As filed with the Securities and Exchange Commission on May 14, 2015

Registration No. 333-

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549

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

PLASMATECH BIOPHARMACEUTICALS, INC.
(Exact name of registrant as specified in its charter)

Delaware	**83-0221517**
(State or other jurisdiction of incorporation or organization)	**(IRS Employer Identification Number)**

4848 Lemmon Avenue, Suite 517, Dallas, TX 75219
(214) 905-5100
(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

John J. Concannon III, Esq.
Morgan, Lewis & Bockius LLP
One Federal Street
Boston, Massachusetts 02110
(617) 951-8000
(Name, address, including zip code, and telephone number, including area code, of agent for service)

Approximate date of commencement of proposed sale to the public:
From time to time after the effective date of this Registration Statement.

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

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

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

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

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

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Securities Exchange Act of 1934.

Large accelerated filer ☐	Accelerated filer ☐	Non-accelerated filer ☐ (Do not check if a smaller reporting company)	Smaller reporting company ☒

CALCULATION OF REGISTRATION FEE

Title of each class of securities to be registered	**Amount to be Registered(1)**	**Proposed maximum per share offering price(2)**	**Proposed maximum aggregate offering price(2)**	**Amount of registration fee**
Common Stock, par value $0.01 per share	1,925,000	$ 7.31	$ 14,071,750	$ 1,635.14

(1) This Registration Statement registers 1,925,000 shares of common stock of Plasmatech Biopharmaceuticals, Inc., of which 675,000 are issuable upon exercise of warrants. This Registration Statement also relates to such additional securities (i) to be offered or issued in connection with any provision of any securities purported to be registered hereby to be offered pursuant to terms which provide for a change in the amount of securities being offered or issued to prevent dilution resulting from stock splits, stock dividends, or similar transactions and (ii) of the same class as the securities covered by this Registration Statement issued or issuable prior to completion of the distribution of the securities covered by this Registration Statement as a result of a split of, or a stock dividend on, the registered securities.

(2) Estimated solely for the purpose of calculating the registration fee in accordance with Rule 457(c) under the Securities Act. The price per share and aggregate offering price are based on the average of the high and low sales prices of the common stock on May 8, 2015, as reported on The NASDAQ Capital Market.

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

The information contained in this prospectus is not complete and may be changed. We may not sell these securities until the Registration Statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and we are not soliciting offers to buy these securities in any jurisdiction where such offer or sale is not permitted.

Subject to Completion, Dated May 14, 2015

PROSPECTUS

PLASMATECH BIOPHARMACEUTICALS, INC.

1,925,000 Shares of Common Stock

This prospectus relates to the possible resale, from time to time, by the selling stockholders identified in this prospectus of up to 1,925,000 shares of our common stock, par value $0.01 per share, initially issued in a private placement, of which 675,000 shares are issuable upon the exercise of warrants.

The selling stockholders may offer the shares from time to time as each selling stockholder may determine through public or private transactions or through other means described in the section entitled “Plan of Distribution” or a supplement to this prospectus. Each selling stockholder may also sell shares under Rule 144 under the Securities Act of 1933, as amended, if available, rather than under this prospectus.

The registration of these shares does not necessarily mean that any holders will sell any of their shares or exercise their warrants. We are not offering for sale any shares of our common stock pursuant to this prospectus. We will not receive any cash proceeds from the sale of any of our shares of common stock by the selling stockholders, but we have agreed to pay certain registration expenses.

Our common stock is listed on The NASDAQ Capital Market under the symbol “PTBI.” On May 13, 2015, the closing price of our common stock was $8.60 per share.

The mailing address of our principal executive offices is 4848 Lemmon Avenue, Suite 517, Dallas, Texas 75219. Our telephone number is (214) 905-5100.

Investing in our securities involves certain risks. Before investing, you should refer to the risk factors beginning on page 8 of this prospectus, included in our periodic reports, in prospectus supplements and in other information filed by us with the Securities and Exchange Commission.

This prospectus may not be used to offer or sell any securities unless accompanied by a prospectus supplement.

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.

The date of this prospectus is , 2015.

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Prospectus

ABOUT THIS PROSPECTUS

We have not authorized any dealer, agent or other person to give any information or to make any representation other than those contained or incorporated by reference in this prospectus. You must not rely upon any information or representation not contained or incorporated by reference in this prospectus. This prospectus does not constitute an offer to sell or the solicitation of an offer to buy any securities other than the registered securities to which they relate, nor do this prospectus and the accompanying prospectus supplement, if any, constitute an offer to sell or the solicitation of an offer to buy securities in any jurisdiction to any person to whom it is unlawful to make such offer or solicitation in such jurisdiction. You should not assume that the information contained in this prospectus is accurate on any date subsequent to the date set forth on the front of the document or that any information we have incorporated by reference is correct on any date subsequent to the date of the document incorporated by reference, even though this prospectus is delivered or securities are sold on a later date.

References in this prospectus to the terms "the Company," "PlasmaTech," "we," "our" and "us" or other similar terms mean PlasmaTech Biopharmaceuticals, Inc., unless we state otherwise or the context indicates otherwise.

