As filed with the Securities and Exchange Commission on April 18, 2014

Registration Statement No. 333-192285

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

POST-EFFECTIVE AMENDMENT NO. 1 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.)**

1616 Eastlake Ave. East, Suite 510
Seattle, Washington 98102
Telephone: (800) 351-3902
(Address, including zip code, and telephone number, including area code, of Registrant's principal executive offices)

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Chairman, Chief Executive Officer and President
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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.

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.

On November 12, 2013, Atossa Genetics Inc. (the "***Company***") filed a registration statement with the Securities and Exchange Commission (the "***Commission***") on Form S-1 (Registration No. 333-192285), which was amended on December 11, 2013 (as so amended, the "***Registration Statement***" or the "***Form S-1***"). The Registration Statement was declared effective by the Commission on December 13, 2013 to register for resale by the selling stockholder identified in the prospectus an aggregate of 4,200,000 shares of our Common Stock, $0.001 par value per share (the "***Common Stock***"). This Post-Effective Amendment No. 1 to Form S-1 (the "***Post-Effective Amendment No. 1***") is being filed by the registrant pursuant to the undertakings in Item 17 of the Form S-1 to (i) incorporate by reference the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2013 and (ii) update certain other information in the Form S-1.

No additional securities are being registered under this Post-Effective Amendment No. 1. All filing fees payable in connection with the registration of the shares of the Common Stock covered by the Registration Statement were paid by the registrant at the time of the initial filing of the Form S-1.

The information in this prospectus is not complete and may be changed. The security holders identified in this prospectus may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and 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 April 18, 2014

ATOSSA GENETICS INC.
4,200,000 shares of Common Stock

This prospectus covers the sale of an aggregate of 4,200,000 shares of our common stock, $0.001 par value per share (the "***Common Stock***"), by Aspire Capital Fund, LLC ("***Aspire Capital***" or the "***Selling Stockholder***").

The prices at which the Selling Stockholder may sell the shares of Common Stock will be determined by the prevailing market price for the shares or in negotiated transactions. We will not receive proceeds from the sale of the shares by the Selling Stockholder. However, we may receive up to $25 million in gross proceeds from the sale of our Common Stock to the Selling Stockholder pursuant to a common stock purchase agreement entered into with the Selling Stockholder on November 8, 2013 (the "***Purchase Agreement***") once the registration statement, of which this prospectus is a part, is declared effective.

The Selling Stockholder is an "underwriter" within the meaning of the Securities Act of 1933, as amended. We will pay the expenses of registering these shares, but all selling and other expenses incurred by the Selling Stockholder will be paid by the Selling Stockholder.

The Company's Common Stock is traded on the NASDAQ Capital Market under the symbol "ATOS". On April 17, 2014, the closing sale price of our Common Stock on the NASDAQ Capital Market was $1.30 per share. Our principal executive offices are located at 1616 Eastlake Ave. East, Suite 510, Seattle, Washington 98102 and our telephone number is (800) 351-3902.

Investing in our securities involves risks. You should carefully consider the risk factors beginning on page 11 of this prospectus before you make an investment 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.

The date of this prospectus is , 2014

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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 22 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

This prospectus and the documents incorporated by reference into it contain, in addition to historical information, certain information, assumptions and discussions that may constitute 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" or the negative 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 will obtain in a timely manner clearance from the Food and Drug Administration ("***FDA***") to sell, market and distribute our MASCT System, which we also refer to as the ForeCYTE Breast Aspirator;
- our ability to successfully re-launch our ForeCYTE Breast Aspirator and NAF cytology test;
- the estimated costs associated with our product recall;
- our ability to successfully sell our products and services at currently expected prices or otherwise at prices acceptable to us;
- our ability to successfully develop and commercialize new tests, tools and treatments currently in development and in the timeframes currently expected;
- our ability to maintain our business relationships, including with our distributors, suppliers and customers, while we are undergoing the recall we commenced in October 2013 and while we seek additional regulatory clearance to market, sell and distribute our ForeCYTE Breast Aspirator and NAF cytology test;
- our ability to engage third-party suppliers to manufacture the ForeCYTE Breast Aspirator, Microcatheter System, other devices under development and their components at quantities and costs acceptable to us;
- our ability to satisfy ongoing FDA requirements for the ForeCYTE Breast Aspirator, NAF cytology test and Microcatheter System and to obtain regulatory approvals and/or clearances for our other products and services in development, including our ability to timely and adequately respond to and ultimately close out the Warning Letter we received from the FDA on February 21, 2013 and the inspectional observations and discussion points we received on March 14, 2014 and any issues resulting therefrom;
- our ability to defend the securities class action law suit filed against us on October 10, 2013, 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;
- the benefits and clinical accuracy of the NAF cytology test and ArgusCYTE test and whether any product or service that we commercialize is safer or more effective than competing products and services;
- our ability to establish and maintain intellectual property rights covering our products and services;
- the willingness of health insurance companies, including those who are members of the MultiPlan, FedMed and HealthSmart networks, and other third-party payors to approve our products and services for coverage and reimbursement;
- our ability to establish and maintain an independent sales representative force, including with our current and future distributors and their sub-distributors, to market our products and services that we may develop, both regionally and nationally;

