ATOSSA GENETICS INC
Form S-1/A
March 21, 2017

As filed with the Securities and Exchange Commission on March 20, 2017

Registration Statement No. 333-216031

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

AMENDMENT NO. 2 TO

FORM S-1

REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933

ATOSSA GENETICS INC.

(Exact name of registrant as specified in its charter)

Delaware	**3841**	**26-4753208**
(State or other jurisdiction of incorporation or organization)	(Primary Standard Industrial Classification Code Number)	(I.R.S. Employer Identification No.)

107 Spring Street

Seattle, Washington 98104

Telephone: (800) 351-3902

(Address, including zip code, and telephone number, including area code, of Registrant’s principal executive offices)

Steven C. Quay

Chairman, Chief Executive Officer and President

107 Spring Street

Seattle, Washington 98104

Telephone: (800) 351-3902

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

Kyle Guse	Ryan A. Murr
Chief Financial Officer and General Counsel	Gibson, Dunn & Crutcher LLP
107 Spring Street	555 Mission Street, Suite 3000
Seattle, Washington 98104	San Francisco, California 94105
(800) 351-3902	Telephone: (415) 398-8200

Approximate date of commencement of proposed sale to the public: From time to time 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. ¨

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

If this Form is a post-effective amendment filed 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 is an emerging growth company, as defined in Section 2(a) of the Securities Act. This Registration Statement complies with the requirements that apply to an issuer that is an emerging growth company.

CALCULATION OF REGISTRATION FEE

Title of each class of securities to be registered(1)	Proposed maximum aggregate offering price(2)	Amount of registration fee(3)
Common Stock, par value $0.015 per share	$6,080,000	$ 704.67

(1) Pursuant to Rule 416(a) of the Securities Act of 1933, as amended, this Registration Statement also covers any additional shares of Common Stock which may become issuable to prevent dilution from stock splits, stock dividends and similar events.

(2) Pursuant to Rule 457(o) of the Securities Act of 1933, estimated solely for the purpose of calculating the registration fee. Includes offering price of shares which the underwriters have the option to purchase to cover over-allotments, if any.

(3) Previously paid.

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 Securities and Exchange Commission, acting pursuant to said Section 8(a), may determine.

The information in this preliminary 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 preliminary prospectus is not an offer to sell these securities and it is not soliciting offers to buy these securities in any jurisdiction where the offer or sale is not permitted.

PRELIMINARY PROSPECTUS, SUBJECT TO COMPLETION DATED MARCH 20, 2017

3,500,000

Shares of Common Stock

This is a firm commitment public offering of 3,500,000 shares of our Common Stock by Atossa Genetics Inc. Our Common Stock is listed on The NASDAQ Capital Market under the symbol "ATOS." On March 17, 2017, the last reported sale price of our Common Stock was $1.46 per share.

We are an "emerging growth company" as that term is used in the Jumpstart Our Business Startups Act of 2012 (the "***JOBS Act***") and, as such, have elected to comply with certain reduced public company reporting requirements for this prospectus and future filings.

Our business and an investment in our securities involve a high degree of risk. See "Risk Factors" beginning on page 5 of this prospectus for a discussion of information that you should consider before investing in our securities.

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

	Per Share	Total
Public offering price	$	$
Underwriting discounts and commissions [1]	$	$
Proceeds, before expenses, to us	$	$

(1) We have also agreed to pay the underwriter a non-accountable expense allowance of 1% of gross offering proceeds (excluding the over-allotment option) and reimbursement for certain of its accountable expenses up to a maximum of $79,500. See “Underwriting” beginning on page 21 of this prospectus for a description of compensation payable to the underwriters.

We have granted a 45-day option to the underwriters to purchase up to 525,000 additional shares of Common Stock solely to cover over-allotments, if any.

The underwriters expect to deliver the shares against payment therefor on or about , 2017.

Aegis Capital Corp.

, 2017

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Neither we nor the underwriters have authorized anyone to provide any information or to make any representations other than those contained in this prospectus or in any free writing prospectus prepared by or on behalf of us or to which we have referred you. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. This prospectus is an offer to sell only the shares offered hereby, but only under the circumstances and in the jurisdictions where it is lawful to do so. The information contained in this prospectus or in any applicable free writing prospectus is current only as of its date, regardless of its time of delivery or any sale of shares of our Common Stock. Our business, financial condition, results of operations and prospects may have changed since that date. We are not, and the underwriters are not, making an offer of these securities in any jurisdiction where such offer is not permitted.

For investors outside the United States: Neither we nor the underwriters have done anything that would permit this offering or possession or distribution of this prospectus in any jurisdiction where action for that purpose is required, other than in the United States. Persons outside the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the offering of securities and the distribution of this prospectus outside the United States.

You should read this prospectus, any applicable prospectus supplement and the information incorporated by reference in this prospectus before making an investment in the securities of Atossa Genetics Inc. See “Where You Can Find Additional Information” on page _ for more information. You should rely only on the information contained in or incorporated by reference in this prospectus or a prospectus supplement. The Company has not authorized anyone to provide you with different information. This document may be used only in jurisdictions where offers and sales of these securities are permitted. You should assume that information contained in this prospectus, or in any document incorporated by reference, is accurate only as of any date on the front cover of the applicable document. Our business, financial condition, results of operations and prospects may have changed since that date.

NOTE REGARDING FORWARD-LOOKING STATEMENTS

Statements made in this prospectus that are not statements of historical information are forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the "***Securities Act***") and Section 21E of the Securities Exchange Act of 1934, as amended (the "***Exchange Act***"). We have made these statements in reliance on the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. These statements are subject to certain risks and uncertainties, which could cause actual results to differ materially from those projected or anticipated. Although we believe our assumptions underlying our forward-looking statements are reasonable as of the date of this prospectus we cannot assure you that the forward-looking statements set out in this prospectus will prove to be accurate. We typically identify these forward-looking statements by the use of forward-looking words such as "expect," "potential," "continue," "may," "will," "should," "could," "would," "seek," "intend," "plan," "estimate," "anticipate" version of those words or other comparable words. Forward-looking statements contained in this prospectus include, but are not limited to, statements about:

- whether we can obtain approval from the U.S. Food and Drug Administration, (the "***FDA***"), and foreign regulatory bodies, to sell, market and distribute our therapeutics and devices under development;
- our ability to successfully complete clinical trials of our pharmaceutical candidates under development, including endoxifen and our intraductal microcatheters to administer therapeutics, including our study using fulvestrant;
- the success, cost and timing of our product and drug development activities and clinical trials, including whether the ongoing clinical study using our intraductal microcatheters to administer fulvestrant will enroll a sufficient number of subjects, if any, or be completed in a timely fashion or at all;
- our ability to contract with third-party suppliers, manufacturers and service providers, including clinical research organizations, and their ability to perform adequately;
- our ability to successfully develop and commercialize new therapeutics currently in development or that we might identify in the future and in the time frames currently expected;
- our ability to successfully defend ongoing litigation, including the November 3, 2014 appeal of a dismissal of a securities class action lawsuit that was filed against us, and other similar complaints that may be brought in the future, in a timely manner and within the coverage, scope and limits of our insurance policies;
- our ability to establish and maintain intellectual property rights covering our products;

- our expectations regarding, and our ability to satisfy, federal, state and foreign regulatory requirements;
- the accuracy of our estimates of the size and characteristics of the markets that our products and services may address;
- our expectations as to future financial performance, expense levels and capital sources;
- our ability to attract and retain key personnel; and
- our ability to raise capital, including our ability to sell up to 467,650 shares of Common Stock to Aspire Capital Fund LLC ("***Aspire Capital***") under the terms of the May 25, 2016 Common Stock purchase agreement with Aspire Capital (the "***Aspire Purchase Agreement***").

This prospectus also contains estimates and other statistical data provided by independent parties and by us relating to market size and growth and other industry data. These and other forward-looking statements made in this prospectus are presented as of the date on which the statements are made. We have included important factors in the cautionary statements included in this prospectus, particularly in the section titled "Risk Factors," 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 new information, future events or circumstances that may affect our business after the date of this prospectus. Except as required by law, we do not intend to update any forward-looking statements after the date on which the statement is made, whether as a result of new information, future events or circumstances or otherwise.