THE COMPANY

We are an emerging biopharmaceutical company focused on developing a range of pharmaceutical products primarily based upon our nanopolymer chemistry technologies, and salt diafiltration process ("SDF") technology recently licensed from Plasma Technologies LLC ("Licensor"). We currently have one marketed product licensed in the U.S., Europe, China, Australia, New Zealand and Korea. We also have additional products and platform technologies in various stages of development and are seeking partners to continue development and/or to license the technology.

We were incorporated in Wyoming in 1974 as Chemex Corporation, and in 1983 we changed our name to Chemex Pharmaceuticals, Inc. We changed our state of incorporation from Wyoming to Delaware on June 30, 1989. In 1996 we merged with Access Pharmaceuticals, Inc., a private Texas corporation, and changed our name to Access Pharmaceuticals, Inc. On October 24, 2014 we changed our name from Access Pharmaceuticals, Inc. to PlasmaTech Biopharmaceuticals, Inc. Our principal executive office is located at 4848 Lemmon Avenue, Suite 517, Dallas, Texas 75219. Our telephone number is (214) 905-5100. Our website address is *www.plasmatechbio.com*. We do not incorporate by reference into this prospectus the information on our website, and you should not consider it as part of this prospectus.

Recent Developments

On April 7, 2015 we announced we had appointed Charlie Strange, M.D. to our Scientific Advisory Board (SAB). Dr. Strange is a highly regarded thought leader in the Alpha-1 community, and has extensive clinical experience in designing and managing Alpha-1 clinical studies. We believe his advice and counsel will help accelerate development and approval of our proprietary SDF Alpha™ biologic drug.

On April 23, 2015 we closed a $7 million private placement of common stock consisting of 2,333,333 shares of common stock, at a price of $3.00 per share.

On May 11, 2015 we closed a $10 million private placement of common stock consisting of 1,250,000 shares of common stock, at a price of $8.00 per share, and warrants to purchase 625,000 shares of common stock.

On May 5, 2015, the Company, Plasmatech Merger Sub Inc. ("Merger Sub"), a wholly owned subsidiary of the Company, Abeona Therapeutics LLC, an Ohio limited liability company ("Abeona") and Paul A. Hawkins, an individual, solely in his capacity as Member Representative ("Member Representative") entered into an Agreement and Plan of Merger (the "Merger Agreement"). Pursuant to the terms and subject to the conditions set forth in the Merger Agreement, Merger Sub will merge with and into Abeona, with Abeona continuing as the surviving corporation and becoming a wholly owned subsidiary of PlasmaTech (the "Merger"). The Board of Directors of PlasmaTech and Managers of Abeona have unanimously approved the transaction.

In connection with the Merger, the PlasmaTech will issue to Abeona members a total of 3,979,761 common shares upon closing of the transaction, and up to an additional $9 million in performance milestones, in common stock or cash, at the Company's option. The completion of the Merger is subject to customary closing conditions.

On May 8, 2015, holders of warrants to purchase an aggregate of 665,950 shares of our common stock issued in our underwritten public offering, which closed on December 24, 201, exercised such warrants at a per share purchase price of $5.00. Proceeds from such exercise to us was $3,329,750 in cash.

Marketed Product

MuGard® is our marketed product for the management of oral mucositis, a frequent side-effect of cancer therapy for which there is no other established treatment. The market for mucositis treatment is estimated to be in excess of $1.0 billion worldwide. MuGard, a proprietary nanopolymer formulation, has received marketing clearance in the U.S. from the FDA. We launched MuGard in the U.S. in 2010.

Recent MuGard Developments

On August 5, 2010, we entered into an exclusive license with RHEI Pharmaceuticals, N.V. ("RHEI") related to the commercialization of MuGard in China and other Southeast Asian countries. Our China partners have received an acceptance letter from the State Food and Drug Administration of the People's Republic of China, which provides marketing approval in China. MuGard has been manufactured in the U.S. and shipped to China for sale. RHEI has rights to sub-license MuGard sales in some Southeast Asia countries.

On June 6, 2013 we entered into an exclusive license agreement with AMAG Pharmaceuticals, Inc. ("AMAG"), related to the commercialization of MuGard in the U.S. and its territories. Under the terms of the licensing agreement we received an upfront licensing fee of $3.3 million and will receive a tiered, double-digit royalty on net sales of MuGard in the licensed territory. We receive quarterly royalty payments from AMAG.

On March 11, 2014, we announced we had entered into an exclusive license agreement with Hanmi Pharmaceutical Co. Ltd. ("Hanmi") related to MuGard commercialization in South Korea. Under the terms of the agreement, we received an upfront licensing fee and will receive double digit royalties on sales of MuGard in the licensed territory.

On July 8, 2014, we announced we received notification from the Hong Kong Patent Office that a patent for MuGard has been granted.

On August 7, 2014, we entered into an exclusive license agreement with Norgine B.V. ("Norgine"), a leading independent European specialty pharmaceutical company, for the commercialization of MuGard in Europe. Under the terms of the license agreement, we could receive up to $10 million in milestone payments and an escalating double digit royalty on the net sales of the oral mucositis product, MuGard, in the licensed territories. Norgine will develop, manufacture, and commercialize MuGard in the European Union, Switzerland, Norway, Iceland and Lichtenstein. Norgine anticipates launching MuGard in 2015.

On September 12, 2014, we announced we had received notification from the European Patent Office that an additional European patent for MuGard had been granted. The patent (EP1997478) protects a wide range of liquid formulations for the prevention and treatment of mucosal diseases and disorders.