- 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 liquidity sources;
- our ability to attract and retain key personnel; and
- our ability to sell additional shares of our common stock to Aspire Capital under the terms of the 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

This summary highlights some information from this prospectus. It may not contain all the information important to making an investment decision. You should 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. Unless otherwise noted, (1) the term "Atossa Genetics" refers to Atossa Genetics Inc., a Delaware corporation, (2) the terms "Atossa," the "Company," "we," "us," and "our," refer to the ongoing business operations of Atossa and its wholly-owned subsidiary, The National Reference Laboratory for Breast Health, Inc. (the NRLBH), whether conducted through Atossa Genetics or the NRLBH, although such references as they relate to our laboratory tests and services generally refer to the NRLBH, and (3) the term "Common Stock" refers to shares of Atossa Genetics Inc.'s Common Stock and the term "stockholder(s)" refers to the holders of Common Stock or securities exercisable for Common Stock.

Overview

We are a healthcare company focused on improving breast health through the development of a suite of laboratory developed tests, or LDTs, medical devices and therapeutics. Our laboratory tests are being developed by our subsidiary, The National Reference Laboratory for Breast Health, Inc., or the NRLBH, and are intended to address each of the four stages of the breast health care path: the cytological analysis of nipple aspirate fluid, or NAF; the cytological analysis of ductal lavage fluid collected from each individual breast duct with our proprietary microcatheters; the profiling of newly diagnosed breast cancers through the determination of gene expression profiles in breast cancer biopsy tissue; and the monitoring of breast cancer survivors for pre-clinical recurrence through a blood test for circulating tumor cells.

Our medical devices under development include the ForeCYTE Breast Aspirator (510(k) pending, not for sale in the United States) intended for the collection of NAF for cytological testing at a laboratory, intraductal microcatheters for the collection of ductal lavage fluid and for the potential administration of a targeted therapeutic, and various tools for potential use by breast surgeons. Our ForeCYTE Breast Aspirator (previously called the MASCT System) was launched nationally in early 2013 and was recalled in October 2013. It will not be re-launched in the United States unless and until we receive additional clearance from the FDA. We submitted a new 510(k) for the ForeCYTE Breast Aspirator on December 23, 2013; we received questions from the FDA regarding this submission on February 28, 2014 and are in the process of addressing such questions as of the date of this prospectus.

We plan to develop certain of our medical devices and laboratory tests so that they can be used as companions to pharmaceutical therapies. For example, we plan to develop our patented intra ductal microcatheters for the potential delivery of a pharmaceutical targeted to a condition called ductal carcinoma in-situ, or DCIS. We also plan to develop our medical devices and laboratory tests as companion diagnostics to pharmaceutical therapies to treat women at high risk of breast cancer and for the treatment of proliferative epithelial disease, or PED. These programs are in the early pre-clinical stage and will require testing and approval and/or clearance from the FDA prior to commercialization.

Our strategy consists of the following:

(1) Re-launch ForeCYTE : We hope to obtain FDA clearance for the ForeCYTE Breast Aspirator, our lead medical device, and if FDA clearance is obtained, to re-launch it in the United States through a direct sales force and our distributors, including Fisher Healthcare and PSS McKesson. We also intend to introduce the ForeCYTE Breast Aspirator into one or more foreign markets.

(2) Introduce our other Laboratory Tests and other Medical Devices along the Care Path : We plan to make each of the NRLBH's individual laboratory tests and our medical devices available to healthcare providers by completing any necessary development and obtaining any necessary regulatory clearances and/or approvals.

(3) Develop Pharmaceutical Therapies to be used as Companions with our Devices and Laboratory Services : We plan to develop our patented microcatheters to deliver pharmaceuticals to initially treat DCIS. We also plan to develop our devices and laboratory services for use as companion diagnostics. For example, we intend to use our devices to collect specimens of NAF, test the NAF specimens in our laboratory, provide pharmaceutical treatment options for the breast health conditions detected by our tests and then use our medical devices to monitor treatment response. We expect that these companion diagnostic systems will initially target PED and/or high risk women and will require lengthy and costly clinical trials that we will undertake only with input and direction from the FDA.