PROSPECTUS SUMMARY

The following summary of our business highlights certain of the information contained elsewhere in or incorporated by reference into this prospectus. Because this is only a summary, however, it may not contain all of the information that may be important to you. You should carefully read the following summary together with the more detailed information regarding our Company and the securities being sold in this offering, including "Risk Factors" and other information incorporated by reference herein.

Our Company

We are a clinical-stage pharmaceutical company focused on the development of novel therapeutics and delivery methods for the treatment of breast cancer and other breast conditions. Our leading program uses our patented intraductal microcatheters which deliver pharmaceuticals through the breast ducts. We initiated a Phase 2 clinical study in March 2016 using our microcatheters to deliver fulvestrant as a potential treatment of ductal carcinoma in-situ, or DCIS, and breast cancer. This study was initiated at Columbia University Medical Center Breast Cancer Programs and is in the process of being transferred to Montefiore Medical Center.

Our second development program is for endoxifen, which we believe could be a potential treatment for a variety of conditions, including for post-breast cancer therapy, preventative therapy as well as a potential therapy for breast density and other breast health conditions. Endoxifen is an active metabolite of tamoxifen, which is an FDA approved drug given to breast cancer patients to prevent recurrence as well as the occurrence of new breast cancer. Within the endoxifen program, our initial pharmaceutical under development is oral endoxifen for breast cancer patients who are refractory, or resistant, to tamoxifen. Certain research indicates that low endoxifen levels in breast cancer patients taking oral tamoxifen may be correlated with a higher risk of recurrence as compared to patients with adequate endoxifen levels. We estimate that up to 50% of the one million women eligible to take tamoxifen in the United States each year are refractory, meaning that they have inadequate endoxifen levels (for any number of reasons including low levels of a liver enzyme) and they have an increased risk for breast cancer recurrence.

We believe that, based in part on a January 2017 study by Defined Health, a leading market research firm, the potential U.S. market for intraductal administration of fulvestrant or similar drugs in DCIS patients is up to $800 million annually. This estimate includes treatment of DCIS patients prior to surgery as well as patients who would use intraductal treatment as an alternative to surgery. We believe that the potential U.S. market for endoxifen in the treatment and prevention settings is up to $1 billion annually.

We expect to complete the manufacturing of an initial supply of proprietary endoxifen and to initiate the endoxifen Phase 1 clinical study in the second quarter of 2017. We plan to commence a Phase 2 clinical study of endoxifen in the second half of 2017. We anticipate completing enrollment in the fulvestrant microcatheter study by August 2017.

We were incorporated in Delaware in April of 2009 and our Common Stock is currently quoted on The NASDAQ Capital Market under the symbol “ATOS.”

Summary of Our Clinical-Stage Programs Under Development

Delivery of Therapeutics via our Microcatheters

We believe our patented intraductal microcatheters may be useful in delivering a number of therapeutics to the ducts in the breast, the site of the majority of early breast cancers. Doing so is intended to provide a therapeutic directly to the breast tissue while at the same time reducing the delivery of the drug to healthy tissue. We must obtain FDA approval of any drug delivered via our intraductal microcatheters devices, which will require expensive and time-consuming studies. For example, we must complete clinical studies to demonstrate the safety and tolerability of fulvestrant using our delivery method. We may not be successful in completing these studies and obtaining FDA approval.

According to The American Cancer Society, breast cancer is the most common cancer in American women, other than skin cancer. The American Cancer Society estimates that in 2017 there will be 252,710 new cases of breast cancer in women in the United States, in addition to 63,410 cases of carcinoma in situ. They also estimate that 40,610 women will die from breast cancer in the United States in 2017.

Breast cancers and precancerous lesions are typically treated with systemically administered agents such as tamoxifen, Faslodex, Perjeta and Herceptin; however, these drugs can cause serious side effects which may lead to poor patient compliance with the drug regimens. Providing drug directly into the breast ducts targeting the site of the localized cancerous lesions could reduce the need for systemic anti-cancer drugs, and potentially reduce or eliminate the systemic side effects of the drugs and morbidity in such patients, and ultimately improve patient compliance and ultimately reduce mortality.

The initial drug we are studying using our microcatheters for intraductal delivery is fulvestrant. Fulvestrant is FDA-approved for metastatic breast cancer. It is administered as a monthly injection of two shots, typically into the buttocks. In 2012, a published study documented that the single dose cost of intramuscular fulvestrant was approximately $12,000.

1

We own several pending patent applications directed to the treatment of breast conditions, including cancer, by the intraductal administration of therapeutics including fulvestrant, and one issued patent directed to the intraductal treatment of breast conditions following a diagnosis of breast conditions using ductal fluid.

We do not yet have the FDA's input, but based on our preliminary analysis, subject to FDA feedback, we believe that the intraductal fulvestrant program could qualify for designation under the 505(b)(2) status. This would allow us to file with only clinical data and without having to perform additional, significant clinical or pre-clinical studies. As a result, the path to market could be both faster and less expensive than a standard new drug application program.

To support this development program, we have successfully produced microcatheters for the fulvestrant Phase 2 clinical trial. The FDA has also issued a "Safe to Proceed" letter for our first Investigational New Drug application (an "***IND***") for the Phase 2 study and the institutional review board approval has also been received.

In March 2016, we opened enrollment in the fulvestrant microcatheter study, which was initially being conducted by The Columbia University Medical Center Breast Cancer Program. The principal investigator for this study transferred from Columbia to Montefiore Medical Center in January 2017, and as a result we are in the process of transferring the study to Montefiore Medical Center. We expect to complete enrollment in the study by August 2017.

The study includes women with DCIS or invasive breast cancer slated for mastectomy or lumpectomy. This study will assess the safety, tolerability and distribution of fulvestrant when delivered directly into breast milk ducts of these patients compared to those who receive the same product intramuscularly. The secondary objective of the study is to determine if there are changes in the expression of Ki67 as well as estrogen and progesterone receptors between a pre-fulvestrant biopsy and post-fulvestrant surgical specimen. Digital breast imaging before and after drug administration in both groups will also be performed to determine the effect of fulvestrant on any lesions as well as breast density of the participant. Six study participants will receive the standard intramuscular fulvestrant dose of 500 mg to establish the reference drug distribution, and 24 participants will receive fulvestrant by intraductal instillation utilizing our microcatheter device. The total dose administered via our microcatheters will not exceed 500 mg.

The study was presented at the CTRC-AARC San Antonio Breast Cancer Symposium, which was held December 6-10, 2016. The study was presented in the "Ongoing Clinical Trials" category, which features studies that have not been completed and which does not permit the presentation of study results.

Additional information about the study can be found at:
https://clinicaltrials.gov/ct2/show/NCT02540330?term=atossa&rank=2.

Endoxifen

Our second development program involves the drug endoxifen, which is the most active metabolite of tamoxifen, and which we believe could be a potential treatment for a variety of conditions, including for post-breast cancer therapy, preventative therapy as well as a potential therapy for breast density and other breast health conditions.

Within the endoxifen program, our initial pharmaceutical under development is oral endoxifen for breast cancer patients who are refractory to tamoxifen. Endoxifen is an active metabolite of tamoxifen, which is an FDA approved drug used by breast cancer patients to prevent recurrence as well as the occurrence of new breast cancer. Certain research indicates that low endoxifen levels in breast cancer patients taking oral tamoxifen may be correlated with a higher risk of recurrence as compared to breast cancer patients with adequate endoxifen levels. We believe that up to 50% of the one million women eligible to take tamoxifen in the United States each year are refractory, meaning that they have inadequate endoxifen levels (for any number of reasons including low levels of a liver enzyme) and they have an increased risk for breast cancer recurrence. We are also evaluating endoxifen as a potential preventive therapy for breast cancer, a potential therapy to reduce mammographic density, and other breast health conditions.

We have filed patent applications covering endoxifen and we are in the process of manufacturing an initial supply of our proprietary endoxifen drug for initial Phase 1 studies. We expect to initiate the Phase 1 study in the second quarter of 2017. We plan to conduct the Phase 1 study through a clinical research organization in Australia, pending approval from the associated ethics committee. The anticipated primary endpoint of this placebo-controlled, repeat dose study of 48 healthy female volunteers is to assess the pharmacokinetics of both an oral and topical formulation of endoxifen over 28 days. The secondary endpoint is to assess safety and tolerability.