On October 27, 2014, we entered into an exclusive license agreement with Norgine for the commercialization of MuGard in Australia and New Zealand. The terms of the agreement are congruent to our recent license with Norgine for MuGard in Europe. Norgine intends to develop, manufacture and commercialize MuGard in the new territories.

On March 31, 2015, we announced that Hanmi has received marketing approval in Korea from the country's Ministry of Food and Drug Safety and the Korea Testing & Research Institute for MuGard. Hanmi intends to market MuGard in Korea under the trade name Mucogard.

We are actively seeking partners to license MuGard in other territories.

Product Candidates

- ProctiGard™ received 510(K) marketing clearance from the FDA on July 22, 2014 for the treatment of symptomatic management of rectal mucositis. ProctiGard is our product for the treatment of radiation proctitis, a frequent side effect of radiation treatment to the pelvic region. Radiation proctitis, or RP, is the inflammation and damage to the lower portion of the colon after exposure to x-rays or ionizing radiation as part of radiation therapy. RP is most common after treatments for cancer, such as cervical, colon and prostate cancer. RP can be acute, occurring within weeks of initiation of therapy, or can occur months or years after treatment. We intend to commercialize ProctiGard in a manner similar to the commercialization of MuGard, which may include confirmatory clinical trials, with the objective of commercialization in collaboration with marketing partners globally.
- We are also developing additional products using our proprietary mucoadhesive hydrogel technology as a mucoprotectant and/or delivery vehicle, as well as our vitamin B-12 mediated delivery technology.

Compound	Originator	Technology	Indication	Clinical Stage
MuGard®	PlasmaTech	Mucoadhesive liquid	Mucositis	— Launched in U.S. — Licensed to AMAG: U.S. rights — Licensed to Norgine: European Union rights — Licensed to RHEI: China rights and other SE Asia countries — Licensed to Hanmi: South Korea rights — Licensed to Norgine: Australia & New Zealand rights
ProctiGard™	PlasmaTech	Mucoadhesive hydrogel technology	Radiation proctitis	FDA clearance 7/22/14
Alpha-1 Protease Inhibitor (A1PI)	Licensor	Proprietary biological processing	Various	Process validation
Intravenous immune globulin (IVIG)	Licensor	Proprietary biological processing	Various	Process validation

Drug Development Strategy

We have a rich potential pipeline of products and product candidates ranging from preclinical development candidates to one approved product. To maximize return on this portfolio, we plan to develop in-house or with collaborators the following products and technologies: MuGard, ProctiGard and mucoadhesive hydrogel technology.

SDF Licensed Technology

On September 22, 2014, we entered into an exclusive, worldwide licensing agreement with Licensor to obtain rights to utilize and to sub-license to other pharmaceutical firms its patented methods for the extraction of therapeutic biologics from human plasma. Plasma biologics are bio-pharmaceutical proteins extracted, purified, and formulated from human blood plasma by the use of biotechnological processing techniques including precipitation, diafiltration, affinity chromatography, and ion-exchange chromatography. Because plasma biologics are biosimilar, they are less likely than recombinant or transgenic proteins to cause toxic or other adverse reactions, or cause adverse immunological responses such as the stimulation of inhibitors in recipients.

Under the terms of the licensing agreement, as amended on January 23, 2015, we paid a license fee of $1 million in cash, will pay $4 million in cash or 1,096,151 shares of our common stock in 2017, a regulatory approval milestone payment of 513,375 shares of our common stock upon the first FDA regulatory approval of a drug derived from the Licensor's proprietary SDF process, and a tiered royalty on annual net sales of plasma fractions produced with Licensor's proprietary SDF process.

Licensor was founded to develop superior high-yield technology to extract a wide range of therapeutically useful proteins from human blood plasma. We believe that Licensor's proprietary SDF process is expected to significantly enhance yields of key value blood proteins, including alpha-1 protease inhibitor ("A1PI"), expanding market opportunities, while greatly enhancing margins. We obtained rights to utilize and sub-license to other pharmaceutical firms the recently patented improved methods for the extraction of therapeutic biologics from human plasma. We believe that Licensor's lead product, A1PI offers a low-risk, high revenue, short time-to-market respiratory product for treatment of inherited COPD (pulmonary emphysema), among other genetic A1PI deficiencies. Additionally, the ability to extract several additional therapeutically useful and important proteins, due to the process being less destructive than historical fractionation processes, may enable us to seek new therapeutic applications and address high-value-added orphan indications.

RISK FACTORS

An investment in our securities involves risks. We urge you to consider carefully the risks described in the documents incorporated by reference in this prospectus before making an investment decision, including those risks identified under "Item IA. Risk Factors" in our Annual Report on Form 10-K for the year ended December 31, 2014, filed with the Securities and Exchange Commission on March 31, 2015, which report is incorporated by reference in this prospectus, as such information may be amended, supplemented or superseded from time to time by other reports that we subsequently file with the Securities and Exchange Commission.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the other documents we have filed with the SEC that are incorporated herein by reference contain forward-looking statements that involve substantial risks and uncertainties. All statements, other than statements of historical facts, regarding our strategy, future operations, future financial position, future revenues, projected costs, prospects, plans, objectives of management or other financial items are forward-looking statements. The words "anticipate," "believe," "estimate," "expect," "intend," "may," "plan," "predict," "project," "will," "would" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words.

