX-PAD, is intended to improve the quality of life of millions of people suffering from peripheral artery disease (PAD).

We are currently focusing on clinical indications that the route of administration is intramuscular, which means that the cells are administrated locally to the muscle and not systemically. This route of administration may be applicable for several different indications, such as: PAD, critical limb ischemia, or CLI, intermittent claudication, or IC, neuropathic pain, wound healing and orthopedic injuries. In addition, we have reported our pre-clinical studies utilizing our proprietary PLX during the systemic administration in treating for multiple sclerosis, ischemic stroke, and inflammatory bowel disease.

Once we have products ready for commercialization, we will evaluate our various sales and marketing alternatives, including licensing of our technology to other companies, manufacturing and direct sales or entering into marketing collaborations.

Recent Developments

We announced on January 18, 2011 that we had successfully completed a parallel scientific advisory process with the European Medical Agencies, or the EMA, and the U.S. Food and Drug Administration, or the FDA, regarding our planned clinical development program for PLX-PAD.

We plan to conduct two clinical studies of PLX-PAD and to file the necessary regulatory documentation requesting the joint approval of the FDA-EMA for a Phase II/III study of PLX-PAD for CLI and a joint approval of the FDA and the Paul Ehrlich Institute (PEI) in Germany to conduct a Phase II study for IC.

Corporate Information

We were incorporated in the State of Nevada on May 11, 2001. Since 2003, we have owned 100% of the issued and outstanding shares of common stock of a research and development company based in Israel and called Pluristem, Ltd., which is our wholly-owned subsidiary. Our principal offices are located in Israel at MATAM Advanced Technology Park, Building No. 20, Haifa, Israel 31905. We maintain a website at www.pluristem.com; this website is not a part of this prospectus supplement and should not be deemed "filed" under the Securities Exchange Act of 1934, or the Exchange Act.

The Offering

Shares of common stock and warrants offered	shares and warrants to purchase up to shares of common stock. This prospectus also covers up to shares of common stock issuable upon exercise of the warrants.
Offering price per unit	
Terms of warrants	An exercise price of \$ per share exercisable on and expiring on , 20 , the anniversary of the date of the issuance.
Common stock outstanding prior to this offering	28,202,011 shares of common stock.
Common stock to be outstanding after this offering	shares of common stock or shares of common stock if all the warrants are exercised.
Use of proceeds	We estimate that the net proceeds from this offering, after deducting underwriting discounts and commissions and before offering expenses payable by us, will be approximately \$. We intend to use the net proceeds from this offering for expenses related to the conduct of our clinical trials, research and product development activities and for general corporate purposes, including general working capital purposes. See "Use of Proceeds" on page S- 9.
Risk factors	See "Risk Factors" beginning on page S-6 of this prospectus supplement and page 3 of the accompanying prospectus for a discussion of the risks you should carefully consider before deciding to invest in our securities.
Lock-up	Subject to certain exceptions, we and certain of our executive officers have agreed with the underwriters not to sell, transfer or dispose of any shares of our common stock for a period of 90 days (subject to certain exceptions) after the date of this prospectus supplement. See "Underwriting."
NASDAQ Capital Market symbol	PSTI
TASE symbol	PLTR

Unless otherwise stated, all information in this prospectus supplement is based on 28,202,011 shares of common stock outstanding as of January 24, 2011, assumes no exercise of the underwriters' over-allotment option, and does not include the following:

- 2,581,811 shares issuable upon the exercise of stock options outstanding prior to this offering under our stock incentive plans, at a weighted average exercise price of \$3.90 per share;
- 303,409 shares available for future grants under our stock incentive plans; and
- 12,689,273 shares issuable upon the exercise of warrants outstanding prior to this offering, at a weighted average exercise price of \$2.20 per share.
- 2,085,578 restricted stocks units issuable upon vesting.

RISK FACTORS

Investing in our securities involves significant risks. Before making an investment decision, you should carefully consider the risks described below, in the accompanying prospectus and in our most recent Annual Report on Form 10-K, and in our subsequent filings with the SEC, together with all of the other information appearing in this prospectus supplement or incorporated herein by reference, in light of your particular investment objectives and financial circumstances. The risks so described are not the only risks we face. Additional risks not presently known to us or that we currently deem immaterial may also impair our business operations. Our business, financial condition and results of operations could be materially adversely affected by any of these risks. The trading price of our securities could decline due to any of these risks, and you may lose all or part of your investment. The discussion of risks includes or refers to forward-looking statements; you should read the explanation of the qualifications and limitations on such forward-looking statements discussed elsewhere in this prospectus supplement.

We have not recognized any revenues since our incorporation and only have a limited operating history in our current business of developing and commercializing cell therapy products, which raise doubts about our ability to continue as a going concern.

We have a limited operating history in our current business of developing and commercializing cell therapy products and must be considered in the development stage. We have not generated any revenues since our inception and we will, in all likelihood, continue to incur operating expenses without significant revenues until we successfully develop and commercialize our cell therapy products. Our primary source of funds has been the sale of our common stock and government grants. We cannot give assurances that we will be able to generate any significant revenues or income. These circumstances make us dependent on additional financial support until profitability is achieved. There is no assurance that we will ever be profitable or that we will be able to continue as a going concern as is noted in the notes to our consolidated financial statements for the year ended June 30, 2010, included in our Annual Report on Form 10-K, incorporated herein by reference.

Our independent registered public accounting firm's report states that there is a substantial doubt that we will be able to continue as a going concern.

Our independent registered public accounting firm, Kost, Forer, Gabbay & Kassierer, a Member of Ernst & Young Global, stated in their audit report attached to our audited consolidated financial statements for the fiscal years ended June 30, 2010 and 2009 that because we are a development exploration stage company, we have no established source of revenue and are dependent on our ability to raise capital from shareholders and other sources to sustain operations, there is a substantial doubt that we will be able to continue as a going concern. There can be no assurance that acceptable financing to fund our ongoing operations can be obtained on suitable terms, if at all. If we are unable to obtain the financing necessary to support our operations, we may be unable to continue as a going concern. In that event, we may be forced to cease operations and our stockholders could lose their entire investment in our company.

We have a potential conflict with a prior financing agreement that may expose us to potential litigation.

In our subscription agreement for our May 2007 equity financing, or the Prior Financing Agreement, there is a provision that requires us, for a period of four years (subject to acceleration under certain circumstances), not to sell any of our common stock for less than \$0.0125 per share. The Prior Financing Agreement provides that any sale below such price must be preceded by a consent from each purchaser in the Prior Financing Agreement. Since that date, we have effected a one-for-200 reverse stock split.

