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President, Chief Executive Officer, Vice President of Finance and Chief Financial Officer

Bioanalytical Systems, Inc.

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Approximate date of commencement of proposed sale to the public: As soon as practicable after this Registration Statement becomes effective.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933 check the following box: ☒

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

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

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

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

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

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

Explanatory Note

This Post-Effective Amendment No. 3 to Form S-1 (this “Post-Effective Amendment”) is being filed pursuant to Section 10(a)(3) of the Securities Act of 1933, as amended, to update the Form S-1 Registration Statement which was previously declared effective by the Securities and Exchange Commission, to include the audited consolidated financial statements and the notes thereto included in the Company's unaudited Quarterly Report on Form 10-Q for the three months ended December 31, 2013 and the Annual Report on Form 10-K for the fiscal year ended September 30, 2013 and to update the prospectus relating to the offering and sale of the securities that were registered on Form S-1. As of the date of the filing of this Post-Effective Amendment, no further offering will be made of the units registered on Form S-1. The units offering was completed on May 11, 2011. Accordingly, this Post-Effective Amendment concerns only the common shares issuable upon conversion of Series A preferred shares and the exercise of the Class A Warrants underlying the units for common shares.

Pursuant to Rule 429 under the Securities Act of 1933, as amended, our prospectus is a combined prospectus and relates to shares registered under Registration Statement Nos. 333- 172508 and 333-173976. All filing fees payable in connection with the registration of the securities that are subject to these registration statements were previously paid in connection with the filing of the applicable registration statements on Form S-1.

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

PRELIMINARY PROSPECTUS

Subject to Completion, Dated February 18, 2014

Bioanalytical Systems, Inc.

Issuance of up to 1,492,735 Common Shares upon Conversion of Convertible Preferred Shares and Exercise of Warrants

This prospectus relates to the issuance of shares of our common stock upon the conversion of Series A preferred shares (as defined below) and the exercise of warrants. On May 11, 2011, we sold to certain investors units consisting of 5,506 shares of 6% Series A Convertible preferred shares (which were convertible into a total of 2,753,000 common shares at a conversion ratio of \$2.00 per share) (the "Series A preferred shares"), Class A Warrants to purchase 1,376,500 of our common shares and Class B Warrants to purchase a total of 1,376,500 of our common shares. The aggregate gross purchase price of the units was \$5,506,000.00. The closing of the sale of units took place on May 11, 2011, at which time the Company issued the Series A preferred shares and executed and delivered to each purchaser in the offering one Class A Warrant and one Class B Warrant. To date, we have not received any proceeds from the exercise of warrants. No additional amounts are payable upon conversion of the Series A preferred shares.

The Class A Warrants were exercisable immediately after issuance and expire on May 11, 2016. The Class B Warrants were also exercisable immediately after issuance and expired on May 11, 2012. Both the Class A Warrants and the Class B Warrants entitled the holder to purchase the Company's common shares for an exercise price equal to \$2.00 per share, subject to adjustment as provided in the warrant. The warrants provide for cashless exercise in certain circumstances. As of the date of this prospectus, 1,185 Series A preferred shares and 890,103 Class A Warrants remain outstanding. The Conversion of all of the Series A preferred shares and the exercise of all of the Class A Warrants for cash would result in the issuance of 1,492,735 of our common shares and gross proceeds of \$1,780,206.00.

Our common shares are quoted on the NASDAQ Capital Market under the symbol “BASI.” The last reported sale price of our common shares on February 13, 2014 was \$2.91 per share. There is no established public trading market for the Series A preferred shares or the warrants that were previously sold and we do not expect such a market to develop.

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

Investing in our common stock involves substantial risks. See “ Risk Factors ” beginning on page 4 of this prospectus to read about important factors you should consider before purchasing our common stock.

The date of this prospectus is February __, 2014.

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You should rely only on the information incorporated by reference into or contained in this prospectus. We have not authorized anyone to provide you with information different from that contained in this prospectus. If anyone provides you with different or inconsistent information, you should not rely on it. We are offering to sell, and seeking offers to buy, securities only in jurisdictions where offers and sales are permitted. You should assume that the information incorporated by reference into or contained in this prospectus is accurate only as of the date of this prospectus, regardless of the time of delivery of this prospectus or of any sale of units. Our business, financial condition, results of operations, and prospects may have changed since that date.

Some of the industry and market data incorporated by reference into or contained in this prospectus are based on independent industry publications or other publicly available information that we believe are reliable as of their respective dates, while other information is based on our internal sources.

Cautionary Note Regarding Forward-Looking Statements

This prospectus contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 that are based on current expectations, estimates, forecasts and projections regarding management's beliefs and assumptions about the industry in which we operate. Such statements include, in particular, statements about our plans, strategies and prospects under the headings "Prospectus Summary," "Risk Factors," "Use of Proceeds," "Management's Discussion and Analysis of Financial Condition and Results of Operations" and "Business." When used in this prospectus, the words "anticipate," "believe," "could," "estimate," "expect," "intend," "may," "plan," "potential," "predict," "p," "will," "would," and similar expressions identify forward-looking statements.

Forward-looking statements are not a guarantee of future performance or results, and will not necessarily be accurate indications of the times at, or by, which such performance or results will be achieved. Forward-looking statements are based on information available at the time the statements are made and involve known and unknown risks, uncertainties and other factors that may cause actual outcomes and results to differ materially from what is expressed or forecasted in such forward-looking statements.

Except as required by applicable law, we assume no obligation to update any forward-looking statements publicly or to update the reasons why actual results could differ materially from those anticipated in any forward-looking statements, even if new information becomes available in the future.

Prospectus Summary

This summary highlights information about our Company and this offering contained elsewhere in this prospectus or incorporated by reference into this prospectus and is qualified in its entirety by the more detailed information and financial statements. You should read this entire prospectus carefully, including "Risk Factors", "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our financial statements and related notes, before making an investment decision. In this prospectus, unless otherwise specified or the context otherwise requires, the terms "we", "us", "our", "BASi", "the Company", or "ours" refer to Bioanalytical Systems, Inc. and its consolidated subsidiaries.

About Bioanalytical Systems, Inc.

Bioanalytical Systems, Inc., a corporation organized in Indiana in 1974, provides contract drug development services and research equipment to many leading global pharmaceutical, medical research and biotechnology companies and

institutions. We offer an efficient, variable-cost alternative to our clients' internal product development programs. Outsourcing development work to reduce overhead and speed drug approvals through the Food and Drug Administration ("FDA") is an established alternative to in-house development among pharmaceutical companies. We derive our revenues from sales of our research services and drug development tools, both of which are focused on determining drug safety and efficacy. BASi has been involved in the research of drugs to treat numerous therapeutic areas since its formation.