We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make. We have included important factors in the cautionary statements included in this prospectus, particularly as set forth and incorporated by reference in the "Risk Factors" section above, that we believe could cause actual results or events to differ materially from the forward-looking statements that we make. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures, collaborations or investments we may make.

You should read this prospectus and the documents that we incorporate by reference in this prospectus completely and with the understanding that our actual future results may be materially different from what we expect. We do not assume any obligation to update any forward-looking statements, except as otherwise required by law. We advise you, however, to consult any further disclosures we make on related subjects in our future annual reports on Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K we file with or furnish to the SEC.

USE OF PROCEEDS

We will not receive any cash proceeds from the sale of shares of our common stock by the selling stockholders pursuant to this prospectus. The selling stockholders will bear any underwriting commissions and discounts attributable to their sale of shares of our common stock.

SELLING STOCKHOLDERS

As of the date of this prospectus, the selling stockholders collectively hold 1,250,000 shares of our Common Stock and warrants to purchase 675,000 of our shares of Common Stock. The warrants were distributed to the selling stockholders in connection with the private placement, which closed on May 11, 2015. Pursuant to a registration rights agreement entered into among the Company and the selling stockholders, we are registering the shares of common stock in order to permit the selling stockholders to offer the shares for resale from time to time. Except for the transactions contemplated by the underlying private placement, the selling stockholders have not had any material relationship with us within the past three years. H.C. Wainwright & Co. acted as the exclusive placement agent for the transaction.

The table below describes the selling stockholders' beneficial ownership of our common stock (i) as of the date of this prospectus and (ii) assuming the selling stockholders have exercised the warrants to purchase shares of our common stock and resold such shares of common stock pursuant to this prospectus. The selling stockholders may sell some, all or none of its shares in this offering.

	Beneficial Ownership Prior to this Offering (1)		***Beneficial Ownership After to this Offering (1)(3)***	
Name and Address of Selling Stockholder	Number of Shares of Common Stock (2)	Percentage of Common Stock	Number of Shares of Common Stock (2)	Percentage of Common Stock
Sabby Volatility Warrant Master Fund Ltd (4) (5)	825,000	*	—	—
Sabby Healthcare Master Fund Ltd (4) (5)	1,050,000	*	—	—
Michael Vasinkevich (6)	17,250	*	—	—
Noam Rubinstein (6)	15,750	*	—	—
H. C. Wainwright & Co., LLC (6)	15,000	*	—	—
Mark Viklund (6)	1,500	*	—	—
Charles Worthman (6)	500	*	—	—

* Less than one percent

(1) Beneficial ownership is determined in accordance with Rule 13d-3(d) promulgated by the SEC under the Securities and Exchange Act of 1934, as amended, or the Exchange Act. Unless otherwise noted, each person or group identified, possesses sole voting and investment power with respect to the shares. In calculating the number of shares beneficially owned by each selling stockholder prior to and after this offering, we have based our calculations on 24,268,085 shares of common stock outstanding as of May 14, 2015.

(2) Assumes the exercise of underlying warrants.

(3) Assumes exercise of underlying warrants and the sale of all shares of common stock by the selling stockholders pursuant to this prospectus.

(4) Sabby Healthcare Master Fund, Ltd. ("SHMF") and Sabby Volatility Warrant Master Fund, Ltd. ("SVWMF") have indicated to us that Hal Mintz has voting and investment power over the shares held by each fund. SHMF and SVWMF have also indicated to us that Sabby Management, LLC serves as the investment manager of SHMF and SVWMF, that Hal Mintz is the manager of Sabby Management, LLC and that each of Sabby Management, LLC and Hal Mintz disclaim beneficial ownership over these shares except to the extent of any pecuniary interest therein.

(5) The address for each of the Sabby funds is c/o Sabby Management, LLC, 10 Mountainview Road, Ste 205, Upper Saddle River, NJ 07458.

(6) The address of such selling stockholder is c/o H.C. Wainwright & Co., LLC, 430 Park Avenue, New York, NY 10022.

PLAN OF DISTRIBUTION

Each Selling Stockholder (the "Selling Stockholders") of the securities and any of their pledgees, assignees and successors-in-interest may, from time to time, sell any or all of their securities covered hereby on the The NASDAQ Capital Market or any other stock exchange, market or trading facility on which the securities are traded or in private transactions. These sales may be at fixed or negotiated prices. A Selling Stockholder may use any one or more of the following methods when selling securities:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the securities as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- settlement of short sales;
- in transactions through broker-dealers that agree with the Selling Stockholders to sell a specified number of such securities at a stipulated price per security;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- a combination of any such methods of sale; or
- any other method permitted pursuant to applicable law.

The Selling Stockholders may also sell securities under Rule 144 under the Securities Act of 1933, as amended (the "Securities Act"), if available, rather than under this prospectus.

Broker-dealers engaged by the Selling Stockholders may arrange for other brokers-dealers to participate in sales. Broker-dealers may receive commissions or discounts from the Selling Stockholders (or, if any broker-dealer acts as agent for the purchaser of securities, from the purchaser) in amounts to be negotiated, but, except as set forth in a supplement to this Prospectus, in the case of an agency transaction not in excess of a customary brokerage commission in compliance with FINRA Rule 2440; and in the case of a principal transaction a markup or markdown in compliance with FINRA IM-2440.