In August 2008, we entered into securities purchase agreements pursuant to which we sold securities at a price higher than the pre-split price of \$0.0125 and below the post-split price of \$2.50. We decided to proceed with the offering notwithstanding the provision for the following reasons:

- The Prior Financing Agreement did not contain any provisions for the adjustment of the specified minimum price in the event of stock splits and the like. If the Prior Financing Agreement were to have contained such a provision, the floor price would be \$2.50, which was greater than the offering price of the August offering.
- The majority of purchasers in the Prior Financing Agreement had sold the stock purchased in the Prior Financing Agreement, and thus the number of purchasers whose consent is purportedly required had been substantially reduced. The number of shares outstanding as to which this provision currently applies according the information supplied by our transfer agent is 1,848,545 shares.

- Any agreement that prevents our board of directors from issuing shares that are necessary to finance our business may be unenforceable.
- Even if the minimum price provision was considered enforceable and the share price number was to be adjusted for our reverse stock split, we believed that there would be no damage from such offering to the holders of our shares whose consent was purportedly required.

In the event that a court were to hold that the issuance of shares below \$2.50 per share violated the Prior Financing Agreement, it is unclear what remedy the court may impose. If the court were to impose a remedy that would be the equivalent of an anti-dilution provision (which is not contained in the Prior Financing Agreement), any issuance of shares would be dilutive to our shareholders, including those who purchase shares in the current offering, in the event that the price for such shares is below \$2.50 per share. In addition, since August 2008, we, on several occasions, raised funds at a price per share which was higher than the pre-split price of \$0.0125 and below the post-split price of \$2.50.

In connection with the August 2008 financing, we approved the issuance of warrants to purchase up to 161,724 shares of our common stock to each of the investors who was a party to the Prior Financing Agreement and who still held shares purchased pursuant to such agreement as of August, 2008, conditioned upon having the investors execute a general release pursuant to which we would be released from liability including, but not limited to, any claims, demands, or causes of action arising out of, relating to, or regarding sales of certain equity securities notwithstanding the above mentioned provision. As of September 30, 2010 we had received a general release from some of the investors, and issued them warrants to purchase 105,583 shares of our common stock.

Our success will depend in part on our ability to protect our technology and products with patents.

We have three issued U.S. patents and eleven issued non-U.S. patents. In addition, we have five pending U.S. applications and forty-two pending non-U.S. patent applications (including four International Applications). Our issued patents, which will expire in 2020, are directed to methods for maintaining and expanding undifferentiated hematopoietic stem cells and to the use of those cells in cell therapy. We do not view any of these issued patents as being material to our business. Our pending patent applications are directed to compositions, methods for expanding and the therapeutic uses of adherent stromal cells. The patent approval process is complex and results are therefore highly uncertain. No assurance can be given that any of our pending patent applications or future patent applications will be approved, that the scope of any patent protection granted will exclude competitors or provide us with competitive advantages, that any of the patents that have been or may be issued to us will be held valid if subsequently challenged, or that other parties will not claim rights to or ownership of our patents or other proprietary rights that we hold. Furthermore, there can be no assurance that others have not developed or will not develop similar products, duplicate any of our technology or products or design around any patents that have been or may be issued to us or any future licensors. Since patent applications in the United States and in Europe are not publicly disclosed until they are published, there can be no assurance that others did not first file applications for products covered by our pending patent applications, nor can we be certain that we will not infringe any patents that may be issued to others pursuant to such applications.

We are committed to protecting our intellectual property position and to aggressively pursue our patent portfolio.

We have built the ability to manufacture clinical grade ASCs in-house. Through our experience with ASC-based product development, we have developed expertise and know-how in this field. To protect these expertise and know-how, our policies require confidentiality agreements with our employees, consultants, contractors, manufacturers and advisors. These agreements generally provide for protection of confidential information, restrictions on the use of materials and assignment of inventions conceived during the course of performance for us. These agreements might not effectively prevent disclosure of our confidential information.

We fully own our intellectual property and we have no obligations to pay royalties to any third party, except for royalties to the Office of Chief Scientist (see note 6D in our audited consolidated financial statements for fiscal 2010 included elsewhere in our Annual Report on Form 10-K for the fiscal year ended June 30, 2010).

We must further protect and develop our technology and products in order to become a profitable company.

The initial patents underlying our technology are directed to methods of maintaining and expanding undifferentiated hematopoietic stem cells and to the use of those cells in cell therapy. If we do not create additional sufficient layers of patents, other companies may use our technology to develop competing products. If this happens, we may not be able to obtain a competitive position and our business would likely suffer.

Furthermore, the scope of our patents may not be sufficiently broad to offer meaningful protection. In addition, our patents could be successfully challenged, invalidated or circumvented so that our patent rights would not create an effective competitive barrier.

Since we have broad discretion in how we use the proceeds from this offering, we may use the proceeds in ways with which you disagree.

We have not allocated specific amounts of the net proceeds from this offering for any specific purpose. Accordingly, our management will have significant flexibility in applying the net proceeds of this offering. You will be relying on the judgment of our management with regard to the use of these net proceeds, and you will not have the opportunity, as part of your investment decision, to assess whether the proceeds are being used in ways with which you would agree. It is possible that the net proceeds will be invested in a way that does not yield a favorable, or any, return for the Company. The failure of our management to use such funds effectively could have a material adverse effect on our business, financial condition, operating results and cash flow.

Investors in this offering will pay a substantially higher price than the book value of our shares.

If you purchase shares in this offering, you will incur an immediate and substantial dilution in net tangible book value of \$ per share, assuming the sale by us of all shares offered hereby at an assumed price to the public of \$3.96 per share (based on the closing price on NASDAQ Capital Market on January 25, 2011), and that no warrants issued in connection with this offering will be exercised.

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

We have issued a substantial number of shares 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.

SPECIAL NOTE REGARDING FORWARD-LOOKING INFORMATION

This prospectus supplement and the documents we incorporate by reference in this prospectus supplement contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 and other Federal securities laws. All statements, other than statements of historical fact, that we include in this prospectus supplement and in the documents we incorporate by reference in this prospectus supplement, may be deemed forward-looking statements for purposes of the Securities Act of 1933, or the Securities Act, and the Exchange Act. We use the words "anticipate," "believe," "estimate," "expect," "intend," "may," "plan," "project," "will," "would" and similar expressions to identify forward-looking statements, although not all forward-looking statements contain these identifying words. We cannot guarantee that we actually will achieve the plans, intentions or expectations and conduct the clinical studies disclosed in our forward-looking statements and, accordingly, you should not place undue reliance on our forward-looking statements. There are a number of important factors that could cause actual results or events to differ materially from the forward-looking statements that we make, including the factors included in the documents we incorporate by reference in this prospectus supplement. You should read these factors and the other cautionary statements made in the documents we incorporate by reference as being applicable to all related forward-looking statements wherever they appear in this prospectus supplement, the accompanying prospectus and any document incorporated by reference. We caution you that, except as otherwise required by law, we do not undertake any obligation to update forward-looking statements we make.