We support the preclinical and clinical development needs of researchers and clinicians for small molecule and large biomolecule drug candidates. We believe our scientists have the skills in analytical instrumentation development, chemistry, computer software development, physiology, medicine, analytical chemistry and toxicology to make the services and products we provide increasingly valuable to our current and potential clients. Our principal clients are scientists engaged in analytical chemistry, drug safety evaluation, clinical trials, drug metabolism studies, pharmacokinetics and basic neuroscience research from small start-up biotechnology companies to many of the largest global pharmaceutical companies.

Our services and products are marketed globally to pharmaceutical, medical research and biotech companies and institutions engaged in drug research and development. The research services industry is highly fragmented among many niche vendors led by a small number of larger companies; the latter offer an ever-growing portfolio of start-to-finish pharmaceutical development services. Our products are also marketed to academic and governmental institutions. Our services and products may have distinctly different clients (often separate divisions in a single large pharmaceutical company) and requirements. We believe that clients are facing increased pressure to outsource facets of their research and development activities.

We operate in two business segments – contract research services and research products, both of which address the bioanalytical, preclinical, and clinical research needs of drug developers. Both segments arose out of our expertise in a number of core technologies designed to quantify trace chemicals in complex matrices.

The contract research services segment provides screening and pharmacological testing, preclinical safety testing, formulation development, regulatory compliance and quality control testing. The following is a description of the services provided by our contract research services segment:

Product Characterization, Method Development and Validation: Analytical methods, primarily performed in West Lafayette, Indiana, determine potency, purity, chemical composition, structure and physical properties of a compound. Methods are validated to ensure that data generated are accurate, precise, reproducible and reliable and are used consistently throughout the drug development process and in later product support.

Bioanalytical Testing: We analyze specimens from preclinical and clinical trials to measure drug and metabolite concentrations in complex biological matrices. Bioanalysis is performed at our facilities in West Lafayette, Indiana.

Stability Testing: We test stability of drug substances and formulated drug products and maintain secure storage facilities in West Lafayette, Indiana to establish and confirm product purity, potency and shelf life. We have multiple International Conference on Harmonization validated controlled-climate GMP (Good Manufacturing Practices) systems in place, and the testing capability to complete most stability programs.

In Vivo Pharmacology: We provide preclinical in vivo sampling services for the continuous monitoring of chemical changes in life, in particular, how a drug enters, travels through, and is metabolized in living systems. Most services are performed in customized facilities in West Lafayette and Evansville, Indiana using our robotic Culex® APS (Automated Pharmacology System) system.

Preclinical and Pathology Services: We provide pharmacokinetic and safety testing in studies ranging from acute safety monitoring of drugs and medical devices to chronic, multi-year oncogenicity studies in our Evansville, Indiana site. Depending on protocol, multiple tissues may be collected to monitor pathological changes.

Our products business is focused on expediting preclinical screening of developmental drugs. We compete in small niches of the multibillion dollar analytical instrument industry. The products business targets unique niches in life science research. We design, develop, manufacture and market state-of-the-art *in vivo* sampling systems and accessories (including disposables, training and systems qualification), physiology monitoring tools and liquid chromatography and electrochemistry instruments platforms. We offer three (3) principal product lines: Analytical Products, In vivo Sampling Products and Vetronics' Products. The following is a brief description of the products offered:

Analytical Products: The analytical products consist of our liquid chromatographic and electrochemical instruments with associated accessories. The critical component of these products is the Epsilon® electrochemical platform. This incorporates all the hardware capabilities needed for most electrochemical experiments but can be modified through software development. The market is principally academic institutions and industrial research companies.

In Vivo Sampling Products: The in vivo sampling products consist of the Culex® family of automated in vivo sampling and dosing instruments. These are used by pharmaceutical researchers to dose animals and collect biological samples (blood, bile, urine, microdialysate, feces or any bio-fluid) from the animals. Since dosing and sample collections are automated, animals are not manually handled, reducing stress on the animals and producing more representative pharmacological data. Behavior and other physiological parameters can also be monitored simultaneously. Compared to manual methods, the Culex® products offer significant reduction in test model use and comparable reduction in labor. The line also includes miniaturized in vivo sampling devices sold to drug developers and medical research centers to assist in the study of a number of medical conditions including stroke, depression, Alzheimer's and Parkinson's diseases, diabetes and osteoporosis.

Vetronics' Products: The Vetronics' products consist of instruments and related software to monitor and diagnose cardiac function (electro-cardiogram) and measure other vital physiological parameters primarily in cats and dogs in veterinary clinics.

Our principal executive offices are located at 2701 Kent Avenue, West Lafayette, Indiana 47906, and our phone number is (765) 463-4527.

The Offering

Our common shares are traded on the NASDAQ Capital Market under the symbol "BASI". On February 13, 2014, the last sale price of our common shares as reported on the NASDAQ Capital Market was \$2.91 per share.

Issuer	Bioanalytical Systems, Inc.
Securities Offered	1,492,735 shares of common stock issuable upon conversion of the Series A preferred shares or exercise of the warrants.
Conversion Ratio of Series A preferred shares	\$2.00 per share, subject to adjustment as described in this prospectus. See the section entitled "Conversion of Series A Preferred Shares".
Exercise Price of Class A Warrants	\$2.00 per share, subject to adjustment as described in this prospectus. Class A Warrants expire on May 11, 2016. See the section entitled "Exercise of Class A Warrants".
Common shares outstanding before this offering	Approximately 7,965,387 shares.
Common shares outstanding if all outstanding Series A preferred shares are converted and all outstanding Class A Warrants are exercised.	Approximately 9,458,122 shares.
Use of Proceeds	The proceeds of this offering consist solely of the payment by Class A Warrant holders of the exercise price. We plan to use the net proceeds of this offering, if any, for general working capital purposes.

Limitations on Exercise or
Conversion

Notwithstanding anything herein to the contrary, the Company will not permit the conversion of the preferred shares or exercise of the warrants of any holder, if after such conversion or exercise such holder would beneficially own more than 4.99% (or 9.99% as elected by the holder pursuant to the terms of the Series A preferred shares or the warrants, as applicable) of the common shares then outstanding.

Risk Factors

You should carefully read and consider the information set forth under "Risk Factors," together with all of the other information set forth in this prospectus, before deciding to convert preferred shares or exercise warrants.

The number of common shares outstanding before and after the offering is based on 7,965,387 shares outstanding as of February 13, 2014.