In connection with the sale of the securities or interests therein, the Selling Stockholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the securities in the course of hedging the positions they assume. The Selling Stockholders may also sell securities short and deliver these securities to close out their short positions, or loan or pledge the securities to broker-dealers that in turn may sell these securities. The Selling Stockholders may also enter into option or other transactions with broker-dealers or other financial institutions or create one or more derivative securities which require the delivery to such broker-dealer or other financial institution of securities offered by this prospectus, which securities such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

The Selling Stockholders and any broker-dealers or agents that are involved in selling the securities may be deemed to be "underwriters" within the meaning of the Securities Act in connection with such sales. In such event, any commissions received by such broker-dealers or agents and any profit on the resale of the securities purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act. Each Selling Stockholder has informed the Company that it does not have any written or oral agreement or understanding, directly or indirectly, with any person to distribute the securities.

The Company is required to pay certain fees and expenses incurred by the Company incident to the registration of the securities. The Company has agreed to indemnify the Selling Stockholders against certain losses, claims, damages and liabilities, including liabilities under the Securities Act.

We agreed to keep this prospectus effective until the earlier of (i) the date on which the securities may be resold by the Selling Stockholders without registration and without regard to any volume or manner-of-sale limitations by reason of Rule 144, without the requirement for the Company to be in compliance with the current public information under Rule 144 under the Securities Act or any other rule of similar effect or (ii) all of the securities have been sold pursuant to this prospectus or Rule 144 under the Securities Act or any other rule of similar effect. The resale securities will be sold only through registered or licensed brokers or dealers if required under applicable state securities laws. In addition, in certain states, the resale securities covered hereby may not be sold unless they have been registered or qualified for sale in the applicable state or an exemption from the registration or qualification requirement is available and is complied with.

Under applicable rules and regulations under the Exchange Act, any person engaged in the distribution of the resale securities may not simultaneously engage in market making activities with respect to the common stock for the applicable restricted period, as defined in Regulation M, prior to the commencement of the distribution. In addition, the Selling Stockholders will be subject to applicable provisions of the Exchange Act and the rules and regulations thereunder, including Regulation M, which may limit the timing of purchases and sales of the common stock by the Selling Stockholders or any other person. We will make copies of this prospectus available to the Selling Stockholders and have informed them of the need to deliver a copy of this prospectus to each purchaser at or prior to the time of the sale (including by compliance with Rule 172 under the Securities Act).

WHERE YOU CAN FIND MORE INFORMATION; INCORPORATION BY REFERENCE

We file annual, quarterly and current reports, proxy statements and other information with the SEC. You may read and copy information filed by us with the SEC at the SEC's public reference section, 100 F Street, N.E., Washington, D.C. 20549. Information regarding the operation of the public reference section can be obtained by calling 1-800-SEC-0330. The SEC also maintains an Internet site at http://www.sec.gov that contains reports, statements and other information about issuers, such as us, who file electronically with the SEC. We maintain an Internet site at http://www.plasmatechbio.com. However, the information on our Internet site is not incorporated by reference in this prospectus and any prospectus supplement and you should not consider it a part of this prospectus or any accompanying prospectus supplement.

The SEC allows us to "incorporate by reference" into this prospectus the information in other documents that we file with it. This means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be a part of this prospectus, and information in documents that we file later with the SEC will automatically update and supersede information contained in documents filed earlier with the SEC or contained in this prospectus. We incorporate by reference in this prospectus the documents listed below and any future filings that we may make with the SEC under Sections 13(a), 13(c), 14, or 15(d) of the Exchange Act prior to the termination of the offering under this prospectus; provided, however, that we are not incorporating, in each case, any documents or information deemed to have been furnished and not filed in accordance with SEC rules:

- Our Annual Report on Form 10-K for the year ended December 31, 2014 (filed on March 31, 2015);
- Our Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2015 (filed on May 14, 2015);
- Our Current Reports on Form 8-K filed on January 5, 2015, January 6, 2015, February 9, 2015, March 5, 2015, April 7, 2015, April 24, 2015, May 6, 2015, May 7, 2015, May 8, 2015, May 11, 2015, and May 12, 2015, and on Form 8-K/A filed on April 27, 2015 and May 13, 2015;
- Definitive Proxy Statement on Schedule 14A relating to the Company's 2015 Annual Meeting of Shareholders (filed on April 7, 2015); and

- the description of our common stock, par value $0.01 per share contained in our Registration Statement on Form 8-A, dated and filed with the SEC on November 4, 2014, and any amendment or report filed with the SEC for the purpose of updating the description.

All reports and other documents we subsequently file pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act prior to the termination of this offering, including all such documents we may file with the SEC after the date of the initial registration statement and prior to the effectiveness of the registration statement, but excluding any information furnished to, rather than filed with, the SEC, will also be incorporated by reference into this prospectus and deemed to be part of this prospectus from the date of the filing of such reports and documents.

You may obtain a copy of any or all of the documents referred to above which may have been or may be incorporated by reference into this prospectus, except for exhibits to those documents (unless the exhibits are specifically incorporated by reference into those documents) at no cost to you by writing or telephoning us at the following address: Investor Relations, PlasmaTech Biopharmaceuticals, 4848 Lemmon Avenue, Suite 517, Dallas, Texas 75219, telephone (214) 905-5100.