USE OF PROCEEDS

We estimate that the net proceeds from this offering will be approximately \$ million at an assumed public offering price of \$ per unit, which is the closing price of our shares of common stock on the NASDAQ Capital Market on January , 2011, and after deducting underwriting discounts and commissions and estimated offering expenses payable by us. If the underwriters' over-allotment option is exercised in full, we estimate that we will receive net proceeds of approximately \$ million, after deducting underwriting discounts and commissions and estimated offering expenses payable by us.

We intend to use the net proceeds from this offering to fund the preparation of the two clinical studies described under the caption "Prospectus Supplement Summary - Recent Developments" on page S-4 of this prospectus supplement, research and product development activities, other clinical trials activities and for general corporate purposes, including working capital and administrative expenses. The amounts and timing of the expenditures may vary significantly depending on numerous factors, such as the progress of our preparation for the clinical trials and other research and development efforts, technological advances and the competitive environment for our products. Pending the use of the net proceeds, we intend to invest the net proceeds in bank deposits or short-term, interest-bearing, investment-grade securities.

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.

CAPITALIZATION

The following table sets forth our consolidated capitalization as of December 31, 2010:

- on an actual basis; and
- on an as adjusted basis to give effect to our sale of shares of common stock at an assumed public offering price of \$ per share, after deducting underwriting discounts and commissions and estimated offering expenses payable by us (assuming no exercise of the underwriters' over-allotment option).

The information set forth in the following table should be read in conjunction with and is qualified in its entirety by reference to the audited and unaudited financial statements and notes thereto incorporated by reference in this prospectus supplement and the accompanying prospectus.

<i>(In thousands, except share data)</i>	As of December 31, 2010	
	Actual	As Adjusted (unaudited)
Shareholders' equity:		
Common stock, par value \$0.00001 per share – authorized 100,000,000 shares; issued and outstanding 26,489,904 shares (as of December 31, 2010); shares outstanding (1) on an as adjusted basis		
Preferred stock, par value \$0.00001 per share – authorized 10,000,000 shares, none of them issued. (3)	\$	\$
Additional paid-in capital (through September 30, 2010) (2)		44,526
Accumulated deficit during the development stage (through September 30, 2010)		(41,794)
Total shareholders' equity	\$	\$ 2,732
Total capitalization		

(1) Based on 26,489,904 shares outstanding as of December 31, 2010. This number does not include:

- 2,585,811 shares issuable upon the exercise of stock options outstanding prior to this offering under our stock incentive plans, at a weighted average exercise price of \$3.89 per share;
- 318,317 shares available for future grants under our stock incentive plans; and
- 14,250,350 shares issuable upon the exercise of warrants outstanding prior to this offering, at a weighted average exercise price of \$2.15 per share.
- 2,132,036 restricted stock units issuable upon vesting.

(2) This number does not include net proceeds of approximately \$5,006 related to the private placement we closed in October 2010, and approximately \$2,613 received from the exercise of warrants in January 2011.

(3) Less than \$1.

DILUTION

If you purchase shares of our common stock in this offering (either as a component of units or upon warrant exercise), your interest will be diluted to the extent of the difference between the public offering price per share and the net tangible book value per share of our common stock after this offering. Our net tangible book value as of September 30, 2010, was approximately \$2.7 million, or approximately \$0.12 per share. Net tangible book value per share is equal to total assets minus the sum of total liabilities and intangible assets divided by the total number of shares outstanding. Unless otherwise noted, all information contained in this dilution section assumes that the underwriters do not exercise their over-allotment option.

After giving effect to the sale of shares of common stock in this offering at an assumed public offering price of \$3.96 per share, the closing price of our shares on the NASDAQ Capital Market on January 25, 2010, and after deducting underwriting discounts and commissions and estimated offering expenses, our net tangible book value as of September 30, 2010, would have been \$, or \$ per share. This amount represents an immediate increase in net tangible book value to existing shareholders of \$ per share and an immediate dilution in net tangible book value of \$ per share to purchasers of our shares of common stock in this offering, as illustrated in the following table (without giving effect to the over-allotment option granted to the underwriters):

Public offering price per share	\$
Net tangible book value per share as of September 30, 2010	\$
Increase in net tangible book value per share after giving effect to this offering	\$
Pro forma net tangible book value per share as of September 30, 2010	\$
Dilution in net tangible book value per share to new investors	\$

This table assumes no exercise of outstanding options or warrants prior to this offering, or issued but unvested Restricted Stock Units. To the extent that options or warrants are exercised, there will be further dilution to new investors.

If the underwriters' over-allotment option is exercised in full, our pro forma net tangible book value per share after giving effect to this offering would be \$ per share, and the dilution in pro forma net tangible book value per share to investors in this offering would be \$ per share.

The foregoing per share dilution does not give effect to the potential exercise of the warrants offered hereby. Assuming the sale of all securities offered hereby and also the exercise of all warrants offered hereby, the per share dilution would be as follows:

After giving effect to the sale of shares of common stock in this offering (inclusive of the warrant shares) at an assumed public offering price of \$3.96 per share, and assuming an exercise price of \$3.96 per warrant share, both prices are the closing price of our shares on the NASDAQ Capital Market on January 25, 2010, and after deducting underwriting discounts and commissions and estimated offering expenses, our net tangible book value as of September 30, 2010, would have been \$, or \$ per share. This amount represents an immediate increase in net tangible book value to existing shareholders of \$ per share and an immediate dilution in net tangible book value of \$ per share to purchasers of our shares of common stock in this offering, as illustrated in the following table (without giving effect to the over-allotment option granted to the underwriters):

Public offering price per share	\$
Net tangible book value per share as of September 30, 2010	\$
Increase in net tangible book value per share after giving effect to this offering	\$
Pro forma net tangible book value per share as of September 30, 2010	\$
Dilution in net tangible book value per share to new investors	\$

If the underwriters' over-allotment option is exercised in full, our pro forma net tangible book value per share after giving effect to this offering would be \$ per share, and the dilution in pro forma net tangible book value per share to investors in this offering would be \$ per share.

UNDERWRITING

We have entered into an underwriting agreement with the underwriters named below. Oppenheimer & Co. Inc. is acting as book-running manager and representative of the underwriters.