Risk Factors

You should carefully consider the risks described under the heading, "Risk Factors", in our most recent Annual Report on Form 10-K for the fiscal year ended September 30, 2013 which are incorporated by reference into this prospectus before making an investment decision. You should also refer to the other information in this prospectus or incorporated by reference into this prospectus, including our financial statements and the related notes thereto. The risks and uncertainties described in this prospectus or incorporated by reference into this prospectus are not the only risks and uncertainties we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial also may impair our business operations. If any of the risks described actually occur, our business, results of operations and financial condition could suffer. In that event the trading price of our common shares could decline. The risks described also include forward-looking statements and our actual results may differ substantially from those discussed in these forward-looking statements.

Use of Proceeds

We received gross proceeds from the offer and sale of the units of \$5,506,000.00. No additional amounts are payable upon conversion of the Series A preferred shares and the warrants provide for cashless exercise in certain circumstances. **We have not received any additional proceeds from the exercise of warrants to date. In the event of full exercise for cash of all of the warrants that remain outstanding, we will receive additional gross proceeds of approximately \$1,780,206.00.** The actual exercise of any of the outstanding warrants, however, is beyond our control and depends on a number of factors, including the market price of our common stock. There can be no assurance that any of the outstanding warrants will be exercised.

The principal reason for this offering is to provide shares of common stock issuable upon conversion of the Series A preferred shares and exercise of the warrants issued in connection with the offer and sale of the units. While we have no specific plan for the proceeds, we expect to use the net proceeds of this offering, if any, for working capital and general corporate purposes.

Determination of Offering Price

The conversion price of the Series A preferred shares of \$2.00 and the exercise price for the warrants of \$2.00 were determined by our Board of Directors after consulting with the placement agent in the offering of the units. They were not based on any discount to the market price of our common stock. The conversion and exercise prices are not necessarily related to our book value, net worth or any other established criteria of value and may or may not be considered the fair value of our common stock. After the date of this prospectus, our common stock may trade at prices above or below the conversion and exercise prices. You should not consider the conversion and exercise prices

as an indication of value of our company or our common stock. You should not assume or expect that our shares of common stock will trade at or above the conversion or exercise prices in any given time period. The market price of our common stock may decline during or after this offering, and you may not be able to exercise or sell the shares of our common stock. Before converting or exercising you should make your own assessment of our business and financial condition, our prospects for the future, and the terms of the Series A preferred shares and warrants. On February 13, 2014, the closing sale price of our common stock on the The NASDAQ Capital Market was \$2.91 per share.

Description of Securities

Authorized Capital

We currently have authority to issue 19,000,000 common shares and 1,000,000 preferred shares. As of February 13, 2014, we had 7,965,387 common shares issued and outstanding and 1,185 Series A preferred shares issued and outstanding.

Description of Common Shares

Voting Rights

Each outstanding common share is entitled to one vote on all matters submitted to a vote of shareholders. There is no cumulative voting.

Dividend and Liquidation Rights

The holders of outstanding common shares are entitled to receive dividends out of assets legally available for the payment of dividends at the times and in the amounts as our board of directors may from time to time determine. The common shares are neither redeemable nor convertible. Holders of our common shares have no preemptive or subscription rights to purchase any of our securities. Upon our liquidation, dissolution or winding up, the holders of our common shares are entitled to receive, pro rata, our assets which are legally available for distribution, after payment of all debts and other liabilities and subject to the prior rights of any holders of preferred shares then outstanding.

We have never paid any cash dividends on our common shares.

Transfer Agent and Registrar

The transfer agent and registrar for our common shares is Computershare Ltd.

Conversion of Series A Preferred Shares

Subject to certain ownership limitations as described below, the Series A preferred shares are convertible at any time at the option of the holder into our common shares at a conversion ratio determined by dividing the stated value of the Series A preferred shares (or \$1,000) by a conversion price of \$2.00 per share. Accordingly, each Series A preferred share is convertible into 500 common shares. The conversion price is subject to adjustment in the case of share splits, share dividends, combinations of shares and similar recapitalization transactions.

If the volume weighted average price for 20 trading days during any consecutive 30 trading day period beginning after the original issue date (a "Threshold Period"), exceeds 200% of the then effective conversion price, the Company may deliver a written notice to all holders of Series A preferred shares requiring each holder to convert all or part of such holder's Series A preferred shares plus all accrued but unpaid dividends thereon and all liquidated damages and other amounts due in respect of the Series A preferred shares, into common shares at the then current conversion ratio. The Company may not deliver a forced conversion notice, and such notice shall not be effective if delivered, unless all of the Equity Conditions have been met on each of at least 20 trading days during the applicable Threshold Period and through the trading day after the date that conversion shares issuable pursuant to a forced conversion are actually delivered to the holders pursuant to a forced conversion notice. Any forced conversion notice shall be applied ratably to all of the holders of Series A preferred shares based on each holder's initial purchases of Series A preferred shares, provided that any voluntary conversions by a holder shall be applied against such holder's pro rata allocation, thereby decreasing the aggregate amount forcibly converted if less than all of the Series A preferred shares are forcibly converted.

Subject to limited exceptions, a holder of Series A preferred shares will not have the right to convert, and the Company will not have the right to force such holder to convert, any portion of its Series A preferred shares if the holder, together with its affiliates, would beneficially own in excess of 4.99% (or 9.99% as elected by the holder pursuant to the terms of the certificate of designation) of the number of our common shares outstanding immediately after giving effect to its conversion.

Exercise of Class A Warrants

Class A Warrants entitle the holder to purchase common shares for an exercise price equal to \$2.00 per share. Subject to certain limitations as described below the Class A Warrants were exercisable at the option of the holder beginning immediately after May 11, 2011, the date of issuance, and will expire and entitle the holder to a cashless exercise on the fifth anniversary following the date of issuance.

Subject to limited exceptions, a holder of warrants does not have the right to exercise any portion of its warrants if the holder, together with its affiliates, would beneficially own in excess of 4.99% (or 9.99% as elected by the holder pursuant to the terms of the warrant) of the number of our common shares outstanding immediately after giving effect to such exercise.

The exercise price and the number of shares issuable upon exercise of the warrants is subject to appropriate adjustment in the event of recapitalization events, share dividends, share splits, share combinations, reclassifications, reorganizations or similar events affecting our common shares, and also upon any distributions of assets, including cash, shares or other property to our shareholders. The warrant holders must pay the exercise price in cash upon exercise of the warrants unless such holders are utilizing the cashless exercise provisions of the warrants. After the close of business on the applicable expiration date, unexercised warrants will become void.

In addition, in the event we consummate a merger or consolidation with or into another person or other reorganization event in which our common shares are converted or exchanged for securities, cash or other property, or we sell, lease, license or otherwise dispose of all or substantially all of our assets or we or another person acquire 50% or more of our outstanding common shares, then following such event, the holders of the warrants will be entitled to receive upon exercise of the warrants the same kind and amount of securities, cash or property which the holders would have received had they exercised the warrants immediately prior to such fundamental transaction. Any successor to us or surviving entity shall assume the obligations under the warrants.