Subject to successful completion of the Phase 1 study and other regulatory requirements, we plan to initiate a Phase 2 study of endoxifen in the second half of 2017.

We believe that the potential U.S. market for endoxifen in the treatment and prevention settings is up to $1 billion in annual sales.

Our Pre-Clinical Programs Under Development

In addition to our clinical-stage pharmaceutical programs, we are in the process of evaluating other therapeutic candidates to treat breast conditions, including breast cancer. Factors we are considering in evaluating potential drug candidates include, for example, the ability to obtain expedited regulatory approval, significance of unmet medical need, size of the patient population, intellectual property opportunities, and the anticipated pre-clinical and clinical pathway.

Our Medical Devices

Our medical devices include the ForeCYTE Breast Aspirator and the FullCYTE Breast Aspirator, which collect specimens of nipple aspirate fluid ("***NAF***") for cytological testing at a laboratory, and a universal transport kit to assist with the packaging and transport of NAF samples to a laboratory. We also own the exclusive rights to manufacture and sell various medical devices (although we do not currently maintain an inventory of such devices) consisting primarily of tools to assist breast surgeons, which we acquired from Acueity Healthcare, Inc. in 2012. We are not currently commercializing our breast aspirator devices, transportation kits, tools for breast surgeons nor any NAF cytology tests.

Our patented intraductal microcatheter devices are being developed for the targeted delivery of potential pharmaceuticals and are currently being used in a Phase 2 clinical trial, as described above.

Intellectual Property

As of February 15, 2017, and based on a recent periodic review of our patent estate, we own 78 issued patents (33 in the United States and approximately 45 in foreign countries), and 11 pending patent applications (5 in the United States, and 6 international applications) directed to ForeCyte, FullCyte, and Acueity devices, various tests, intraductal treatments, and therapeutics. Excluding certain patents and applications that are no longer being maintained or prosecuted, our patent estate consists primarily of the following:

Description	U.S. Patents Issued [1]	Expiration	U.S. Pending [1]	Foreign Patents Granted [1]	Expiration	Foreign Pending [1]
Intraductal Treatment Program	0	N/A	3	2		1

Therapeutics	0	N/A	3	0	2017 - 2031 N/A	2
ForeCyte Breast Aspirator Program	2	2017 - 2031	0	12	2017 - 2031	0
Fullcyte Microcatheters, Fullcyte Breast aspirator and Diagnostics/tests Programs	29	2017 - 2031	1	31	2017 - 2031	3
Acueity Tools	12	2017 - 2024	0	0	2017 - 2024	0

(1) The total number of patents issued or pending, as applicable, in the respective descriptive columns exceed the totals because some patents and applications contain more than one type of claim directed to methods, kits, compositions, devices and/or technology. The patent counts disclosed herein and in our patent estate are subject to change.

Atossa and Atossa Genetics (stylized) are our registered trademarks.

Implications of being an Emerging Growth Company

We are an "emerging growth company," as defined in the JOBS Act, and, for as long as we continue to be an "emerging growth company," we may choose to take advantage of exemptions from various reporting requirements applicable to other public companies but not to "emerging growth companies," including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002 (the "***Sarbanes-Oxley Act***"), reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements, and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved. We could be an "emerging growth company" for up to five years, or until the earliest of (i) the last day of the first fiscal year in which our annual gross revenues exceed $1 billion, (ii) the date that we become a "large accelerated filer" as defined in Rule 12b-2 under the Exchange Act, which would occur if the market value of our Common Stock that is held by non-affiliates exceeds $700 million as of the last business day of our most recently completed second fiscal quarter, or (iii) the date on which we have issued more than $1 billion in non-convertible debt during the preceding three-year period. We are choosing to "opt out" of the extended transition periods available under the JOBS Act for complying with new or revised accounting standards, and intend to take advantage of the other exemptions.

Corporate Information

Our corporate website is located at *www.atossagenetics.com* . Information contained on, or that can be accessed through, our website is not a part of this prospectus. We make available, free of charge through our website or upon written request, our Annual Reports on Form 10-K/A, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and other periodic SEC reports, along with amendments to all of those reports, as soon as reasonably practicable after

we file the reports with the SEC.

Unless otherwise noted, the term “Atossa Genetics” refers to Atossa Genetics Inc., a Delaware corporation, the terms “Atossa,” the “Company,” “we,” “us,” and “our,” refer to the ongoing business operations of Atossa and the historic business o the NRLBH, whether conducted through Atossa Genetics or the NRLBH; however unless the context otherwise indicates, references to “we,” “our” or the “Company” as they relate to laboratory tests generally refers to activities conducted by the NRLBH. We were incorporated in Delaware in April 2009. Our principal executive offices are located at 107 Spring Street, Seattle WA 98104, and our telephone number is (800) 351-3902.

Our name and logo, Atossa and Atossa Genetics (stylized) are our registered trademarks. ArgusCYTE is our registered service mark. This prospectus also includes additional trademarks, trade names and service marks of third parties, which are the property of their respective owners.

THE OFFERING

Common Stock covered by this Prospectus:	4,000,000 shares of Common Stock.
Common Stock outstanding as of March 20, 2017:	3,786,913 shares.
Use of proceeds:	The net proceeds from this offering after deducting estimated underwriting discounts and commissions and offering expenses payable by us will be approximately $4.6 million (or $5.3 million if the underwriters exercise in full their option to purchase additional shares of Common Stock from us), assuming an offering price per share of $1.46, the last reported sale price of our Common Stock on The NASDAQ Capital Market on March 17, 2017. We intend to use the net proceeds from this offering for working capital and general corporate purposes. See "Use of Proceeds" for a more detailed description of the intended use of proceeds from this offering.
Risk factors:	The shares offered hereby involve a high degree of risk. See "Risk Factors" beginning on page 5.
Dividend policy:	We currently intend to retain any future earnings to fund the development and growth of our business. Therefore, we do not currently anticipate paying cash dividends on our Common Stock.
Trading symbol:	Our Common Stock currently trades on The NASDAQ Capital Market under the symbol "ATOS."

RISK FACTORS

A purchase of our shares of Common Stock is an investment in our securities and involves a high degree of risk. You should carefully consider the risks and uncertainties and all other information contained in or incorporated by reference in this prospectus, including the risk and uncertainties discussed in our Annual Report on Form 10-K/A for the fiscal year ended December 31, 2016. If any of these risks actually occur, our business, financial condition and results of operations would likely suffer. In that case, the market price of the Common Stock could decline, and you may lose part or all of your investment in our company. Additional risks of which we are not presently aware or that we currently believe are immaterial may also harm our business and results of operations.

We may not continue as a going concern.

We have not yet established an ongoing source of revenue sufficient to cover operating costs and allow us to continue as a going concern. The report issued by our independent auditors also emphasized our ability to continue as a going concern. Our ability to continue as a going concern is dependent on obtaining adequate capital to fund operating losses until we become profitable. If we are unable to obtain adequate capital, we may be unable to develop and commercialize our product offerings or geographic reach and we could be forced to cease operations.

If we do not raise additional capital, we anticipate liquidity issues in the next two to four months.

For the year ended December 31, 2016, we incurred a net loss of $6,368,885 and we had an accumulated deficit of $57,303,748. As of the date of filing this prospectus, we expect that our existing resources will be sufficient to fund our planned operations for at least the next two to four months. We have not yet established an ongoing source of revenue sufficient to cover our operating costs and allow us to continue as a going concern. Our ability to continue as a going concern is dependent on obtaining adequate capital to fund operating losses until we become profitable. The revenue we have generated to date consisted of mainly laboratory services; however, we sold our laboratory business on December 16, 2015 and we currently have no other products and services approved for commercialization. Although the terms of the agreement governing this sale provide that we will receive royalties of 6% of laboratory revenue starting December 2016, we have not received any payments to date and may not receive any in the future. We may not receive or maintain regulatory clearance for our products and other sources of capital may not be available when we need them or on acceptable terms. If we are unable to raise in a timely fashion the amount of capital we anticipate needing, we will be forced to curtail or cease operations.