The underwriting agreement provides for the purchase of a specific number of units of shares of common stock and warrants by each of the underwriters. The underwriters' obligations are several, which means that each underwriter is required to purchase a specified number of units, but is not responsible for the commitment of any other underwriter to purchase units.

Subject to the terms and conditions of the underwriting agreement, each underwriter has severally agreed to purchase the number of units set forth opposite its name below:

<u>Underwriters</u>	<u>Number of Units</u>
Oppenheimer & Co. Inc. Needham & Company, LLC	
Total	

The underwriters have agreed to purchase all of the units offered by this prospectus supplement (other than those covered by the over-allotment option described below) if any are purchased.

The shares of common stock being issued initially and the warrants should be ready for delivery on or about January , 2011 against payment in immediately available funds. The underwriters are offering the units subject to various conditions and may reject all or part of any order. The representative of the underwriters has advised us that the underwriters propose to offer the units directly to the public at the public offering price that appears on the cover page of this prospectus supplement. In addition, the representatives may offer some of the units to other securities dealers at such price less a concession of \$0. per share. The underwriters may also allow, and such dealers may reallow, a concession not in excess of \$ per share to other dealers. After the units are released for sale to the public, the representative may change the offering price and other selling terms at various times.

We have granted the underwriters an over-allotment option. This option, which is exercisable for up to 30 days after the date of this prospectus supplement, permits the underwriters to purchase a maximum of additional units from us to cover over-allotments.

If the underwriters exercise all or part of this option, they will purchase units covered by the option at the public offering price that appears on the cover page of this prospectus supplement, less the underwriting discount. If this option is exercised in full, the total price to public will be \$, and the total gross proceeds to us will be \$. The underwriters have severally agreed that, to the extent the over-allotment option is exercised, they will each purchase a number of additional units proportionate to the underwriter's initial amount reflected in the foregoing table.

The following table provides information regarding the amount of the discount to be paid to the underwriters by us, before expenses:

	Per Unit	Without Exercise of Over-Allotment Option	With Exercise of Over-Allotment Option
Public offering price	\$	\$	\$
Underwriting discount	\$	\$	\$
Proceeds, before expenses, to us	\$	\$	\$

We estimate that our total expenses of the offering, excluding the underwriting discount, will be approximately \$_____.

The Underwriters (pro rata in the proportions of the units purchased by such underwriter) will pay an aggregate advisory fee of \$____ to Leader Underwriters (1993) Ltd. in connection with services performed in Israel in connection with this offering.

We have agreed to indemnify the underwriters against certain liabilities, including liabilities under the Securities Act of 1933.

We and certain of our officers have agreed to a 90-day "lock-up" of 1,953,194 shares of our common stock in the aggregate that they beneficially own, including any securities that are convertible into shares of common stock and securities that are exchangeable or exercisable for any of our equity securities. This means that, subject to certain exceptions, for a period of 90 days following the date of this prospectus supplement, we and certain of our officers may not offer, sell, pledge or otherwise dispose of these securities without the prior written consent of Oppenheimer & Co. Inc.

Rules of the Securities and Exchange Commission may limit the ability of the underwriters to bid for or purchase shares before the distribution of the shares is completed. However, the underwriters may engage in the following activities in accordance with the rules:

- Stabilizing transactions -- The representative 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.
- Over-allotments and syndicate covering transactions -- The underwriters may sell more shares of our common stock in connection with this offering than the number of shares than they have committed to purchase. This overallotment creates a short position for the underwriters. This short sales 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' over-allotment option to purchase additional shares in this offering described above. The underwriters may close out any covered short position either by exercising their over-allotment 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 the over-allotment option. Naked short sales are short sales in excess of the over-allotment option. The underwriters must close out any naked short 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 this offering.
- Penalty bids -- If the representatives purchase shares in the open market in a stabilizing transaction or syndicate covering transaction, they may reclaim a selling concession from the underwriters and selling group members who sold those shares as part of this offering.

Similar to other purchase transactions, the underwriters' 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 the shares if it discourages resales of the shares.

Neither we nor the underwriters make any representation or prediction as to the effect that the transactions described above may have on the price of the shares. These transactions may occur on the NASDAQ Capital Market, the Tel Aviv Stock Exchange and on the Frankfurt Stock Exchange or otherwise. If such transactions are commenced, they may be discontinued without notice at any time.

Electronic Delivery of Preliminary Prospectus: A prospectus supplement in electronic format may be delivered to potential investors by one or more of the underwriters participating in this offering. The prospectus supplement in electronic format will be identical to the paper version of such preliminary prospectus supplement. Other than the prospectus supplement in electronic format, the information on any underwriter's website and any information contained in any other website maintained by an underwriter is not part of this prospectus supplement, the accompanying prospectus or the registration statement of which this prospectus supplement and the accompanying prospectus form a part.

Notice to Non- US Investors

BELGIUM

The offering is exclusively conducted under applicable private placement exemptions and therefore it has not been and will not be notified to, and this prospectus supplement or any other offering material relating to the units has not been and will not be approved by, the Belgian Banking, Finance and Insurance Commission ("Commission bancaire, financière et des assurances/Commissie voor het Bank-, Financie- en Assurantiewezzen"). Any representation to the contrary is unlawful.

Each underwriter has undertaken not to offer sell, resell, transfer or deliver directly or indirectly, any units, or to take any steps relating/ancillary thereto, and not to distribute or publish this document or any other material relating to the units or to the offering in a manner which would be construed as: (a) a public offering under the Belgian Royal Decree of 7 July 1999 on the public character of financial transactions; or (b) an offering of securities to the public under Directive 2003/71/EC which triggers an obligation to publish a prospectus in Belgium. Any action contrary to these restrictions will cause the recipient and the Company to be in violation of the Belgian securities laws.

FRANCE

Neither this prospectus supplement nor any other offering material relating to the units has been submitted to the clearance procedures of the *Autorité des marchés financiers* in France. The units have not been offered or sold and will not be offered or sold, directly or indirectly, to the public in France. Neither this prospectus supplement nor any other offering material relating to the units has been or will be: (a) released, issued, distributed or caused to be released, issued or distributed to the public in France; or (b) used in connection with any offer for subscription or sale of the units to the public in France. Such offers, sales and distributions will be made in France only: (i) to qualified investors (*investisseurs qualifiés*) and/or to a restricted circle of investors (*cercle restreint d'investisseurs*), in each case investing for their own account, all as defined in and in accordance with Articles L.411-2, D.411-1, D.411-2, D.734-1, D.744-1, D.754-1 and D.764-1 of the French *Code monétaire et financier*; (ii) to investment services providers authorised to engage in portfolio management on behalf of third parties; or (iii) in a transaction that, in accordance with article L.411-2-II-1^o-or-2^o-or 3^o of the French *Code monétaire et financier* and article 211-2 of the General Regulations (*Règlement Général*) of the *Autorité des marchés financiers*, does not constitute a public offer (*appel public à l'épargne*). Such units may be resold only in compliance with Articles L.411-1, L.411-2, L.412-1 and L.621-8 through L.621-8-3 of the French *Code monétaire et financier*.