Upon a holder's exercise of a warrant, we will issue the common shares issuable upon exercise of the warrant within three business days following our receipt of notice of exercise and payment of the exercise price, subject to surrender of the warrant.

Certain Provisions of the Indiana Business Corporation Law

As an Indiana corporation, we are governed by the Indiana Business Corporation Law, or IBCL. Under specified circumstances, the following provisions of the IBCL may delay, prevent or make more difficult unsolicited acquisitions or changes of control of us. These provisions also may have the effect of preventing changes in our management. It is possible that these provisions could make it more difficult to accomplish transactions which shareholders may otherwise deem to be in their best interest.

Control Share Acquisitions

Under Chapter 42 of the IBCL, an acquiring person or group who makes a “control share acquisition” in an “issuing public corporation” may not exercise voting rights on any “control shares” unless these voting rights are conferred by a majority vote of the disinterested shareholders of the issuing public corporation at a special meeting of those shareholders held upon the request and at the expense of the acquiring person. If control shares acquired in a control share acquisition are accorded full voting rights and the acquiring person has acquired control shares with a majority or more of all voting power, all shareholders of the issuing public corporation have dissenters’ rights to receive the fair value of their shares pursuant to Chapter 44 of the IBCL.

Under the IBCL, “control shares” are shares acquired by a person that, when added to all other shares of the issuing public corporation owned by that person or in respect to which that person may exercise or direct the exercise of voting power, would otherwise entitle that person to exercise voting power of the issuing public corporation in the election of directors within any of the following ranges:

· one-fifth or more but less than one-third;

· one-third or more but less than a majority; or

· a majority or more.

A “control share acquisition” means, subject to specified exceptions, the acquisition, directly or indirectly, by any person of ownership of, or the power to direct the exercise of voting power with respect to, issued and outstanding control shares. For the purposes of determining whether an acquisition constitutes a control share acquisition, shares acquired within 90 days or under a plan to make a control share acquisition are considered to have been acquired in the same acquisition.

An “issuing public corporation” means a corporation which has (i) 100 or more shareholders, (ii) its principal place of business or its principal office in Indiana, or that owns or controls assets within Indiana having a fair market value of greater than \$1,000,000, and (iii) (A) more than 10% of its shareholders resident in Indiana, (B) more than 10% of its shares owned of record or owned beneficially by Indiana residents, or (C) 1,000 shareholders resident in Indiana.

The provisions described above do not apply if, before a control share acquisition is made, the corporation’s articles of incorporation or bylaws, including a bylaw adopted by the corporation’s board of directors, provide that they do not apply. Our second amended and restated articles of incorporation and our second amended and restated bylaws do not exclude us from Chapter 42.

Certain Business Combinations

Chapter 43 of the IBCL restricts the ability of a “resident domestic corporation” to engage in any combinations with an “interested shareholder” for five years after the date the interested shareholder became such, unless the combination or the purchase of shares by the interested shareholder on the interested shareholder’s date of acquiring shares is approved by the board of directors of the resident domestic corporation before that date. If the combination was not previously approved, then the interested shareholder may effect a combination after the five-year period only if that shareholder receives approval from a majority of the disinterested shareholders or the offer meets specified “fair price” criteria.

For purposes of the above provisions, “resident domestic corporation” means an Indiana corporation that has 100 or more shareholders. “Interested shareholder” means any person, other than the resident domestic corporation or its subsidiaries, who is (1) the beneficial owner, directly or indirectly, of 10% or more of the voting power of the outstanding voting shares of the resident domestic corporation or (2) an affiliate or associate of the resident domestic corporation, which at any time within the five-year period immediately before the date in question, was the beneficial owner, directly or indirectly, of 10% or more of the voting power of the then outstanding shares of the resident domestic corporation.

The definition of “beneficial owner” for purposes of Chapter 43 means a person who, directly or indirectly, owns the subject shares, has the right to acquire or vote the subject shares (excluding voting rights under revocable proxies made in accordance with federal law), has any agreement, arrangement or understanding for the purpose of acquiring,

holding or voting or disposing of the subject shares, or holds any “derivative instrument” that includes the opportunity, directly or indirectly, to profit or share in any profit derived from any increase in the value of the subject shares.

The above provisions do not apply to corporations that elect not to be subject to Chapter 43 in an amendment to their articles of incorporation approved by a majority of the disinterested shareholders. That amendment, however, cannot become effective until 18 months after its passage and would apply only to share acquisitions occurring after its effective date. Our second amended and restated articles of incorporation do not exclude us from Chapter 43.

Directors’ Duties and Liability

Under Chapter 35 of the IBCL, directors are required to discharge their duties:

· in good faith;

· with the care an ordinarily prudent person in a like position would exercise under similar circumstances; and

in a manner the directors reasonably believe to be in the best interest of the corporation.

Under the IBCL, a director is not liable for any action taken as a director, or any failure to act, regardless of the nature of the alleged breach of duty (including breaches of the duty of care, the duty of loyalty, and the duty of good faith) unless the director has breached or failed to perform the duties of the director's office and the action or failure to act constitutes willful misconduct or recklessness. This exculpation from liability under the IBCL does not affect the liability of directors for violations of the federal securities laws.

Consideration of Effects on Other Constituents

Chapter 35 of the IBCL also provides that a board of directors, in discharging its duties, may consider, in its discretion, both the long-term and short-term best interests of the corporation, taking into account, and weighing as the directors deem appropriate, the effects of an action on the corporation's shareholders, employees, suppliers and customers and the communities in which offices or other facilities of the corporation are located and any other factors the directors consider pertinent. Directors are not required to consider the effects of a proposed corporate action on any particular corporate constituent group or interest as a dominant or controlling factor. If a determination is made with the approval of a majority of the disinterested directors of the board of directors, that determination is conclusively presumed to be valid unless it can be demonstrated that the determination was not made in good faith after reasonable investigation.

Chapter 35 specifically provides that specified judicial decisions in Delaware and other jurisdictions, which might be looked upon for guidance in interpreting Indiana law, including decisions that propose a higher or different degree of scrutiny in response to a proposed acquisition of the corporation, are inconsistent with the proper application of the business judgment rule under that section.

Mandatory Classified Board of Directors

Under Section 23-1-33-6(c) of the IBCL, a corporation with a class of voting shares registered with the SEC under Section 12 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), must have a classified board of directors unless the corporation adopts a bylaw expressly electing not to be governed by this provision by the later of July 31, 2009 or 30 days after the corporation's voting shares are registered under Section 12 of the Exchange Act. In accordance with the law and our second amended and restated bylaws, the Board of Directors is divided into three classes: Class I, Class II and Class III, each class having a staggered term of three years. Each year the term of office of one Class expires.