USE OF PROCEEDS

We estimate that the net proceeds from our issuance and sale of 3,500,000 shares of Common Stock in this offering will be approximately $4.6 million (or approximately $5.3 million if the underwriters exercise their option to purchase additional shares from us in full), assuming a public offering price of $1.46 per share, which was the last reported sale price of our Common Stock on The NASDAQ Capital Market on March 17, 2017, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

A $0.25 increase (decrease) in the assumed public offering price of $1.46 per share would increase or decrease the net proceeds from this offering by approximately $0.8 million ($0.8 million), assuming the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. An increase (decrease) by 500,000 shares in the number of shares offered by us would increase (decrease) the net proceeds to us from this offering by approximately $0.7 million ($0.7 million), assuming that the public offering price remains the same, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. We do not expect that a change in the public offering price or the number of shares by these amounts would have a material effect on our anticipated uses of the net proceeds from this offering, although it may accelerate the time at which we will need to seek additional capital.

We anticipate that we will use the net proceeds from this offering for working capital and general corporate purposes. We may also use a portion of the net proceeds from this offering for the acquisition of, or investment in, complementary business, products, or technologies, although we have no present commitments or agreements for any specific acquisitions or investments. Pending our use of the net proceeds from this offering, we intend to invest the net proceeds in a variety of capital preservation investments, including short-term, investment grade, interest bearing instruments and U.S. government securities

These expected uses of the net proceeds from this offering represent our intentions based upon our current financial condition, results of operations, business plans, and conditions. As of the date of this prospectus, we cannot predict with certainty all of the particular uses for the net proceeds to be received upon the closing of this offering or the amounts that we will actually spend on the uses set forth above. The amounts and timing of our actual expenditures may vary significantly depending on numerous factors. As a result, our management will retain broad discretion over the allocation of the net proceeds from this offering.

DIVIDEND POLICY

We have not declared any dividends and do not anticipate that we will declare dividends in the foreseeable future; rather, we intend to retain any future earnings for the development of the business. Payment of future cash dividends, if any, will be at the discretion of our Board of Directors after taking into account various factors, including our financial condition, operating results, current and anticipated cash needs, outstanding indebtedness and plans for expansion and restrictions imposed by lenders, if any.

DILUTION

If you invest in our Common Stock, your interest will be diluted immediately to the extent of the difference between the public offering price per share of Common Stock and the adjusted net tangible book value per share of our Common Stock after this offering.

The net tangible book value of our Common Stock as of December 31, 2016, was approximately $2,456,666, or approximately $0.65 per share. Net tangible book value per share represents the amount of our total tangible assets, excluding goodwill and intangible assets, less total liabilities, divided by the total number of shares of our Common Stock outstanding.

Dilution per share to new investors represents the difference between the amount per share paid by purchasers for each share of Common Stock in this offering and the net tangible book value per share of our Common Stock immediately following the completion of this offering.

After giving effect to the sale of 3,500,000 shares of Common Stock offered by this prospectus supplement at an offering price of $1.46 per share, which was the closing price on The Nasdaq Capital Market on March 17, 2017, in connection with this offering and after deducting the estimated underwriting discounts and offering expenses, our pro forma net tangible book value as of December 31, 2016 would have been approximately $7,078,366 or approximately $0.97 per share. This represents an immediate increase in net tangible book value of approximately $0.32 per share to our existing stockholders and an immediate dilution in pro forma net tangible book value of approximately $0.49 per share to purchasers of shares of Common Stock in this offering, as illustrated by the following table:

Offering price per share	$ 1.46
Net tangible book value per share as of December 31, 2016	$ 0.65
Increase per share attributable to the offering	$ 0.32
As adjusted net tangible book value per share after this offering	$ 0.97

Dilution per share to new investors	$ (0.49)

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The discussion of dilution, and the table quantifying it, assumes no exercise of any outstanding options or warrants or the issuance of other potentially dilutive securities. The exercise of potentially dilutive securities having an exercise price less than the offering price would increase the dilutive effect to new investors.

The number of shares of Common Stock shown above to be outstanding after this offering is based on 3,786,913 shares outstanding as of December 31, 2016, and excludes shares of Common Stock issuable in connection with future option grants as well as the following as of December 31, 2016:

- 378,924 shares of our Common Stock subject to options outstanding having a weighted average exercise price of $26.25 per share; and

- 402,228 shares of our Common Stock that have been reserved for issuance upon exercise of outstanding warrants having exercise prices ranging from $18.75 to $186.45 per share.

UNDERWRITING

Aegis Capital Corp. is acting as the representative of the underwriters and the sole book-running manager in this offering. We have entered into an underwriting agreement dated with the representative. Subject to the terms and conditions of the underwriting agreement, we have agreed to sell to each underwriter named below and each underwriter named below has severally and not jointly agreed to purchase from us, at the public offering price per share less the underwriting discounts and commissions set forth on the cover page of this prospectus, the number of shares of Common Stock listed next to its name in the following table:

Underwriters	Number of Shares
Aegis Capital Corp.	
Total	

The underwriters are committed to purchase all the shares of Common Stock offered by us other than those covered by the option to purchase additional shares described below, if they purchase any shares. The obligations of the underwriters may be terminated upon the occurrence of certain events specified in the underwriting agreement. Furthermore, pursuant to the underwriting agreement, the underwriters' obligations are subject to customary conditions and representations and warranties contained in the underwriting agreement, such as receipt by the underwriters of officers' certificates and legal opinions.

We have agreed to indemnify the underwriters against specified liabilities, including liabilities under the Securities Act, and to contribute to payments the underwriters may be required to make in respect thereof.

The underwriters are offering the shares, subject to prior sale, when, as and if issued to and accepted by them, subject to approval of legal matters by their counsel and other conditions specified in the underwriting agreement. The underwriters reserve the right to withdraw, cancel or modify offers to the public and to reject orders in whole or in part.

Over-allotment Option. We have granted the underwriters an over-allotment option. This option, which is exercisable for up to 45 days after the date of this prospectus, permits the underwriters to purchase a maximum of additional shares (15% of the shares sold in this offering) from us to cover over-allotments, if any. If the underwriters exercise all or part of this option, they will purchase shares covered by the option at the public offering price per share, less the underwriting discounts and commissions. If this option is exercised in full, the total offering price to the public will be $ and the total net proceeds, before expenses, to us will be $.

Discounts, Commissions and Non-Accountable Expense Allowance. The following table shows the public offering price, underwriting discount, non-accountable expense allowance and proceeds, before expenses, to us. The information assumes either no exercise or full exercise by the underwriters of their over-allotment option.

	Per Share	Total Without Over-Allotment Option	Total With Over-Allotment Option
Public offering price	$	$	$
Underwriting discount (%)	$	$	$
Nonaccountable expense allowance (%)	$	$	$
Proceeds, before expense, to us	$	$	$

The underwriters propose to offer the shares offered by us to the public at the public offering price per share set forth on the cover of this prospectus. In addition, the underwriters may offer some of the shares to other securities dealers at such price less a concession of up to $ per share. If all of the shares offered by us are not sold at the public offering price per share, the underwriters may change the offering price per share and other selling terms by means of a supplement to this prospectus.

We have also agreed to pay the representative a nonaccountable expense allowance of % of the aggregate offering proceeds (excluding the over-allotment option), and to reimburse certain of the representative's out of pocket expenses, including the fees of underwriters' counsel, up to a total of $79,500.

We estimate that the total expenses of the offering payable by us, excluding the total underwriting discounts, commissions, and non-accountable expense allowance will be approximately $.

Lock-Up Agreements. We have agreed with the representative that we will not offer or sell any securities for a period of 90 days from the closing date of this offering, subject to certain exceptions. In addition, all of our directors and executive officers have entered into lock up agreements with the representative prior to the commencement of this offering pursuant to which each of these persons, for a period of 90 days from the closing date of this offering, without the prior written consent of the representative, agree not to (1) offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend, or otherwise transfer or dispose of, directly or indirectly, any shares of our securities or any securities convertible into or exercisable or exchangeable for common shares owned or acquired on or prior to the closing date of this offering (including any common shares acquired after the closing date of this offering upon the conversion, exercise or exchange of such securities); (2) file or caused to be filed any registration statement relating to the offering of any shares of our capital shares; or (3) enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of common shares, whether any such transaction described in clause (1), (2), or (3) above is to be settled by delivery of common shares or such other securities, in cash or otherwise, except for certain exceptions and limitations.