UNITED KINGDOM/GERMANY/NORWAY/THE NETHERLANDS

In relation to each Member State of the European Economic Area which has implemented the Prospectus Directive (each, a "Relevant Member State") an offer to the public of any securities which are the subject of the offering contemplated by this prospectus supplement may not be made in that Relevant Member State other than the offers contemplated in this prospectus supplement in name(s) of Member State(s) where prospectus will be approved or passported for the purposes of a non-exempt offer once this prospectus supplement has been approved by the competent authority in such Member State and published and passported in accordance with the Prospectus Directive as implemented in name(s) of relevant Member State(s) except that an offer to the public in that Relevant Member State of any securities may be made at any time under the following exemptions under the Prospectus Directive, if they have been implemented in that Relevant Member State:

- (a) to legal entities which are authorised or regulated to operate in the financial markets or, if not so authorised or regulated, whose corporate purpose is solely to invest in securities;
- (b) to any legal entity which has two or more of (1) an average of at least 250 employees during the last financial year; (2) a total balance sheet of more than €43,000,000 and (3) an annual net turnover of more than €50,000,000, as shown in its last annual or consolidated accounts;
- (c) by the underwriters to fewer than 100 natural or legal persons (other than qualified investors as defined in the Prospectus Directive) subject to obtaining the prior consent of the representative for any such offer; or
- (d) in any other circumstances falling within Article 3(2) of the Prospectus Directive, provided that no such offer of securities shall result in a requirement for the publication by the Company or any underwriter of a prospectus pursuant to Article 3 of the Prospectus Directive.

For the purposes of this provision, the expression an "offer to the public" in relation to any units in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and any units to be offered so as to enable an investor to decide to purchase any units, as the same may be varied in that Member State by any measure implementing the Prospectus Directive in that Member State and the expression "Prospectus Directive" means Directive 2003/71/EC and includes any relevant implementing measure in each Relevant Member State.

Each underwriter has represented, warranted and agreed that:

- (a) it has only communicated or caused to be communicated and will only communicate or cause to be communicated any invitation or inducement to engage in investment activity (within the meaning of section 21 of the Financial Services and Markets Act 2000 (the *FSMA*)) received by it in connection with the issue or sale of any units in circumstances in which section 21(1) of the FSMA does not apply to the Company; and
- (b) it has complied with and will comply with all applicable provisions of the FSMA with respect to anything done by it in relation to the units in, from or otherwise involving the United Kingdom.

ISRAEL

In the State of Israel, the units offered hereby may not be offered to any person or entity other than the following:

- (a) a fund for joint investments in trust (i.e., mutual fund), as such term is defined in the Law for Joint Investments in Trust, 5754-1994, or a management company of such a fund;
- (b) a provident fund as defined in Section 47(a)(2) of the Income Tax Ordinance of the State of Israel, or a management company of such a fund;
- (c) an insurer, as defined in the Law for Oversight of Insurance Transactions, 5741-1981, (d) a banking entity or satellite entity, as such terms are defined in the Banking Law (Licensing), 5741-1981, other than a joint services company, acting for their own account or for the account of investors of the type listed in Section 15A(b) of the Securities Law 1968;
- (d) a company that is licensed as a portfolio manager, as such term is defined in Section 8(b) of the Law for the Regulation of Investment Advisors and Portfolio Managers, 5755-1995, acting on its own account or for the account of investors of the type listed in Section 15A(b) of the Securities Law 1968;
- (e) a company that is licensed as an investment advisor, as such term is defined in Section 7(c) of the Law for the Regulation of Investment Advisors and Portfolio Managers, 5755-1995, acting on its own account;
- (f) a company that is a member of the Tel Aviv Stock Exchange, acting on its own account or for the account of investors of the type listed in Section 15A(b) of the Securities Law 1968;
- (g) an underwriter fulfilling the conditions of Section 56(c) of the Securities Law, 5728-1968;
- (h) a venture capital fund (defined as an entity primarily involved in investments in companies which, at the time of investment, (i) are primarily engaged in research and development or manufacture of new technological products or processes and (ii) involve above-average risk);
- (i) an entity primarily engaged in capital markets activities in which all of the equity owners meet one or more of the above criteria; and
- (j) an entity, other than an entity formed for the purpose of purchasing units in this offering, in which the shareholders equity (including pursuant to foreign accounting rules, international accounting regulations and U.S. generally accepted accounting rules, as defined in the Securities Law Regulations (Preparation of Annual Financial Statements), 1993) is in excess of NIS 250 million.

Any offeree of the units offered hereby in the State of Israel shall be required to submit written confirmation that it falls within the scope of one of the above criteria. This prospectus supplement will not be distributed or directed to investors in the State of Israel who do not fall within one of the above criteria.

ITALY

The offering of the units offered hereby in Italy has not been registered with the Commissione Nazionale per la Società e la Borsa ("CONSOB") pursuant to Italian securities legislation and, accordingly, the units offered hereby cannot be offered, sold or delivered in the Republic of Italy ("Italy") nor may any copy of this prospectus supplement or any other document relating to the units offered hereby be distributed in Italy other than to professional investors (*operatori qualificati*) as defined in Article 31, second paragraph, of CONSOB Regulation No. 11522 of 1 July, 1998 as subsequently amended. Any offer, sale or delivery of the units offered hereby or distribution of copies of this prospectus supplement or any other document relating to the units offered hereby in Italy must be made:

- (a) by an investment firm, bank or intermediary permitted to conduct such activities in Italy in accordance with Legislative Decree No. 58 of 24 February 1998 and Legislative Decree No. 385 of 1 September 1993 (the "Banking Act");
- (b) in compliance with Article 129 of the Banking Act and the implementing guidelines of the Bank of Italy; and
- (c) in compliance with any other applicable laws and regulations and other possible requirements or limitations which may be imposed by Italian authorities.

SWEDEN

This prospectus supplement has not been nor will it be registered with or approved by Finansinspektionen (the Swedish Financial Supervisory Authority). Accordingly, this prospectus supplement may not be made available, nor may the units offered hereunder be marketed and offered for sale in Sweden, other than under circumstances which are deemed not to require a prospectus under the Financial Instruments Trading Act (1991: 980).