Indemnification

Chapter 37 of the IBCL authorizes every Indiana corporation to indemnify its officers and directors under certain circumstances against liability incurred in connection with proceedings to which the officers or directors are made a party by reason of their relationship to the corporation. Officers and directors may be indemnified where they have acted in good faith, which means, in the case of official action, they reasonably believed the conduct was in the corporation's best interests, and in all other cases, they reasonably believed the action taken was not against the best interests of the corporation, and in the case of criminal proceedings they had reasonable cause to believe the action was lawful or there was no reasonable cause to believe the action was unlawful. Chapter 37 of the IBCL also requires every Indiana corporation to indemnify any of its officers or directors (unless limited by the articles of incorporation of the corporation) who were wholly successful, on the merits or otherwise, in the defense of any such proceeding against reasonable expenses incurred in connection with the proceeding. A corporation may also, under certain circumstances, pay for or reimburse the reasonable expenses incurred by an officer or director who is a party to a proceeding in advance of final disposition of the proceeding. Chapter 37 of the IBCL states that the indemnification provided for therein is not exclusive of any other rights to which a person may be entitled under the articles of incorporation, bylaws or resolutions of the board of directors or shareholders.

Our second amended and restated articles of incorporation and second amended and restated bylaws provide for indemnification, to the fullest extent permitted by the IBCL, of our directors, officers and employees against liability and reasonable expenses that may be incurred by them in connection with proceedings in which they are made a party by reason of their relationship to the company.

Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers or persons controlling the registrant pursuant to the foregoing provisions, the registrant has been informed 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.

Plan of Distribution

Pursuant to the terms of the Series A preferred shares and the warrants, shares of common stock will be distributed to those holders who properly convert or exercise and remit the payment of the conversion or exercise price.

U.S. Federal Income Tax Considerations

This prospectus registers the conversion of the Series A preferred shares and the exercise of the warrants. As such, this general summary of U.S. federal income tax consequences is limited to the conversion or exercise, respectively, of the preferred shares and warrants (which we refer to collectively as our securities), purchased pursuant to the units offering. Unit holders should consult their own tax advisors for any other dispositions. This discussion assumes that public shareholders will hold our securities as capital assets within the meaning of Section 1221 of the Internal Revenue Code of 1986, as amended (the “Code”). This discussion does not address all aspects of U.S. federal taxation that may be relevant to a public shareholder in light of such public shareholder’s particular circumstances. In addition, this discussion does not address: (1) U.S. gift or estate tax laws, (2) state, local or foreign tax consequences, (3) the special tax rules that may apply to certain public shareholders, including without limitation banks, insurance companies, financial institutions, broker-dealers, taxpayers that have elected mark-to-market accounting, taxpayers subject to the alternative minimum tax provisions of the Code, tax-exempt entities, regulated investment companies, real estate investment trusts, taxpayers whose functional currency is not the U.S. dollar, or U.S. expatriates or former long-term residents of the United States, or (4) the special tax rules that may apply to a public shareholder that acquires, holds, or disposes of our securities as part of a straddle, hedge, wash sale, constructive sale or conversion transaction or other integrated investment. Additionally, this discussion does not consider the tax treatment of partnerships (including entities treated as partnerships for U.S. federal tax purposes) or other pass-through entities or persons who hold our securities through such entities. The tax treatment of a partnership and each partner thereof generally will depend upon the status and activities of the partnership and such partner. Thus, partnerships, other pass-through entities and persons holding our securities through such entities should consult their own tax advisors.

This discussion is based on current provisions of the Code, U.S. Treasury regulations promulgated under the Code, judicial opinions, and published rulings and procedures of the U.S. Internal Revenue Service (the “IRS”), all as in effect on the date of this prospectus and all of which are subject to change, possibly with retroactive effect. We have not sought, and will not seek, any ruling from the IRS or any opinion of counsel with respect to the tax consequences discussed below, and there can be no assurance that the IRS will not take a position contrary to the tax consequences discussed below or that any position taken by the IRS would not be sustained.

As used in this “U.S. Federal Income Tax Considerations” section only, the term “U.S. Person” means a person that is, for U.S. federal income tax purposes: (1) an individual citizen or resident of the United States, (2) a corporation (or other entity treated as a corporation for U.S. federal income tax purposes) created or organized in or under the laws of the United States or of any state thereof or the District of Columbia, (3) an estate the income of which is subject to U.S. federal income taxation regardless of its source, or (4) a trust if (A) a court within the United States is able to exercise primary supervision over the administration of the trust and one or more U.S. Persons have the authority to control all substantial decisions of the trust, or (B) it has in effect a valid election to be treated as a U.S. Person. As used in this discussion, the term “U.S. holder” means a beneficial owner of our securities that is a U.S. Person and the term “non-U.S. holder” means a beneficial owner of our securities (other than an entity that is treated as a partnership or other pass-through entity for U.S. federal income tax purposes) that is not a U.S. Person. Each prospective investor is urged to consult its own tax advisors with respect to the U.S. federal, state, local and foreign tax consequences to such investor of the acquisition, ownership and disposition of our securities.

General

Because there are no authorities that directly address instruments that are similar to the units, no assurance can be given that the IRS or the courts will agree with the discussion below. Accordingly, each investor is urged to consult its own tax advisors regarding the U.S. federal, state, local and any foreign tax consequences of the conversion of the Series A preferred shares or the exercise of the warrants.

U.S. Holders

Conversion of Convertible Preferred Shares into Common Shares

A U.S. holder who converts Series A preferred shares into our common shares generally will not recognize gain or loss, except that the fair market value of any common shares attributable to dividend arrearages may be treated as a taxable deemed distribution if not previously recognized. The adjusted tax basis of the common shares (excluding any common shares treated as a deemed distribution) will equal the tax basis of the Series A preferred shares exchanged and the holding period of the common shares received (excluding any common shares treated as a deemed distribution) will include the holding period of the Series A preferred shares. The tax basis of any common shares treated as a deemed distribution will equal its fair market value on the date of the conversion, and the U.S. holder will begin a new holding period for such common shares.

Exercise of a Warrant

A U.S. holder will not be required to recognize taxable gain or loss upon exercise of a warrant. The U.S. holder's tax basis in the common shares received upon exercise of the warrant generally will be an amount equal to the sum of the U.S. holder's initial investment in the warrant (i.e., the portion of the U.S. holder's purchase price for a unit that is allocated to the warrant, as described above) and the exercise price. The U.S. holder's holding period in our common shares received upon exercise of the warrant will begin on the date following the date of exercise and will not include the period during which the U.S. holder held the warrant.