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The lock-up period described in the preceding paragraph will be automatically extended if: (1) during the last 17 days of the lock-up period, we issue an earnings release or announce material news or a material event; or (2) prior to the expiration of the lock-up period, we announce that we will release earnings results during the 16-day period beginning on the last day of the lock-up period, in which case the restrictions described in the preceding paragraph will continue to apply until the expiration of the 18-day period beginning on the date of the earnings release.

Electronic Offer, Sale and Distribution of Securities. A prospectus in electronic format may be made available on the websites maintained by one or more of the underwriters or selling group members, if any, participating in this offering and one or more of the underwriters participating in this offering may distribute prospectuses electronically. The representative may agree to allocate a number of shares and warrants to underwriters and selling group members for sale to their online brokerage account holders. Internet distributions will be allocated by the underwriters and selling group members that will make internet distributions on the same basis as other allocations. Other than the prospectus in electronic format, the information on these websites is not part of, nor incorporated by reference into, this prospectus or the registration statement of which this prospectus forms a part, has not been approved or endorsed by us or any underwriter in its capacity as underwriter, and should not be relied upon by investors.

NASDAQ Capital Market Listing. Our Common Stock is listed on The NASDAQ Capital Market under the symbol "ATOS."

Stabilization. In connection with this offering, the underwriters may engage in stabilizing transactions, over-allotment transactions, syndicate-covering transactions, penalty bids and purchases to cover positions created by short sales. Stabilizing transactions permit bids to purchase shares so long as the stabilizing bids do not exceed a specified maximum, and are engaged in for the purpose of preventing or retarding a decline in the market price of the shares while the offering is in progress.

Over-allotment transactions involve sales by the underwriters of shares in excess of the number of shares the underwriters are obligated to purchase. This creates a syndicate short position that may be either a covered short position or a naked short position. In a covered short position, the number of shares over-allotted by the underwriters is not greater than the number of shares that naked short position, the number of shares involved is greater than the number of shares in the over-allotment option. The underwriters may close out any short position by exercising their over-allotment option and/or purchasing shares in the open market.

Syndicate covering transactions involve purchases of shares in the open market after the distribution has been completed in order to cover syndicate short positions. In determining the source of shares to close out the short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared with the price at which they may purchase shares through exercise of the over-allotment option. If the underwriters sell more shares than could be covered by exercise of the over-allotment option and, therefore, have a

naked short position, the position can be closed out only by buying shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that after pricing there could be downward pressure on the price of the shares in the open market that could adversely affect investors who purchase in the offering.

Penalty bids permit the representative to reclaim a selling concession from a syndicate member when the shares originally sold by that syndicate member are purchased in stabilizing or syndicate covering transactions to cover syndicate short positions.

These stabilizing transactions, syndicate covering transactions and penalty bids may have the effect of raising or maintaining the market price of our shares or Common Stock or preventing or retarding a decline in the market price of our shares or Common Stock. As a result, the price of our Common Stock in the open market may be higher than it would otherwise be in the absence of these transactions. Neither we nor the underwriters make any representation or prediction as to the effect that the transactions described above may have on the price of our Common Stock. These transactions may be effected on The NASDAQ Capital Market, in the over-the-counter market or otherwise and, if commenced, may be discontinued at any time.

Passive market making. In connection with this offering, underwriters and selling group members may engage in passive market making transactions in our Common Stock on The NASDAQ Capital Market in accordance with Rule 103 of Regulation M under the Exchange Act, during a period before the commencement of offers or sales of the shares and extending through the completion of the distribution. A passive market maker must display its bid at a price not in excess of the highest independent bid of that security. However, if all independent bids are lowered below the passive market maker’s bid, then that bid must then be lowered when specified purchase limits are exceeded.

Certain Relationships

The underwriters and their affiliates have provided, or may in the future provide, various investment banking, commercial banking, financial advisory, brokerage, and other services to us and our affiliates for which services they have received, and may in the future receive, customary fees and expense reimbursement.

The underwriters and their affiliates may, from time to time, engage in transactions with and perform services for us in the ordinary course of their business for which they may receive customary fees and reimbursement of expenses. In the ordinary course of their various business activities, the underwriters and their affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own accounts and for the accounts of their customers, and such investment and securities activities may involve securities and/or instruments of our company. The underwriters and their affiliates may also make investment recommendations and/or publish or express independent research views in respect of such securities or instruments and may at any time hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

Offer Restrictions Outside the United States

Other than in the United States, no action has been taken by us or the underwriters that would permit a public offering of the securities offered by this prospectus in any jurisdiction where action for that purpose is required. The securities offered by this prospectus may not be offered or sold, directly or indirectly, nor may this prospectus or any other offering material or advertisements in connection with the offer and sale of any such securities be distributed or published in any jurisdiction, except under circumstances that will result in compliance with the applicable rules and regulations of that jurisdiction. Persons into whose possession this prospectus comes are advised to inform themselves about and to observe any restrictions relating to the offering and the distribution of this prospectus. This prospectus does not constitute an offer to sell or a solicitation of an offer to buy any securities offered by this prospectus in any jurisdiction in which such an offer or a solicitation is unlawful.

DESCRIPTION OF SECURITIES TO BE REGISTERED

Our authorized capital stock consists of 75,000,000 shares of Common Stock, $0.015 par value per share, and 10,000,000 shares of preferred stock, $0.001 par value per share.

Common Stock

Holders of Common Stock are entitled to receive ratably dividends out of funds legally available, if and when declared from time to time by our Board of Directors. We have never paid any cash dividends on our Common Stock and our Board of Directors does not anticipate that we will pay cash dividends in the foreseeable future. The future payment of dividends, if any, on our Common Stock is within the discretion of the Board of Directors and will depend upon earnings, capital requirements, financial conditions, and other relevant factors. Holders of Common Stock are entitled to one vote for each share held on each matter to be voted on by stockholders. There is no cumulative voting in the election of directors. In the event of liquidation, dissolution or winding up of the affairs of us, holders of Common Stock are to share in all assets remaining after the payment of liabilities and any preferential distributions payable to preferred stockholders, if any. The holders of Common Stock have no preemptive or conversion rights and are not subject to further calls or assessments. There are no redemption or sinking fund provisions applicable to the Common Stock. The rights of the holders of the Common Stock are subject to any rights that may be fixed for holders of preferred stock, if any. All of the outstanding shares of Common Stock are fully paid and non-assessable.

Certificate of Incorporation

Under our certificate of incorporation, as amended, our Board of Directors, without further action by our stockholders, currently has the authority to issue up to 10,000,000 shares of preferred stock and to fix the rights (including voting rights), preferences, and privileges of these “blank check” preferred shares. Such preferred stock may have rights, including economic rights, senior to our Common Stock. As a result, the issuance of the preferred stock could have a material adverse effect on the price of our Common Stock and could make it more difficult for a third party to acquire a majority of our outstanding Common Stock.

Anti-Takeover Devices

Our certificate of incorporation and bylaws include a number of provisions that may have the effect of delaying, deferring or preventing another party from acquiring control of us and encouraging persons considering unsolicited

tender offers or other unilateral takeover proposals to negotiate with our Board of Directors rather than pursue non-negotiated takeover attempts. These provisions include the items described below.

Board Composition and Filling Vacancies. In accordance with our certificate of incorporation, our Board of Directors is divided into three classes serving staggered three-year terms, with one class being elected each year. Our certificate of incorporation also provides that directors may only be removed from office for cause and only by the affirmative vote of holders of 75% or more of the outstanding shares of capital stock then entitled to vote at an election of directors. Furthermore, any vacancy on our Board of Directors, however occurring, including any vacancy resulting from an increase in the size of the board, may only be filled by the affirmative vote of a majority of our directors then in office even if less than a quorum. The classification of directors, together with the limitations on removal of directors and treatment of vacancies, has the effect of making it more difficult for stockholders to change the composition of our Board of Directors.

Undesignated Preferred Stock. Our certificate of incorporation authorizes "blank-check" preferred stock, which means that our Board of Directors has the authority to designate one or more series of preferred stock without stockholder approval. These series of preferred stock may have superior rights, preferences and privileges over our Common Stock, including dividend rights, voting rights, and liquidation preferences. The ability of our Board of Directors to issue shares of our preferred stock without stockholder approval could deter takeover offers and make it more difficult or costly for a third party to acquire us without the consent of our Board of Directors.