SWITZERLAND

The units offered pursuant to this prospectus supplement will not be offered, directly or indirectly, to the public in Switzerland and this prospectus supplement does not constitute a public offering prospectus as that term is understood pursuant to art. 652a or art. 1156 of the Swiss Federal Code of Obligations. The Company has not applied for a listing of the units being offered pursuant to this prospectus supplement on the SWX Swiss Exchange or on any other regulated securities market, and consequently, the information presented in this prospectus supplement does not necessarily comply with the information standards set out in the relevant listing rules. The units being offered pursuant to this prospectus supplement have not been registered with the Swiss Federal Banking Commission as foreign investment funds, and the investor protection afforded to acquirers of investment fund certificates does not extend to acquirers of units.

Investors are advised to contact their legal, financial or tax advisers to obtain an independent assessment of the financial and tax consequences of an investment in units.

DESCRIPTION OF WARRANTS

The warrants to be issued in this offering represent the right to purchase up to shares of common stock at an initial exercise price of \$ per share. Each warrant may be exercised at any time and from time to time on or after , 2011 and through and including .

Exercise

Holders of the warrants may exercise their warrants to purchase shares of our common stock on or before the expiration date by delivering (i) an exercise notice, appropriately completed and duly signed, and (ii) if such holder is not utilizing the cashless exercise provisions, payment of the exercise price for the number of shares with respect to which the warrant is being exercised. Warrants may be exercised in whole or in part, but only for full shares of common stock, and any portion of a warrant not exercised prior to the expiration date shall be and become void and of no value. We provide certain rescission, compensation and buy-in rights to a holder if we fail to deliver the shares of common stock underlying the warrants by the third trading day after delivery to us of the exercise notice. With respect to the rescission rights, the holder has the right to rescind the exercise. The buy-in rights apply if after such third trading day the holder purchases (in an open market transaction or otherwise) shares of our common stock to deliver in satisfaction of a sale by the holder of the warrant shares that the holder anticipated receiving from us upon exercise of the warrant. In this event, we will:

- pay cash to the holder in an amount equal to the excess (if any) of the buy-in price over the product of (A) such number of shares of common stock, times (B) the price at which the sell order giving rise to holder's purchase obligation was executed; and
- at the election of holder, either (A) reinstate the portion of the warrant as to such number of shares of common stock, or (B) deliver to holder a certificate or certificates representing such number of shares of common stock.

In addition, the warrant holders are entitled to a "cashless exercise" option if, at any time of exercise, there is no effective registration statement registering, or no current prospectus available for, the issuance or resale of the shares of common stock underlying the warrants. This option entitles the warrant holder to elect to receive fewer shares of common stock without paying the cash exercise price. The number of shares to be issued would be determined by a formula based on the total number of shares with respect to which the warrant is being exercised, the volume weighted average of the prices per share of our common stock on the trading date immediately prior to the date of exercise and the applicable exercise price of the warrants.

The shares of common stock issuable on exercise of the warrants will be, when issued in accordance with the warrants, duly and validly authorized, issued and fully paid and non-assessable. We will authorize and reserve at least that number of shares of common stock equal to the number of shares of common stock issuable upon exercise of all outstanding warrants.

Delivery of Certificates

Upon the holder's exercise of a warrant, we will promptly, but in no event later than three trading days after the exercise date, issue and deliver, or cause to be issued and delivered, a certificate for the shares of common stock issuable upon exercise of the warrant. In addition, we will, if the holder provides the necessary information to us, issue and deliver the shares electronically through The Depository Trust Corporation through its Deposit Withdrawal Agent Commission System or another established clearing corporation performing similar functions.

Certain Adjustments

The exercise price and the number of shares of common stock purchasable upon the exercise of the warrants are subject to adjustment upon the occurrence of the following events:

Stock Dividends and Splits

If, at any time while the warrant is outstanding, we (i) pay a stock dividend or otherwise make a distribution on shares of common stock or any other equity or equity equivalent securities payable in shares of common stock, (ii) subdivide outstanding shares of common stock into a larger number of shares, (iii) combine outstanding shares of common stock into a smaller number of shares, or (iv) issue by reclassification of common stock any shares of capital stock, then in each such case the exercise price shall be multiplied by a fraction of which the numerator shall be the number of shares of common stock outstanding immediately before such event and of which the denominator shall be the number of shares of common stock outstanding immediately after such event, and the number of shares issuable upon exercise of this Warrant shall be proportionately adjusted such that the aggregate exercise price of the warrant shall remain unchanged.

Subsequent Rights Offerings

If, at any time while the warrant is outstanding, we issue rights, options or warrants to all holders of our common stock entitling them to purchase our common stock at a price per share less than the volume weighted average price on the date of the issuance of such rights, options or warrants, then the exercise price shall be multiplied by a fraction, of which the denominator shall be the number of shares of common stock outstanding on the date of issuance of such rights or warrants plus the number of additional shares of common stock offered for subscription or purchase, and of which the numerator shall be the number of shares of common stock outstanding on the date of issuance of such rights or warrants plus the number of shares which the aggregate offering price of the total number of shares so offered would purchase at such volume weighted average price.

Pro Rata Distributions

If, at any time while the warrant is outstanding, we distribute evidences of our indebtedness or assets or rights or warrants to purchase any security other than our common stock to all holders of our common stock, or, distribution, then the exercise price will adjust pursuant to a volume weighted average price based ratio that takes into account the then per share fair market value of the portion of the Distribution applicable to one outstanding share of the Common Stock.

Fundamental Transaction

If, at any time while the warrant is outstanding, we (i) consolidate or merge with or into another corporation, (ii) sell all or substantially all of our assets, (iii) are subject to or complete a tender or exchange offer pursuant to which holders of our common stock are permitted to tender or exchange their shares for other securities, cash or property, or (iv) effect any reclassification of our common stock or any compulsory share exchange pursuant to which our common stock is converted into or exchanged for other securities, cash or property, each, a Fundamental Transaction, then the holders shall have the right thereafter to receive, upon exercise of the warrant, the same amount and kind of securities, cash or property as it would have been entitled to receive upon the occurrence of such Fundamental Transaction if it had been, immediately prior to such Fundamental Transaction, the holder of the number of warrant shares then issuable upon exercise of the warrant, which we refer to in this prospective supplement as Alternate Consideration. Any successor to us, surviving entity or the corporation purchasing or otherwise acquiring such assets shall assume the obligation to deliver to the holder such Alternate Consideration as the holder may be entitled to purchase, and the other obligations under the warrant.