Non-U.S. Holders

Conversion of Series A Preferred Shares into Common Shares

Non-U.S. holders generally will not recognize any gain or loss for U.S. federal income tax purposes upon the conversion of Series A preferred shares into our common shares, except that the fair market value of any common shares attributable to dividend arrearages may be treated as a taxable deemed distribution if not previously recognized.

Exercise of a Warrant

The U.S. federal income tax treatment of a non-U.S. holder's exercise of a warrant generally will correspond to the U.S. federal income tax treatment of the exercise of a warrant by a U.S. holder, as described under "U.S. Holders—Exercise of a Warrant" above.

Legal Matters

The validity of the common shares offered hereby and certain other legal matters were passed upon for us by Ice Miller LLP, Indianapolis, Indiana.

Experts

The consolidated financial statements of Bioanalytical Systems, Inc. as of and for the year ended September 30, 2013, incorporated in this prospectus by reference to the Annual Report on Form 10-K for the year ended September 30, 2013, have been audited by McGladrey LLP, an independent registered public accounting firm, as stated in their report incorporated by reference herein, and have been so incorporated in reliance upon such reports and upon the authority of such firm as experts in accounting and auditing.

The consolidated financial statements of Bioanalytical Systems, Inc. at September 30, 2012, and for the year ended September 30, 2012, incorporated by reference in this prospectus have been so incorporated in reliance on the report of Crowe Horwath LLP, independent registered public accounting firm, given on the authority of said firm as experts in accounting and auditing.

Where You Can Find More Information

Our executive offices are located at 2701 Kent Avenue, West Lafayette, Indiana 47906, and our telephone number is (765) 463-4527. We make available on our website, www.BASInc.com, our annual reports, quarterly reports, and proxy statements, as well as up- to- date investor presentations. These reports are also available free of charge upon written request. The information on our website is not incorporated by reference into this prospectus, and you should not consider it part of this prospectus.

We have filed two registration statements on Form S-1 (Registration Nos. 333-172508 and 333-173976) with the SEC under the Securities Act with respect to the securities offered by this prospectus. This prospectus, which is a part of such registration statements, does not include all of the information contained in the registration statements and their respective exhibits. For further information regarding us and our securities, you should consult the registration statements and their respective exhibits. The registration statements and exhibits, as well as our other reports filed with the SEC, can be inspected and copied at the SEC's public reference room at 100 F Street, N.E., Washington, D.C. 20549. The public may obtain information about the operation of the public reference room by calling the SEC at 1-800-SEC-0330. In addition, the SEC maintains a web site at <http://www.sec.gov> which contains the Form S-1 and other reports, proxy and information statements and information regarding issuers that file electronically with the SEC.

Statements contained in this prospectus concerning the provisions of any documents are summaries of those documents, and we refer you to the documents filed with the SEC for more information. The registration statements and any of their respective amendments, including exhibits filed as a part of the registration statements or any amendment, are available for inspection and copying as described above.

Incorporation of Certain Information By Reference

The SEC allows us to incorporate by reference into this prospectus certain information we file with it, which means that we can disclose important information by referring you to those documents. The information incorporated by reference is considered to be a part of this prospectus. We incorporate by reference the documents listed below that we have previously filed with the SEC:

- Our Amended Annual Report on Form 10-K/A for the fiscal year ended September 30, 2012, filed on October 11, 2013;
- Our Amended Quarterly Report on Form 10-Q/A for the three months ended December 31, 2012, filed on October 11, 2013;
- Our Amended Quarterly Report on Form 10-Q/A for the three and six months ended March 31, 2013, filed on October 11, 2013;
- Our Quarterly Report on Form 10-Q for the three and nine months ended June 30, 2013, filed on October 18, 2013;
 - Our Form 8-K filed on October 29, 2013;
 - Our Form 8-K filed on November 5, 2013;
- Our Annual Report on Form 10-K for the fiscal year ended September 30, 2013, filed on December 30, 2013;
 - Our Form 8-K filed on January 10, 2014;
 - Our Form 8-K filed on January 22, 2014;
 - Our Form 8-K filed on January 28, 2014;
- Our Proxy Statement on Form DEF 14A, filed on February 6, 2014;
- Our Quarterly Report on Form 10-Q for the three months ended December 31, 2013, filed on February 14, 2014.

Any statements contained in a previously filed document incorporated by reference into this prospectus is deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus modifies or supersedes that statement.

We will provide to each person, including any beneficial owner, to whom this prospectus is delivered, upon written or oral request, at no cost to the requester, a copy of any and all of the information that is incorporated by reference in this prospectus but not delivered with this prospectus.

You may request a copy of the filing, at no cost to you, by telephoning us at (765) 463-4527 or by writing us at the following address:

Bioanalytical Systems, Inc.

2701 Kent Avenue

West Lafayette, Indiana 47906

Attention: Secretary

You may also access the documents incorporate by reference in this prospectus through our website at www.BASinc.com. Except for the specific incorporated document listed above, no information available on or through our website shall be deemed to be incorporated into this prospectus or the registration statement of which it forms a part.

**Issuance of up to 1,492,735 Common Shares upon Conversion of Convertible Preferred Shares
and Exercise of Warrants**

Prospectus

PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

Item 13. Other Expenses of Issuance and Distribution

The following table sets forth the expenses (estimated except for the registration fee) expected to be incurred in connection with this offering.

SEC Registration Fee	\$0
Legal Fees and Expenses	\$5,000
Accounting Fees and Expenses	\$1,000
Printing Expenses	\$0
Miscellaneous	\$0
Total	\$6,000

Item 14. Indemnification of Directors and Officers

Indiana Business Corporation Law

Chapter 37 of the Indiana Business Corporation Law, as amended (the "IBCL"), authorizes every Indiana corporation to indemnify its officers and directors under certain circumstances against liability incurred in connection with proceedings to which the officers or directors are made a party by reason of their relationship to the corporation. Officers and directors may be indemnified where they have acted in good faith, which means, in the case of official action, they reasonably believed the conduct was in the corporation's best interests, and in all other cases, they reasonably believed the action taken was not against the best interests of the corporation, and in the case of criminal proceedings they had reasonable cause to believe the action was lawful or there was no reasonable cause to believe the action was unlawful. Chapter 37 of the IBCL also requires every Indiana corporation to indemnify any of its officers or directors (unless limited by the articles of incorporation of the corporation) who were wholly successful, on the merits or otherwise, in the defense of any such proceeding against reasonable expenses incurred in connection with the proceeding. A corporation may also, under certain circumstances, pay for or reimburse the reasonable expenses incurred by an officer or director who is a party to a proceeding in advance of final disposition of the proceeding. Chapter 37 of the IBCL states that the indemnification provided for therein is not exclusive of any other rights to which a person may be entitled under the articles of incorporation, bylaws or resolutions of the board of directors or shareholders.