Section 203 of the Delaware General Corporation Law. In addition, our certificate of incorporation does not opt out of Section 203 of the Delaware General Corporation Law, which protects a corporation against an unapproved takeover by prohibiting a company from engaging in any business combination with any interested stockholder (defined as a stockholder owning more than 15% of the outstanding shares) for a period of three years from the time such stockholder became a 15% holder unless approved by our Board of Directors.

Stockholder Rights Agreement. On May 19, 2014, the Company adopted a stockholder rights agreement which provides that all stockholders of record on May 26, 2014 received a non-taxable distribution of one preferred stock purchase right for each share of our Common Stock held by such stockholder. Each right is attached to and trades with the associated share of Common Stock. The rights will become exercisable only if one of the following occurs: (1) a person becomes an "Acquiring Person" by acquiring beneficial ownership of 15% or more of our Common Stock (or, in the case of a person who beneficially owned 15% or more of our Common Stock on the date the stockholder rights agreement was executed, by acquiring beneficial ownership of additional shares representing 2.0% of our Common Stock then outstanding (excluding compensatory arrangements)); or (2) a person commences a tender offer that, if consummated, would result in such person becoming an Acquiring Person. If a person becomes an Acquiring Person, each right will entitle the holder, other than the Acquiring Person and certain related parties, to purchase a number of shares of our Common Stock with a market value that equals twice the exercise price of the right. The initial exercise price of each right is $15.00, so each holder (other than the Acquiring Person and certain related parties) exercising a right would be entitled to receive $30.00 worth of our Common Stock. If the Company is acquired in a merger or similar business combination transaction at any time after a person has become an Acquiring Person, each holder of a right (other than the Acquiring Person and certain related parties) will be entitled to purchase a similar amount of stock of the acquiring entity.

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Transfer Agent and Registrar

We have appointed VStock Transfer, LLC, 18 Lafayette Place, Woodmere, New York 11598 (Telephone: (212) 828-8436; Facsimile (646) 536-3179) as our transfer agent and registrar.

Listing

Our Common Stock is listed on The NASDAQ Capital Market under the symbol “ATOS.”

DISCLOSURE OF COMMISSION POSITION ON INDEMNIFICATION FOR SECURITIES ACT LIABILITIES

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers, and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable.

LEGAL MATTERS

Certain legal matters relating to the validity of the Common Stock offered by this prospectus will be passed upon for us by Gibson, Dunn & Crutcher LLP, San Francisco, California. Certain legal matters will passed upon for the underwriters by Ellenoff Grossman & Schole LLP, New York, New York.

EXPERTS

The consolidated financial statements as of December 31, 2016 and 2015 and for each of the two years in the period ended December 31, 2016 incorporated by reference in this Prospectus have been so included in reliance on the report of BDO USA, LLP, an independent registered public accounting firm (the report on the consolidated financial statements contains an explanatory paragraph regarding the Company’s ability to continue as a going concern) which is

incorporated by reference in the Prospectus, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND ADDITIONAL INFORMATION

We are required to file annual, quarterly and special reports, proxy statements and other information with the SEC. You may read and copy any document filed by us at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the public reference room. Our filings with the SEC are also available to the public at the SEC's Internet web site at *http://www.sec.gov*.

We have filed a registration statement, of which this prospectus is a part, covering the securities offered hereby. As allowed by SEC rules, this prospectus does not include all of the information contained in the registration statement and the included exhibits, financial statements and schedules. You are referred to the registration statement, the included exhibits, financial statements and schedules for further information. This prospectus is qualified in its entirety by such other information.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to "incorporate by reference" information from other documents that we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus. Information in this prospectus supersedes information incorporated by reference that we filed with the SEC prior to the date of this prospectus.

We incorporate by reference into this prospectus and the registration statement of which this prospectus is a part the information or documents listed below that we have filed with the SEC (Commission File No. 001-35610):

· our Annual Report on Form 10-K/A for the year ended December 31, 2016, filed with the SEC on March 21, 2017.

We also elect to incorporate by reference information filed after the date of this prospectus. All documents subsequently filed by us pursuant to Section 13(a), 13(c) and 14 or 15(d) of the Exchange Act, prior to the termination date of the offering set forth herein shall be deemed incorporated by reference to this prospectus.

We will furnish without charge to you, on written or oral request, a copy of any or all of the documents incorporated by reference, including exhibits to these documents. You should direct any requests for documents to Kyle Guse, Chief Financial Officer, Atossa Genetics Inc., 107 Spring Street, Seattle, Washington, 98104, telephone: (800) 351-3902. Copies of the above reports may also be accessed from our web site at *www.atossagenetics.com*.

Any statement contained in a document incorporated or deemed to be incorporated by reference in this prospectus will be deemed modified, superseded, or replaced for purposes of this prospectus to the extent that a statement contained in this prospectus modifies, supersedes, or replaces such statement.

3,500,000 Shares

of Common Stock

PROSPECTUS

Aegis Capital Corp.

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PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

Item 13. Other Expenses of Issuance and Distribution.

The following table sets forth the costs and expenses, payable by the Company in connection with the registration and sale of the Common Stock being registered. All amounts are estimates except the SEC registration fee.

SEC registration fee	$705
Printing expense	$5,000
Legal fees and expenses	$40,000
Accounting fees and expenses	$30,000
Transfer Agent Fees	$1,000
Miscellaneous Fees	$3,295
Total	$80,000

Item 14. Indemnification of Directors and Officers.

Section 145 of the Delaware General Corporation Law, or the DGCL, authorizes a corporation to indemnify its directors and officers against liabilities arising out of actions, suits and proceedings to which they are made or threatened to be made a party by reason of the fact that they have served or are currently serving as a director or officer to a corporation. The indemnity may cover expenses (including attorneys' fees) judgments, fines and amounts paid in settlement actually and reasonably incurred by the director or officer in connection with any such action, suit or proceeding. Section 145 permits corporations to pay expenses (including attorneys' fees) incurred by directors and officers in advance of the final disposition of such action, suit or proceeding. In addition, Section 145 provides that a corporation has the power to purchase and maintain insurance on behalf of its directors and officers against any liability asserted against them and incurred by them in their capacity as a director or officer, or arising out of their status as such, whether or not the corporation would have the power to indemnify the director or officer against such liability under Section 145.

We have adopted provisions in our certificate of incorporation and bylaws that limit or eliminate the personal liability of our directors to the fullest extent permitted by the DGCL, as it now exists or may in the future be amended.

Consequently, a director will not be personally liable to us or our stockholders for monetary damages or breach of fiduciary duty as a director, except for liability for:

- any breach of the director's duty of loyalty to us or our stockholders;
- any act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;
- any unlawful payments related to dividends or unlawful stock purchases, redemptions, or other distributions; or
- any transaction from which the director derived an improper personal benefit.

These limitations of liability do not alter director liability under the federal securities laws and do not affect the availability of equitable remedies such as an injunction or rescission.

In addition, our bylaws provide that:

- we will indemnify our directors, officers and, in the discretion of our Board of Directors, certain employees to the fullest extent permitted by the DGCL, as it now exists or may in the future be amended; and
- we will advance reasonable expenses, including attorneys' fees, to our directors and, in the discretion of our Board of Directors, to our officers and certain employees, in connection with legal proceedings relating to their service for or on behalf of us, subject to limited exceptions.

We have entered into indemnification agreements with each of our directors and certain of our executive officers. These agreements provide that we will indemnify each of these directors and executive officers to the fullest extent permitted by Delaware law. We will advance expenses, including attorneys' fees, judgments, fines, and settlement amounts, to each indemnified director, executive officer, or affiliate in connection with any proceeding in which indemnification is available, and we will indemnify our directors and officers for any action or proceeding arising out of that person's services as an officer or director brought on behalf of the Company or in furtherance of our rights.

We maintain general liability insurance that covers certain liabilities of our directors and officers arising out of claims based on acts or omissions in their capacities as directors or officers, including liabilities under the Securities Act.

Item 15. Recent Sales of Unregistered Securities.