LEGAL MATTERS

The validity of the securities being offered hereby will be passed upon by Morgan, Lewis & Bockius LLP. One or more partners or other employees of Morgan, Lewis & Bockius LLP may beneficially own shares of our common stock.

EXPERTS

The consolidated financial statements incorporated by reference from the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2014, have been audited by Whitley Penn LLP, an independent registered public accounting firm, as stated in their report, which is incorporated by reference in this prospectus. Such financial statements have been so incorporated in reliance upon the report of such firm given upon their authority as experts in accounting and auditing.

PART II

INFORMATION NOT REQUIRED IN THE PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution.

Set forth below is an estimate (except in the case of the registration fee) of the amount of fees and expenses to be incurred in connection with the issuance and distribution of the offered securities registered hereby, other than underwriting discounts and commission, if any, incurred in connection with the sale of the offered securities. All such amounts will be borne by PlasmaTech Biopharmaceuticals, Inc.

SEC Registration Fee	$	1,635
Accounting Fees and Expenses	$	25,000
Legal Fees and Expenses	$	25,000
Miscellaneous Fees and Expenses	$	1,365
Total:	$	53,000

Item 15. Indemnification of Directors and Officers.

Section 145 of the Delaware General Corporation law empowers a Delaware corporation to indemnify its officers and directors and certain other persons to the extent and under the circumstances set forth therein.

Our Certificate of Incorporation, as amended, and By-laws, as amended, provide for indemnification of our officers and directors and certain other persons against liabilities and expenses incurred by any of them in certain stated proceedings and under certain stated conditions.

The above discussion of the Registrant's Certificate of Incorporation, as amended, By-laws, as amended, and Section 145 of the Delaware General Corporation Law is not intended to be exhaustive and is qualified in its entirety by such Certificate of Incorporation, By-Laws and statute.

The Company maintains a general liability insurance policy that covers certain liabilities of the Company's directors and officers arising out of claims based on acts or omissions in their capacities as directors or officers.

Item 16. Exhibits

INDEX TO EXHIBITS

2.1 Amended and Restated Agreement of Merger and Plan of Reorganization between the Registrant and Chemex Pharmaceuticals, Inc., dated as of October 31, 1995 (Incorporated by reference to Exhibit A of our Registration Statement on Form S-4 dated December 20, 1995, Commission File No. 33-64031)

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2.3 Agreement and Plan of Merger, by and among the Registrant, MACM Acquisition Corporation and MacroChem Corporation, dated July 9, 2008 (Incorporated by reference to Exhibit 2.3 of our Form 10-Q for the quarter ended June 30, 2008)

3.1 Certificate of Incorporation (Incorporated by reference to Exhibit 3(a) of our Form 8-K dated July 12, 1989, Commission File Number 9-9134)

3.2 Certificate of Amendment of Certificate of Incorporation filed August 13, 1992 (Incorporated by reference to Exhibit 3.3 of our Form 10-K for year ended December 31, 1995)

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4.18	Form of Warrant Agreement between the Company and American Stock Transfer & Trust Company (Incorporated by reference to Exhibit 4.1 of the Company's Pre-effective Amendment No. 1 to Form S-1 filed October 24, 2014)
5.1	Opinion of Morgan, Lewis & Bockius LLP (filed herewith)
23.1	Consent of Whitley Penn LLP (filed herewith)
23.2	Consent of Morgan, Lewis & Bockius LLP (included in Exhibit 5.1)
24	Powers of Attorney (included on signature page)

Item 17. Undertakings.

(a) The undersigned registrant hereby undertakes:

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

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

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

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

provided, however, that paragraphs (i), (ii) and (iii) do not apply if the registration statement is on Form S-3 and the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the registrant pursuant to Section 13 or Section 15(d) of the Exchange Act that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement;

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

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

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

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

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

(6) That, for the purpose of determining liability of the registrant under the Securities Act to any purchaser in the initial distribution of the securities, the undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:

(i) any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424;

(ii) any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;

(iii) the portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and

(iv) any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

(b) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Exchange Act that is incorporated by reference in this registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(h) Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the registrant pursuant to the provisions described under Item 15 above, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant, PlasmaTech Biopharmaceuticals, Inc., certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Dallas, State of Texas, on this 14th day of May, 2015.

PLASMATECH BIOPHARMACEUTICALS, INC.

By: /s/ Steven H. Rouhandeh
Steven H. Rouhandeh
Executive Chairman

By: /s/ Stephen B. Thompson
Stephen B. Thompson
Vice President Finance

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Steven H. Rouhandeh and Jeffrey B. Davis, and each of them, as such person's true and lawful attorneys-in-fact and agents with full power of substitution and resubstitution, for such person and in such person's name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) and additions to this Registration Statement on Form S-3 and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, and hereby grants to such attorneys-in-fact and agents full power and authority to do and perform each and every act and thing requisite and necessary to be done, as fully to all intents and purposes as such person might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents or such person's substitute or substitutes may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed by the following persons in the capacities indicated as of the 14th day of May, 2015.