Our second amended and restated articles of incorporation and second amended and restated bylaws provide for indemnification, to the fullest extent permitted by the IBCL, of our directors, officers and employees against liability and reasonable expenses that may be incurred by them in connection with proceedings in which they are made a party by reason of their relationship to the company.

Directors' and Officers' Liability Insurance

We maintain directors' and officers' liability insurance policies, which insure against liabilities that directors or officers may incur in such capacities. These insurance policies may be sufficiently broad to permit indemnification of our directors and officers for liabilities, including reimbursement of expenses incurred, arising under the Securities Act or otherwise.

Item 15. Recent Sales of Unregistered Securities

On August 17, 2012, the Company sold 101,500 common shares directly to our interim Chief Executive Officer and members of our Board of Directors at the closing price on the previous day on the NASDAQ Capital Market of \$1.26 for aggregate proceeds of \$127,890.00. The securities were sold in reliance on Section 4(a)(2) of the Securities Act of 1933, as amended.

Item 16. Exhibits and Financial Statement Schedules.

(a) See Exhibit Index.

(b) Schedules not listed above have been omitted because the information required to be set forth therein is not applicable or is shown in the financial statements or notes thereto.

Item 17. Undertakings

The undersigned registrant hereby undertakes:

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

i. To include any prospectus required by section 10(a)(3) of the Securities Act of 1933;

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 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;

(2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

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

(4) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the 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.

(5) Each prospectus filed pursuant to Rule 424(b) as part of a registration statement relating to an offering, other than registration statements relying on Rule 430B or other than prospectuses filed in reliance on Rule 430A, shall be deemed to be part of and included in the registration statement as of the date it is first used after effectiveness. 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 first use, 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 date of first use.

(6) That, for the purpose of determining liability of the registrant under the Securities Act of 1933 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.

(7) For purposes of determining any liability under the Securities Act of 1933, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.

(8) For the purposes of determining any liability under the Securities Act of 1933, each post-effective amendment that contains a form of prospectus 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.

(9) That, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934 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.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the Registrant has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of West Lafayette, State of Indiana, on February 18, 2014.

BIOANALYTICAL SYSTEMS, INC.

By: /s/ Jacqueline M. Lemke
 Jacqueline M. Lemke
 President, Chief Executive Officer, Vice President of
 Finance and Chief Financial Officer, and Director

KNOWN ALL BY THESE PRESENT, that each person whose signature appears below constitutes and appoints Jacqueline M. Lemke as his or her true and lawful attorney-in-fact and agent, with the full power of substitution, for him or her and in his or her name, place or stead, in any and all capacities, to sign any and all amendments to this Registration Statement (including post-effective amendments), and to sign any registration statement for the same offering covered by this Registration Statement that is to be effective upon filing pursuant to Rule 462(b) promulgated under the Securities Act, and all post-effective amendments thereto, and to file the same, with exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or their, his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

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

Signature	Title	Date
/s/ Jacqueline M. Lemke	President, Chief Executive Officer, Vice President	February 18, 2014
Jacqueline M. Lemke	of Finance and Chief Financial Officer (principal executive, financial and accounting officer), and Director	
*	Chairman	February 18, 2014
John B. Landis, Ph.D.		

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*	Director	February 18, 2014
Larry S. Boulet		
*	Director	February 18, 2014
Richard A. Johnson, Ph.D.		
*	Director	February 18, 2014
David L. Omachinski		
/s/ Merrill R. Osheroff, Ph.D.	Director	February 18, 2014
Merrill R. Osheroff, Ph.D.		
*	Director	February 18, 2014
A. Charlene Sullivan, Ph.D.		
* By: /s/ Jacqueline M. Lemke		
Jacqueline M. Lemke		
Attorney-in-fact		

EXHIBIT INDEX

Number Description of Exhibits

- | | |
|------|--|
| (3) | <p>3.1 Second Amended and Restated Articles of Incorporation of Bioanalytical Systems, Inc. as amended through May 9, 2011 (incorporated by reference to Exhibit 3.1 to Form-10Q for the quarter ended June 30, 2011).</p> <p>3.2 Second Amended and Restated Bylaws of Bioanalytical Systems, Inc., as subsequently amended (incorporated by reference to Exhibit 3.2 to Form 10-K for the fiscal year ended September 30, 2009).</p> |
| (4) | <p>4.1 Specimen Certificate for Common Shares (incorporated by reference to Exhibit 4.1 to Registration Statement on form S-1, Registration No. 333-36429).</p> <p>4.2 Form of Warrant (incorporated by reference to Exhibit 4.2 to Registration Statement on Form S-1, Registration No. 333-172508).</p> <p>4.3 Certificate of Designation of Preferences, Rights, and Limitations of Convertible Preferred Shares (incorporated by reference to Exhibit 3.1 on Form 8-K, dated May 12, 2011).</p> <p>4.4 Specimen Certificate for 6% Series A Convertible Preferred Shares (incorporated by reference to Exhibit 4.3 to Registration Statement on Form S-1, Registration No. 333-172508).</p> |
| (5) | <p>5.1 Opinion of Ice Miller LLP (incorporated by reference to Exhibit 5.1 to Registration Statement on Form S-1, Registration No. 333-172508).</p> |
| (10) | <p>10.1 Loan Agreement between Bioanalytical Systems, Inc. and Regions Bank dated December 18, 2007 (incorporated by reference to Exhibit 10.7 of Form 10-K for the fiscal year ended September 30, 2007).</p> <p>Agreement for Lease, by and among Bioanalytical Systems, Inc., Bioanalytical Systems Limited and Pettifer Estates Limited, dated October 11, 2007 (incorporated by reference to Exhibit 10.1 to Form 8-K 10.2 filed October 17, 2007).</p> <p>10.3 Form of Lease, by and among Bioanalytical Systems, Inc., Bioanalytical Systems Limited and Pettifer Estates Limited (incorporated by reference to Exhibit 10.2 to Form 8-K filed October 17, 2007).</p> <p>10.4 Bioanalytical Systems, Inc. 2008 Director and Employee Stock Option Plan (*) (incorporated by reference to Appendix A to the Revised Definitive Proxy Statement filed February 5, 2008, SEC File No. 000-23357).</p> <p>10.5 Form of Bioanalytical Systems, Inc. 2008 Director and Employee Stock Option Plan (*) (incorporated by reference to Exhibit 10.31 to Form 10-K for the fiscal year ended September 30, 2008).</p> <p>10.6 Loan and Security Agreement by and between Bioanalytical Systems, Inc., and Entrepreneur Growth Capital LLC, executed January 13, 2010 (incorporated by reference to Exhibit 10.35 to Form 10-K for</p> |

the fiscal year ended September 30, 2009).