The Company has sold the following securities within the past three years which were not registered under the Securities Act:

On April 1, 2014, the Company issued options to purchase 300,000 shares of its Common Stock, exercisable at $1.69 per share which was the fair market value on the date of grant, to Ben Chen as an inducement grant for the employment of Mr. Chen as the Company's Sr. Vice President of Global Regulatory Affairs and Quality Assurance. This transaction was exempt from registration under Section 4(a)(2) of the Securities Act, as a transaction by an issuer not involving any public offering.

On June 2, 2014, the Company issued options to purchase 200,000 shares of its Common Stock, exercisable at $1.41 per share which was the fair market value on the date of grant, to John Sawyer as an inducement grant for the employment of Mr. Sawyer as the Company's Sr. Vice President of Global Regulatory Affairs and Quality Assurance. This transaction was exempt from registration under Section 4(a)(2) of the Securities Act, as a transaction by an issuer not involving any public offering.

On September 2, 2014, the Company issued options to purchase 200,000 shares of its Common Stock, exercisable at $1.86 per share which was the fair market value on the date of grant, to Scott Youmans as an inducement grant for the employment of Mr. Youmans as the Company's Sr. Vice President of Operations. This transaction was exempt from registration under Section 4(a)(2) of the Securities Act, as a transaction by an issuer not involving any public offering.

On December 15, 2014, the Company issued options to purchase 200,000 shares of its Common Stock, exercisable at $0.96 per share which was the fair market value on the date of grant, to Pieter Van der Poel as an inducement grant for the employment of Mr. Van der Poel as the Company's Vice President of European Commercial Operations. This transaction was exempt from registration under Section 4(a)(2) of the Securities Act, as a transaction by an issuer not involving any public offering.

From March 4, 2015 to March 31, 2015 we sold 2,653,199 shares of Common Stock to Aspire Capital under the November 8, 2013 agreement with them, with total gross proceeds to the Company of $4,292,349.

On May 4, 2015, the Company issued options to purchase 200,000 shares of its Common Stock, exercisable at $1.44 per share which was the fair market value on the date of grant, to Cindy Atha as an inducement grant for the employment of Ms. Atha as the Company's Vice President of Sales and Marketing. This transaction was exempt from registration under Section 4(a)(2) of the Securities Act, as a transaction by an issuer not involving any public offering.

On May 26, 2015 Company entered into a stock purchase agreement with Aspire Capital Fund, LLC, which provides that, upon the terms and subject to the conditions and limitations set forth therein, Aspire Capital was committed to purchase up to an aggregate of $25 million of shares of our Common Stock over the 30-month term of the agreement. Under the agreement, on May 26, 2015, Aspire Capital was issued 375,000 shares of Common Stock as a commitment fee. These transactions were exempt from registration under Section 4(a)(2) of the Securities Act, as transactions by an issuer not involving any public offering.

On May 26, 2015, the Company issued options to purchase 100,000 shares of its Common Stock, exercisable at $1.49 per share which was the fair market value on the date of grant, to Dr. Gerald Engley as an inducement grant for the employment of Mr. Engley as the Company's Sr. Director of Medical Affairs. This transaction was exempt from registration under Section 4(a)(2) of the Securities Act, as a transaction by an issuer not involving any public offering.

On October 12, 2015, the Company issued options to purchase 200,000 shares of its Common Stock, exercisable at $0.79 per share which was the fair market value on the date of grant, to Janet Rea as an inducement grant for the employment of Ms. Rea as the Company's Vice President of Regulatory Affairs and Quality. This transaction was exempt from registration under Section 4(a)(2) of the Securities Act, as a transaction by an issuer not involving any public offering.

On November 11, 2015, Company entered into a stock purchase agreement with Aspire Capital Fund, LLC, which provides that, upon the terms and subject to the conditions and limitations set forth therein, Aspire Capital was committed to purchase up to an aggregate of $25 million of shares of our Common Stock over the 30-month term of the agreement. This transaction was exempt from registration under Section 4(a)(2) of the Securities Act, as a transaction by an issuer not involving any public offering.

In the first quarter of 2016, Ensisheim Partners LLC, which is under sole ownership and control by Steven Quay, CEO, President and Chairman of the Board, and Shu-Chih Chen, Director, purchased a total of 5,333 shares of Common Stock directly from the Company in at-the-market transactions which were approved by the Company's audit committee at purchase prices of $3.30 to $7.95 per share. The issuances of the shares were exempt from registration under the Securities Act, pursuant to the exemption for transactions by an issuer not involving any public offering under Section 4(a)(2) of the Securities Act and Rule 506 of Regulation D promulgated thereunder.

On May 25, 2016 the Company entered into the Aspire Purchase Agreement, which provides that, upon the terms and subject to the conditions and limitations set forth therein, Aspire Capital was committed to purchase up to an aggregate of $10.0 million of shares of our Common Stock over the 30-month term of the agreement. This transaction was exempt from registration under Section 4(a)(2) of the Securities Act, as a transaction by an issuer not involving any public offering.

Item 16. Exhibits and Financial Statement Schedules.

See Exhibit Index set forth on page II-6 to this Registration Statement.

Item 17. Undertakings.

The undersigned registrant hereby undertakes to provide to the underwriters at the closing specified in the underwriting agreement certificates in such denominations and registered in such names as required by the underwriters to permit prompt delivery to each purchaser.

The undersigned registrant hereby undertakes that:

(a) For purposes of determining any liability under the Securities Act, 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.

(b) For the purpose of determining any liability under the Securities Act, 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.

(c) 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 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to section 15(d) of the Exchange Act) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered

therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

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

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-1 and has duly caused this Amendment No. 2 to Registration Statement on Form S-1 to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Seattle, State of Washington, on March 20, 2017.

Atossa Genetics Inc.

By: /s/ Steven C. Quay
Steven C. Quay, M.D., Ph.D.
Chairman, Chief Executive Officer and President

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Pursuant to the requirements of the Securities Act of 1933, as amended, this Amendment No. 2 to Registration Statement on Form S-1 has been signed by the following persons in the capacities and on the dates indicated.

Signature	**Office(s)**	**Date**
/s/ Steven C. Quay **Steven C. Quay, M.D., Ph.D.**	Chairman, Chief Executive Officer and President (Principal Executive Officer)	March 20, 2017
/s/ Kyle Guse **Kyle Guse**	Chief Financial Officer, General Counsel and Secretary (Principal Financial and Accounting Officer)	March 20, 2017
* **Shu-Chih Chen, Ph.D.**	Director	March 20, 2017
* **Stephen J. Galli, M.D.**	Director	March 20, 2017
* **H. Lawrence Remmel**	Director	March 20, 2017
* **Gregory L. Weaver**	Director	March 20, 2017
/* **Richard I. Steinhart**	Director	March 20, 2017

*** By: /s/ Kyle Guse**

Attorney-in-fact

EXHIBIT INDEX

		Incorporated by Reference Herein	
Exhibit No.	**Description**	**Form**	**Date**
1.1	Underwriting Agreement between the Company and Aegis Capital Corp., dated August 30, 2016	Current Report on Form 8-K, as Exhibit 1.1	September 2, 2016
2.1††	Agreement and Plan of Reorganization, dated September 30, 2012, by and among the Company, Acueity Healthcare, Inc., and Ted Lachowicz, as Stockholder Representative	Registration Statement on Form S-1, as Exhibit 2.1	October 4, 2012
3.1	Amended and Restated Certificate of Incorporation of Atossa Genetics Inc.	Registration Statement on Form S-1, as Exhibit 3.2	June 11, 2012
3.2	Certificate of Amendment to Amended and Restated Certificate of Incorporation of Atossa Genetics Inc.	Current Report on Form 8-K, as Exhibit 4.1	August 26, 2016
3.2	Bylaws of Atossa Genetics Inc.	Registration Statement on Form S-1, as Exhibit 3.4	June 11, 2012
3.3	Amendment to Bylaws of Atossa Genetics Inc.	Current Report on Form 8-K, as Exhibit 3.1	December 20, 2012
3.4	Certificate of Designations, Preferences and Rights of Series A Junior Participating Preferred Stock	Current Report on Form 8-K, as Exhibit 3.1	May 22, 2014
4.1	Specimen Common Stock Certificate	Registration Statement on Form S-1, as Exhibit 4.1	May 21, 2012
4.2	Form of Warrant from 2011 private placement	Registration Statement on Form S-1, as Exhibit 4.2	October 4, 2012
4.3	Form of Placement Agent Warrant from 2011 private placement	Registration Statement on Form S-1, as Exhibit 4.3	October 4, 2012