Signature	Capacity	Date
/s/ Steven H. Rouhandeh Steven H. Rouhandeh	Executive Chairman and Chairman of the Board (principal executive officer)	May 14, 2015
/s/ Stephen B. Thompson Stephen B. Thompson	Vice President Finance (principal financial and accounting officer)	May 14, 2015
/s/ Jeffrey B. Davis Jeffrey B. Davis	Director	May 14, 2015
/s/ Mark J. Ahn Mark J. Ahn	Director	May 14, 2015
/s/ Mark J. Alvino Mark J. Alvino	Director	May 14, 2015
/s/ Stephen B. Howell Stephen B. Howell	Director	May 14, 2015
/s/ Todd Wider Todd Wider	Director	May 14, 2015

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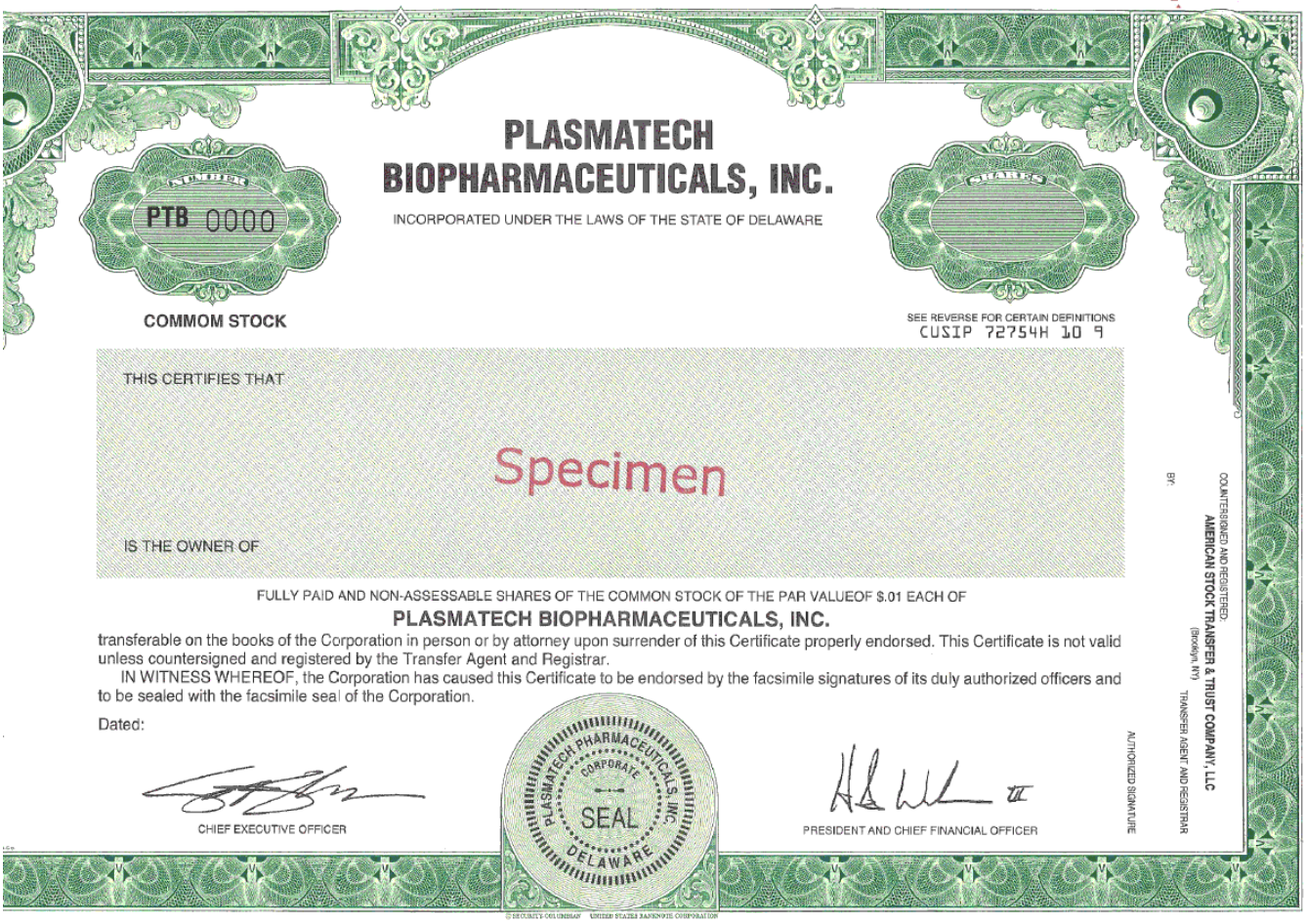
24	Powers of Attorney (included on signature page)

Exhibit 4.1

9201



PLASMATECH BIOPHARMACEUTICALS, INC.

The following abbreviations, when used in the inscription on the face of this certificate, shall be construed as though they were written out in full according to applicable laws or regulations:

TEN COM — as tenants in common
TEN ENT — as tenants by the entireties
JT TEN — as joint tenants with right of survivorship and not as tenants in commom

UNIF GIFT MIN ACT — _____ (Cust) Custodian _____ (Minor) Under Uniform Gifts to Minors Act _____ (State)

Additional abbreviations may also be used though not in the above list.