In the event of certain Fundamental Transactions, the holders of the warrants will be entitled to receive, in lieu of our common stock and at the holders' option, cash in an amount equal to the value of the remaining unexercised portion of the warrant on the date of the transaction determined using a Black-Scholes option pricing model with an expected volatility equal to the 100 day historical price volatility obtained from Bloomberg L.P. as of the trading day immediately prior to the public announcement of the transaction.

Notice of Corporate Action

We will provide notice to holders of the warrants to provide such holders with an opportunity to exercise their warrants and hold common stock in order to participate in or vote on the following corporate events if we (i) declare a dividend on the common stock, (ii) declare a special nonrecurring cash dividend on or a redemption of the common stock, (iii) authorize the granting to all holders of the common stock rights or warrants to subscribe for or purchase any shares of capital stock of any class or of any rights, (iv) require the approval of any stockholders in connection with any reclassification of the common stock, any consolidation or merger to which we are a party, any sale or transfer of all or substantially all of our assets, any compulsory share exchange whereby the common stock is converted into other securities, cash or property, or (v) authorize the voluntary or involuntary dissolution, liquidation or winding up of the affairs of the Company.

Limitations on Exercise

The number of warrant shares that may be acquired by the holder upon any exercise of the warrant shall be limited to the extent necessary to insure that, following such exercise (or other issuance), the total number of shares of common stock then beneficially owned by such holder and its affiliates and any other persons whose beneficial ownership of common stock would be aggregated with the holder's for purposes of Section 13(d) of the Exchange Act, does not exceed 4.99% of the total number of issued and outstanding shares of common stock (including for such purpose the shares of common stock issuable upon such exercise), which we refer to as the Beneficial Ownership Limitation. The holder may elect to change the Beneficial Ownership Limitation from 4.99% to 9.99% of the total number of issued and outstanding shares of common stock (including for such purpose the shares of common stock issuable upon such exercise) upon 61 days' prior written notice.

Waivers and Amendments

The warrants may be modified or amended and the provisions therein may be waived with the written consent of the Company and holders holding warrants at least equal to 67% of the warrant shares issuable upon exercise of all then outstanding warrants.

Additional Provisions

The above summary of certain terms and provisions of the warrants is qualified in its entirety by reference to the detailed provisions of the warrants, the form of which will be filed as an exhibit to a current report on Form 8-K that is incorporated herein by reference. We are not required to issue fractional shares upon the exercise of the warrants. No holders of the warrants will possess any rights as a stockholder under those warrants until the holder exercises those warrants. The warrants may be transferred independent of the common stock they were issued with, on a form of assignment, subject to all applicable laws.

LEGAL MATTERS

The validity of the securities offered hereby will be passed upon for us by Zysman, Aharoni, Gayer and Sullivan & Worcester, LLP, Boston, Massachusetts. Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., New York, New York, is acting as counsel for the underwriters in connection with this offering.

EXPERTS

The financial statements of Pluristem Therapeutics Inc. appearing in Pluristem Therapeutics Inc.'s Annual Report on Form 10-K for the fiscal year ended June 30, 2010, have been audited by Kost Forer Gabbay & Kasierer, a member of Ernst & Young Global, independent registered public accounting firm, as set forth in their report thereon (which contains an explanatory paragraph describing conditions that raise substantial doubt about the Company's to continue as a going concern as described in Note 1.b. to the consolidated financial statements), included therein, and incorporated by reference in this prospectus supplement and accompanying prospectus. Such financial statements have been included herein in reliance upon such report 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. You may read and copy any document we file with the SEC at the SEC's Public Reference Room at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the public reference room.

The SEC also maintains a website, the address of which is www.sec.gov. That site also contains our annual, quarterly and current reports, proxy statements and other information.

We have filed this prospectus supplement with the SEC as part of a registration statement on Form S-3 under the Securities Act. This prospectus supplement does not contain all of the information set forth in the registration statement because some parts of the registration statement are omitted in accordance with the rules and regulations of the SEC. You can obtain a copy of the registration statement from the SEC at the address listed above or from the SEC's website.

We also maintain a website at www.pluristem.com, through which you can access our SEC filings. The information set forth on our website is not part of this prospectus supplement.

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 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 supplement, including information in previously filed documents or reports that have been incorporated by reference in this prospectus supplement.

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 for the fiscal year ended June 30, 2010;
- (2) Our Quarterly Report on Form 10-Q for the fiscal quarter ended September 30, 2010;
- (3) Our Current Report on Form 8-K, as filed with the SEC on October 12, 2010;
- (4) Our Current Report on Form 8-K, as filed with the SEC on October 18, 2010;
- (5) Our Current Report on Form 8-K, as filed with the SEC on December 13, 2010;
- (6) Our Current Report on Form 8-K, as filed with the SEC on January 18, 2011; and
- (7) The description of our common stock contained in our Registration Statement on Form 8-A filed with the SEC on December 10, 2007, as amended.

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 this prospectus supplement and prior to its effectiveness and (2) until all of the common stock 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. 20, Haifa, 31905, Israel, Attention: Yaky Yanay, (+972) 74 710 7171.

PROSPECTUS



\$75,000,000

PLURISTEM THERAPEUTICS INC.

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 \$75,000,000. 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. 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.

Our common stock is traded on the NASDAQ Capital Market under the symbol "PSTI."

Investing in our securities involves risks. See "Risk Factors" on page 4 of this prospectus.

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

This prospectus is dated January 11, 2011.

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You should rely only on the information contained in this prospectus and the documents incorporated by reference in this prospectus 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 does not constitute an offer to sell, or a solicitation of an offer to purchase, the securities offered by this prospectus 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 or any document incorporated by reference is accurate as of any date other than the date on the front cover of 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.

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission, or 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 \$75,000,000. 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, 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

We are a bio-therapeutics company dedicated to the commercialization of non-personalized (allogeneic) cell therapy products for the treatment of several severe degenerative, ischemic and autoimmune disorders. We are developing a pipeline of products, stored ready-to-use, that are derived from human placenta, a non-controversial, non-embryonic, adult stromal cell source. The placental adherent stromal cells are grown in the Company's proprietary PluriX™ three-dimensional bioreactor, which imitates the natural microstructure of the body.

Pluristem's first product in development, PLX-PAD, is intended to improve the quality of life of millions of people suffering from peripheral artery disease, or PAD. The enrollment for the Phase I clinical trials for PLX-PAD in Germany and the US is completed. The Phase I study is designed to evaluate the safety of using PLX-PAD in patients with critical limb ischemia, or CLI, the end stage of PAD.