4.4	Form of Warrant dated September 30, 2012	Registration Statement on Form S-1, as Exhibit 4.4	October 4, 2012
4.5	Form of Warrant Agreement from January 2014 Public Offering	Current Report on Form 8-K, as Exhibit 4.1	January 20, 2014
4.6	Form of Warrant issued to Dawson James Securities Inc. in January 2014	Current Report on Form 8-K, as Exhibit 4.2	January 20, 2014
4.7	Rights Agreement between the Company and VStock Transfer, LLC, dated May 19, 2014	Current Report on Form 8-K, as Exhibit 3.1	May 22, 2014
4.8	Form of Pre-Funded Warrant from June 5, 2015 offering	Current Report on Form 8-K, as Exhibit 4.1	June 10, 2015
4.9	Registration Rights Agreement between the Company and Aspire Capital Fund, LLC, dated May 25, 2016	Current Report on Form 8-K, as Exhibit 4.1	May 27, 2016
5.1	Opinion of Gibson, Dunn & Crutcher, LLP	Filed herewith	
10.1#	Restated and Amended Employment Agreement with Steven Quay	Registration Statement on Form S-1, as Exhibit 10.3	February 14, 2012
10.2#	Restated and Amended Employment Agreement with Shu-Chih Chen	Registration Statement on Form S-1, as Exhibit 10.4	February 14, 2012

10.3	Form of Indemnification Agreement	Registration Statement on Form S-1, as Exhibit 10.5	May 21, 2012
10.4#	Atossa Genetics Inc. 2010 Stock Option and Incentive Plan, as amended	Quarterly Report on Form 10-Q, as Exhibit 10.3	November 14, 2016
10.5#	Form of Incentive Stock Option Agreement	Registration Statement on Form S-1, as Exhibit 10.7	June 11, 2012
10.6#	Form of Non-Qualified Stock Option Agreement for Employees	Registration Statement on Form S-1, as Exhibit 10.8	June 11, 2012
10.7#	Form of Non-Qualified Stock Option Agreement for Non-Employee Directors	Registration Statement on Form S-1, as Exhibit 10.9	June 11, 2012
10.8	Form of Subscription Agreement	Registration Statement on Form S-1, as Exhibit 10.10	February 14, 2012
10.9	Patent Assignment Agreement by and between the Company and Ensisheim Partners, LLC	Registration Statement on Form S-1, as Exhibit 10.12	April 6, 2012
10.10#	Form of Restricted Stock Award Agreement	Registration Statement on Form S-1, as Exhibit 10.13	June 11, 2012
10.11	Office Lease with Sander Properties, LLC, dated March 4, 2011	Registration Statement on Form S-1, as Exhibit 10.20	April 6, 2012
10.12	Office Lease with Sander Properties, LLC, dated July 8, 2011	Registration Statement on Form S-1, as Exhibit 10.21	April 6, 2012
10.13	Office Lease with Sander Properties, LLC, dated September 20, 2011	Registration Statement on Form S-1, as Exhibit 10.22	April 6, 2012
10.14	Sublease with Fred Hutchinson Cancer Research Center, dated December 9, 2011	Registration Statement on Form S-1, as Exhibit 10.23	April 6, 2012
10.15†	Purchase Agreement between the Company and Hologic Inc., dated May 11, 2011	Registration Statement on Form S-1, as Exhibit 10.28	June 25, 2012

10.16†	Supply and Distribution Agreement, dated as of September 21, 2012, between the Company and Diagnostics Test Group LLC	Registration Statement on Form S-1, as Exhibit 10.31	October 4, 2012
10.17	Amended and Restated Employment Agreement between the Company and Kyle Guse dated May 18, 2016#	Current Report on Form 8-K, as Exhibit 10.1	May 20, 2016
10.18	Purchase Agreement, dated as of March 27, 2013, by and between the Company and Aspire Capital Fund, LLC	Annual Report on Form 10-K, as Exhibit 10.30	March 28, 2013
10.19	Purchase Agreement, dated as of November 8, 2013, by and between the Company and Aspire Capital Fund, LLC	Quarterly Report on Form 10-Q, as Exhibit 10.2	November 12, 2013
10.20	OwnerChip Program Agreement dated September 1, 2013, by and between The National Reference Laboratory for Breast Health, Inc. and Affymetrix, Inc.	Quarterly Report on Form 10-Q, as Exhibit 10.1	November 12, 2013
10.21	License and Services Agreement dated June 10, 2013, between Atossa Genetics and A5 Genetics KFT	Annual Report on Form 10-K, as Exhibit 10.32	March 27, 2014
10.22	Office Space Lease dated July 18, 2013 between Alexandria (ARE) and the Company	Annual Report on Form 10-K, as Exhibit 10.33	March 27, 2014

10.23	Lab and Office Space Lease Agreement dated March 24, 2014 between Alexandria (ARE) and the Company	Annual Report on Form 10-K, as Exhibit 10.35	March 27, 2014
10.24	Offer Letter Agreement dated March 20, 2014 between the Company and Ben Chen#	Post-Effective Amendment No. 1 to Registration Statement on Form S-1, as Exhibit 10.34	April 28, 2014
10.25#	Offer Letter Agreement dated May 23, 2013 between the Company and with Peter Carbonaro	Quarterly Report on Form 10-Q, as Exhibit 10.1	May 14, 2014
10.26#	Offer Letter Agreement dated November 12, 2012 between the Company and Chris Destro	Quarterly Report on Form 10-Q, as Exhibit 10.2	May 14, 2014
10.27	Office Space Assignment and Assumption of Lease and Consent to Assignment dated August 8, 2014 between Legacy Group, Inc. and the Company	Quarterly Report on Form 10-Q, as Exhibit 10.1	August 12, 2014
10.28#	Offer Letter Agreement dated May 23, 2014 between the Company and with John Sawyer	Annual Report on Form 10-K, as Exhibit 10.30	March 30, 2015
10.29	Intellectual Property License Agreement dated May 14, 2015 between the Company and Besins Healthcare Luxembourg SARL	Current Report on Form 8-K, as Exhibit 10.1	May 18, 2015
10.30	Placement Agent Agreement dated June 5, 2015 among the Company, Roth Capital Partners, LLC and Dawson James Securities, Inc.	Current Report on Form 8-K, as Exhibit 10.1	June 10, 2015
10.31	Form of Subscription Agreement from June 5, 2015 offering.	Current Report on Form 8-K, as Exhibit 10.2	June 10, 2015
10.32	Stock Purchase Agreement, between the Company, National Reference Laboratory For Breast Health and the NRL Investment Group, LLC, dated as of December 16, 2015	Current Report on Form 8-K, as Exhibit 10.1	December 16, 2016
10.33	Office Lease Agreement dated October 1, 2015 between Hughes-Northwest, Inc. and the Company.	Annual Report on Form 10-K, as Exhibit 22.1	March 30, 2016
10.34	Employment Separation Agreement and Release dated February 3, 2016 between Scott Youmans and the Company.	Current Report on Form 8-K, as Exhibit 10.1	February 8, 2016
10.35	Common Stock Purchase Agreement, between the Company and Aspire Capital Fund, LLC, dated as of May 25, 2016	Current Report on Form 8-K, as Exhibit 10.1	May 27, 2016

10.36	Settlement and Termination of License Agreement between Besins Healthcare Luxembourg SARL and its Affiliates and Atossa Genetics, Inc. dated August 4, 2016	Current Report on Form 8-K, as Exhibit 10.1	August 5, 2016
21.1	List of Subsidiaries	Annual Report on Form 10-K/A, as Exhibit 22.1	March 20, 2017
23.1	Consent of BDO USA, LLP.	Filed herewith	
23.2	Consent of Gibson, Dunn & Crutcher, LLP	Filed herewith (incorporated from Exhibit 5.1)	February 13, 2017
24.1	Powers of Attorney	Registration Statement on Form S-1, Part II	February 13, 2017

# Indicates management contract or compensatory plan, contract or agreement.

‡ Confidential treatment has been granted for portions of this exhibit. These portions have been omitted from this Registration Statement and submitted separately to the Securities and Exchange Commission.

† Schedules and exhibits omitted pursuant to Item 601 of Regulation S-K.