Amendment to Loan Agreement between Bioanalytical Systems, Inc., and Entrepreneur Growth Capital 10.7 LLC, dated May 13, 2010 (incorporated by reference to Exhibit 10.9 to Form 10-Q for the fiscal quarter ended March 31, 2010).

Fourth Amendment to Loan Agreement between Bioanalytical Systems, Inc. and Regions Bank, 10.8 executed November 29, 2010 (incorporated by reference to Exhibit 10.1 for Form 8-K filed December 2, 2010).

- 10.9 Amendment to Loan Agreement between Bioanalytical Systems, Inc., and Entrepreneur Growth Capital LLC, dated December 23, 2010 (incorporated by reference to Exhibit 10.1 for Form 8-K filed December 30, 2010).
- 10.10 Fourth Amendment to Loan Agreement between Bioanalytical Systems, Inc. and Regions Bank, as amended on December 29, 2010 (incorporated by reference to Exhibit 10.1 for Form 8-K filed January 5, 2011).

Fifth Amendment to Loan Agreement between Bioanalytical Systems, Inc. and Regions Bank, executed
10.11 February 22, 2011 and effective February 11, 2011 (incorporated by reference to Exhibit 10.1 for Form 8-K filed February 24, 2011).

Form of Securities Purchase Agreement between Bioanalytical Systems, Inc. and certain purchasers, dated May
10.125, 2011 (incorporated by reference to Exhibit 10.27 to Registration Statement on Form S-1, Registration No. 333-172508).
- 10.13 Severance Agreement between Michael R. Cox and Bioanalytical Systems Inc., dated March 31, 2012 (*) (incorporated by reference to Exhibit 10.2 for Form 8-K filed April 5, 2012).
- 10.14 Employment Agreement between Jacqueline M. Lemke and Bioanalytical Systems Inc., effective April 9, 2012 (*) (incorporated by reference to Exhibit 10.1 for Form 8-K filed April 5, 2012).

Employee Incentive Stock Option Agreement between Anthony S. Chilton and Bioanalytical Systems, Inc.,
10.15 dated April 9, 2012 (incorporated by reference to Exhibit 10.3 to Form 10-Q for the fiscal quarter ended March 31, 2012).
- 10.16 Non-Qualified Employee Stock Option Agreement between Jacqueline M. Lemke and Bioanalytical Systems, Inc., dated April 9, 2012 (incorporated by reference to Exhibit 10.4 to Form 10-Q for the fiscal quarter ended March 31, 2012).
- 10.17 Severance Agreement between Anthony S. Chilton and Bioanalytical Systems, Inc., dated July 4, 2012 (*) (incorporated by reference to Exhibit 10.21 to Form 10-K for the year ended September 30, 2012).
- 10.18 Severance Agreement between Alberto F. Hidalgo and Bioanalytical Systems, Inc., dated July 6, 2012 (*) (incorporated by reference to Exhibit 10.22 to Form 10-K for the year ended September 30, 2012).
- 10.19 Addendum to Employment Agreement between Jacqueline M. Lemke and Bioanalytical Systems, Inc., effective October 15, 2012 (*) (incorporated by reference to Exhibit 10.1 for Form 8-K filed October 19, 2012).

Sixth Amendment to Loan Agreement between Bioanalytical Systems, Inc. and Regions Bank, executed
10.20 November 9, 2012 and effective November 1, 2012 (incorporated by reference to Exhibit 10.1 for Form 8-K filed November 9, 2012).

Amended and Restated Sixth Amendment to Loan Agreement between Bioanalytical Systems, Inc. and Regions Bank, executed December 21, 2012 and effective November 1, 2012 (incorporated by reference to Exhibit 10.1
10.21 to Form 8-K filed December 27, 2012).

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- Amendment to Loan Agreement between Bioanalytical Systems, Inc., and Entrepreneur Growth Capital LLC, dated December 21, 2012 (incorporated by reference to Exhibit 10.1 to Form 8-K filed December 28, 2012).
- Employee Incentive Stock Option Agreement between Jacqueline M. Lemke and Bioanalytical Systems, Inc., dated February 7, 2013(*) (incorporated by reference to Exhibit 10.1 to Form 10-Q for the fiscal quarter ended March 30, 2013).
- Amended and Restated Employment Agreement between Jacqueline M. Lemke and Bioanalytical Systems, Inc. effective February 7, 2013 (*) (incorporated by reference to Exhibit 10.2 to Form 10-Q for the fiscal quarter ended March 30, 2013).
- Seventh Amendment to Loan Agreement between Bioanalytical Systems, Inc. and Regions Bank, executed October 31, 2013 (incorporated by reference to Exhibit 10.1 to Form 8-K filed November 5, 2013).
- Bioanalytical Systems, Inc. Annual Incentive Bonus Plan (incorporated by reference to Exhibit 10.38 to Form 10-K for the fiscal year ended September 30, 2013).
- Notice of non-renewal to Entrepreneur Growth Capital LLC, dated October 30, 2013 (incorporated by reference to Exhibit 10.22 to Form 10-K for the fiscal year ended September 30, 2013).
- Severance Agreement between Lori D. Payne and Bioanalytical Systems, Inc., dated October 25, 2013 (incorporated by reference to Exhibit 10.3 to Form 10-Q for the fiscal quarter ended December 31, 2013).
- Waiver letter, dated January 29, 2014 from Entrepreneur Growth Capital LLC (incorporated by reference to Exhibit 10.4 to Form 10-Q for the fiscal quarter ended December 31, 2013).
- (16) 16.1 Letter from Crowe Horwath LLP dated February 12, 2013, addressed to Securities and Exchange Commission (incorporated by reference to Exhibit 16.1 to Form 8-K filed February 12, 2013).
- 16.2 Letter from Crowe Horwath LLP dated February 21, 2013, addressed to Securities and Exchange Commission (incorporated by reference to Exhibit 16.1 to Form 8-K filed February 21, 2013).
- (21) 21.1 Subsidiaries of the Registrant (incorporated by reference to Exhibit 21.1 to Form 10-K for the fiscal year ended September 30, 2013).
- (23) 23.1 Consent of Independent Registered Public Accounting Firm McGladrey LLP (filed herewith).
- 23.2 Consent of Independent Registered Public Accounting Firm Crowe Horwath LLP (filed herewith).
- 23.3 Consent of Ice Miller LLP (Included in Exhibit 5.1).
- (24) 24.1 Power of Attorney (see signature page).
- (101) 101 XBRL data file (incorporated by reference to Exhibit 101 to Form 10-K for the fiscal year ended September 30, 2013).

* Management contract or compensatory plan or arrangement.

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