We are currently focusing on clinical indication that the route of administration is intramuscular, which means that the cells are administrated locally to the muscle and not systemically. This route of administration may be applicable for several different indications, such as: PAD, CLI, intermittent claudication, neuropathic pain, wound healing and orthopedic injuries. In addition the company reported pre-clinical studies utilizing our proprietary PLX during the systemic administration in treating for multiple sclerosis, ischemic stroke, and inflammatory bowel disease.

Once we have products ready for commercialization, we will evaluate our various sale and marketing alternatives, including licensing of our technology to other companies, manufacturing and direct sales or entering into marketing collaborations.

Our shares of common stock are traded on the NASDAQ Capital Market under the symbol "PSTI", on the Tel Aviv Stock Exchange under the symbol "PLTR" and on the Frankfurt Stock Exchange in Europe under the symbol "PJT".

Our executive offices are located at MATAM Advanced Technology Park, Building No. 20, Haifa, Israel, our telephone number is 011 972 74 710 7171 and our website address is www.pluristem.com. The information on our website is not incorporated by reference in this prospectus and should not be considered to be part of this prospectus. Our website address is included in this prospectus as an inactive technical reference only. 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.

RISK FACTORS

An investment in our securities involves significant risks. You should carefully consider the risk factors contained in any prospectus supplement and in our filings with the SEC, as well as all of the information contained in this prospectus, any prospectus supplement and the documents incorporated by reference in this prospectus, before you decide to invest 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 operations.

SPECIAL NOTE REGARDING FORWARD-LOOKING INFORMATION

This prospectus, any prospectus supplement and the documents we incorporate by reference in this prospectus contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 and other Federal securities laws. All statements, other than statements of historical fact, that we include in this prospectus, any prospectus supplement and in the documents we incorporate by reference in this prospectus, may be deemed forward-looking statements for purposes of the Securities Act of 1933, or the Securities Act, and the Securities Exchange Act of 1934, or the Exchange Act. We use the words "anticipate," "believe," "estimate," "expect," "intend," "may," "plan," "project," "will," "would" and similar expressions to identify forward-looking statements, although not all forward-looking statements contain these identifying words. We cannot guarantee that we actually will achieve the plans, intentions or expectations disclosed in our forward-looking statements and, accordingly, you should not place undue reliance on our forward-looking statements. There are a number of important factors that could cause actual results or events to differ materially from the forward-looking statements that we make, including the factors included in the documents we incorporate by reference in this prospectus. You should read these factors and the other cautionary statements made in the documents we incorporate by reference as being applicable to all related forward-looking statements wherever they appear in this prospectus, any prospectus supplement and any document incorporated by reference. We caution you that, except as otherwise required by law, we do not undertake any obligation to update forward-looking statements we make.

USE OF PROCEEDS

Unless we otherwise indicate in the 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 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 the net proceeds in bank deposits or investment-grade, interest-bearing securities.

THE SECURITIES WE MAY OFFER

The descriptions of the securities contained in this prospectus, together with the applicable prospectus supplement, summarize the material terms and provisions of the various types of securities that we may offer. We will describe in the applicable prospectus supplement relating to any securities the particular terms of the securities offered by that prospectus supplement. If we so indicate in the applicable prospectus supplement, the terms of the securities may differ from the terms we have summarized below. We may also include in the prospectus supplement information, where applicable, about material United States 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;
- warrants to purchase common stock;
- preferred 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 \$75,000,000.

DESCRIPTION OF CAPITAL STOCK

Our authorized capital stock currently consists of 100,000,000 shares of common stock, of which there were 26,442,278 shares outstanding as of December 15, 2010, 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. 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 and Charter and Bylaws Provisions

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 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 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 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.

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;
- any provisions of the governing unit agreement that differ from those described below; 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 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; or
- through a combination of these methods of sale.

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.

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 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 this offering, 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.
- *Over-allotments 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 over-allotment 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’ over-allotment option to purchase additional shares in any underwritten offering. The underwriters may close out any covered short position either by exercising their over-allotment 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 the over-allotment option. Naked short sales are short sales in excess of the over-allotment 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, on the Tel Aviv Stock Exchange and on the Frankfurt 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.

VALIDITY OF THE SECURITIES

The validity of the securities offered hereby will be passed upon for us by Zysman, Aharoni, Gayer and Sullivan & Worcester, LLP, Boston, Massachusetts.

EXPERTS

The financial statements of Pluristem Therapeutics Inc. appearing in Pluristem Therapeutics Inc.'s Annual Report (Form 10-K) for the fiscal year ended June 30, 2010, have been audited by Kost Forer Gabbay & Kassirer, a member of Ernst & Young Global, independent registered public accounting firm, as set forth in their report thereon (which contains an explanatory paragraph describing conditions that raise substantial doubt about the Company's to continue as a going concern as described in Note 1.b. to the consolidated financial statements), included therein, and incorporated herein by reference. Such financial statements are incorporated herein by reference in reliance upon such report given on the authority of such firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We file reports, proxy statements and other documents with the SEC. You may read and copy any document we file with the SEC at the SEC's Public Reference Room at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the public reference room.

The SEC also maintains a website, the address of which is www.sec.gov. That site also contains our annual, quarterly and current reports, proxy statements, information statements and other information.

We have filed this prospectus with the SEC as part of a registration statement on Form S-3 under the Securities Act. This prospectus does not contain all of the information set forth in the registration statement because some parts of the registration statement are omitted in accordance with the rules and regulations of the SEC. You can obtain a copy of the registration statement from the SEC at the address listed above or from the SEC's website.

We also maintain a website at www.pluristem.com, through which you can access our SEC filings. The information set forth on our website and on the SEC's website is not part of this prospectus.

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:

- (1) Our Annual Report on Form 10-K for the fiscal year ended June 30, 2010;
- (2) Our Quarterly Report on Form 10-Q for the fiscal quarter ended September 30, 2010;
- (3) Our Current Report on Form 8-K, as filed with the SEC on October 12, 2010;
- (4) Our Current Report on Form 8-K, as filed with the SEC on October 18, 2010;
- (5) Our Current Report on Form 8-K, as filed with the SEC on December 13, 2010, and
- (6) The description of our common stock contained in our Registration Statement on Form 8-A filed with the SEC on December 10, 2007, as amended.

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 this registration statement and prior to its effectiveness and (2) until all of the common stock 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 the 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. 20, Haifa, 31905, Israel, Attention: Yaky Yanay, (+972) 74 710 7171.



____ Shares of Common Stock
Warrants to purchase up to Shares of Common Stock

PROSPECTUS SUPPLEMENT

____, 2011

Sole Book-Running Manager
Oppenheimer & Co.

Co-Lead Manager
Needham & Company, LLC