For Value Received, _____ hereby sell, assign and transfer unto

PLEASE INSERT SOCIAL SECURITY OR OTHER IDENTIFYING NUMBER OF ASSIGNEE

_____

_____

PLEASE PRINT OR TYPEWRITE NAME AND ADDRESS, INCLUDING POSTAL ZIP CODE, OF ASSIGNEE

_____

_____ Shares of the Stock represented by the within Certificate, and do hereby irrevocably constitute and appoint

_____

_____

Attorney to transfer the said stock on the books of the within-named Corporation, with full power of substitution in the premises.

Dated _____

X _____
(SIGNATURE)

NOTICE: THE SIGNATURE(S) TO THIS ASSIGNMENT MUST CORRESPOND WITH THE NAME(S) AS WRITTEN UPON THE FACE OF THE CERTIFICATE IN EVERY PARTICULAR WITHOUT ALTERATION OR ENLARGEMENT OR ANY CHANGE WHATEVER.

X _____
(SIGNATURE)

THE SIGNATURE(S) SHOULD BE GUARANTEED BY AN ELIGIBLE GUARANTOR INSTITUTION (BANKS, STOCKBROKERS, SAVINGS AND LOAN ASSOCIATIONS AND CREDIT UNIONS WITH MEMBERSHIP IN AN APPROVED SIGNATURE GUARANTEE MEDALLION PROGRAM), PURSUANT TO S.E.C. RULE 17Ad-15.

SIGNATURE(S) GUARANTEED BY:

Exhibit 5.1

Morgan, Lewis & Bockius llp
One Federal Street
Boston, Massachusetts 02110-1726
Tel. +1.617.341.7700
Fax: +1.617.341.7701
www.morganlewis.com

Morgan Lewis

May 14, 2015

PlasmaTech Biopharmaceuticals, Inc.
4848 Lemmon Avenue, Suite 517
Dallas, Texas 75219

Re: Registration Statement on Form S-3

Ladies and Gentlemen:

We have acted as counsel to PlasmaTech Biopharmaceuticals, Inc., a Delaware corporation (the "Company"), in connection with the Company's registration statement on Form S-3 filed with the Securities and Exchange Commission (the "Registration Statement") under the Securities Act of 1933, as amended (the "Act"), relating to an aggregate of up to 1,925,000 shares of common stock, par value $0.01 per share, of the Company (the "Shares") that may be sold or delivered by the parties listed as selling stockholders in the Registration Statement (the "Selling Stockholders"), of which 1,250,000 Shares (the "Existing Shares") are currently held by the Selling Stockholders and 675,000 (the "Warrant Shares") are issuable by the Company upon the exercise of warrants (the "Warrants") currently held by the Selling Stockholders. The Existing Shares may be sold or delivered, and the Warrant Shares, after exercise of the Warrants in accordance with the terms thereof, may be sold or delivered, from time to time as set forth in the Registration Statement, any amendment thereto, the prospectus contained therein (the "Prospectus") and supplements to the Prospectus, and pursuant to Rule 415 under the Act.

We have reviewed the corporate proceedings of the Company with respect to the authorization of the issuance of the Shares. As such counsel, we have also examined originals or copies of the Registration Statement and the exhibits thereto and such other documents, corporate records and other instruments as we have deemed necessary or appropriate for the purpose of this opinion. As to questions of fact material to this opinion, we have relied on certificates or comparable documents of public officials and of officers and representatives of the Company.

We have assumed the genuineness of all signatures, the conformity to the originals of all documents reviewed by us as copies, the authenticity and completeness of all original documents reviewed by us in original or copy form and the legal competence of each individual executing any document.

We have also assumed that, at or prior to the time of the issuance and delivery of any Warrant Shares, that there will not have occurred any change in law, change in the Warrants or the Company's Certificate of Incorporation, or further action by the Company's board of directors, in each case affecting the validity of the issuance of the Warrant Shares.

This opinion is limited solely to the Delaware General Corporation Law, as applied by courts located in Delaware.

Based upon and subject to the foregoing, we are of the opinion that the Existing Shares are validly issued, fully paid and nonassessable, and the Warrant Shares, when issued after exercise of the Warrants in accordance with the terms thereof, will be validly issued, fully paid and nonassessable.

We hereby consent to the filing of this opinion as an exhibit to the Registration Statement and to the reference to this firm under the heading "Legal Matters" in the Registration Statement. In giving this consent, we do not admit that we are in the category of persons whose consent is required under Section 7 of the Act, or the rules and regulations promulgated thereunder. In rendering the opinions set forth above, we are opining only as to the specific legal issues expressly set forth therein, and no opinion shall be inferred as to any other matter or matters.

This opinion is intended solely for use in connection with the issuance and sale of the Shares that are the subject of the Registration Statement and is not to be relied upon for any other purpose.

Very truly yours,

/s/ Morgan, Lewis & Bockius LLP

MORGAN, LEWIS & BOCKIUS LLP

EXHIBIT 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the inclusion in this Registration Statement on Form S-3 of PlasmaTech Biopharmaceuticals, Inc. of our report dated March 31, 2015 relating to our audits of the consolidated financial statements of PlasmaTech Biopharmaceuticals, Inc. as of and for the years ended December 31, 2014 and 2013. We also consent to the reference to our firm under the heading "Experts" in such Registration Statement.

/s/ Whitley Penn, LLP

Dallas, Texas
May 14, 2015