(4) Advance Partnering Opportunities : We plan to work with third parties and partners to develop our business. For example, we plan to work with Fisher Healthcare and PSS McKesson to distribute the ForeCYTE Breast Aspirator and we may partner with one or more laboratories to act as NAF collection sites using our ForeCYTE Breast Aspirator if and when we receive FDA clearance for the device. We plan to retain clinical research organizations, or CROs, for clinical development of potential therapeutic programs and we intend to partner with pharmaceutical companies to develop companion diagnostic systems, which may include therapeutics to treat PED, DCIS and/or high risk women.

(5) Promote Physician and Patient Awareness : Our products and services are highly innovative and gaining adoption will require that physicians change the way they practice medicine. To facilitate adoption, we will continue to educate physicians and patients by engaging key opinion leaders, publishing in peer reviewed journals and working with patient advocacy groups.

All of our medical devices and the NRLBH's laboratory tests, as well as the breast health companion diagnostic systems, are currently under development and we must receive additional regulatory clearances and/or approvals prior to marketing and commercialization.

The NRLBH has been certified pursuant to the Clinical Laboratory Improvement Amendments, or CLIA. CLIA certification is legally required to receive reimbursement from federal or state medical benefit programs, like Medicare and Medicaid, and is a practical requirement for most third-party insurance benefit programs. Our CLIA-certified laboratory, which is permitted to accept samples from all 50 states under its CLIA certification, its state licenses, or, in New York under recognized exemption provisions while its license application is pending, examines the NAF specimens by cytological analysis.

Our Diagnostic Tools

In 2012 we acquired the rights from Acueity to manufacture, use and sell a number of diagnostic tools, including: the Viaduct Miniscope and accessories, the Manoa Breast Biopsy system, the Excisor Bioptome, the Acueity Medical Light Source, the Viaduct Microendoscope and accessories. We also acquired cash in the amount of $400,000. The microendoscopes are less than 0.9 mm outside diameter and can be inserted into a milk duct. This permits a physician to pass a microendoscope into the milk duct system of the breast and view the duct system via fiberoptic video images. Abnormalities that are visualized can then be biopsied from inside the duct with the biopsy tools that are inserted adjacent to the microendoscope. Based on a recent periodic review of the Acueity patent estate, these tools are covered by 15 issued patents (13 U.S. patents, one U.K. patent and one German patent). We did not, however, acquire an inventory of these diagnostic tools, manufacturing capabilities or any personnel to market and sell the tools. Following the launch of our four diagnostic tests in the United States, we will then begin to allocate human and financial resources to further develop and ultimately commercialize these medical devices. We intend to complete the steps necessary to begin marketing and selling these tools, such as re-establishment of the supply chain of component parts, securing manufacturers, performing test builds and commercial scale manufacturing, in 2015. This asset purchase is not expected to have an impact on the development and commercialization timetables of our existing product lines. We cannot, however, provide any assurances that delays related to the launch of our four diagnostic tests, independent of the asset purchase, would not delay the expected development of these diagnostic tools or that we will ultimately be successful selling these tools.

We may not, however, achieve commercial market acceptance of any of our products and services. We must first demonstrate to physicians and other healthcare professionals the benefits of our tests and the ForeCYTE Breast Aspirator for their practice and these physicians and healthcare professionals may be reluctant to introduce new services into their practice due to uncertainty regarding reliability of the results of a new product or the learning curve associated with adoption of new services and techniques. Moreover, if third-party payors continue to refuse to cover the cost of collection of the NAF sample, whether from our ForeCYTE Breast Aspirator or competitors' NAF collection devices, physicians may be less likely to recommend or use our products and services if the cost of performing a particular test will not be reimbursed. Even if we are successful in convincing physicians and other healthcare professionals to utilize our tests and services, we must obtain adequate capital to fund our operations until we become profitable and we may not be able to do so. Additionally, we have no prior experience with commercializing any products or services and will need to create an infrastructure to scale operations for commercialization, including hiring experienced personnel (including anatomic pathologists, cytologists, histotechnologists, skilled laboratory and information technology staff, and sales representatives) and building a network of regional, specialty distributors, each with a staff of independent sales representatives who have experience in women's health products to target physicians and mammography clinics in the United States.

Therapeutic Programs under Development

We plan to develop certain of our medical devices and laboratory tests so that they can be used as companions to pharmaceutical therapies. For example, we plan to develop our medical devices and laboratory tests as companion diagnostics to pharmaceutical therapies to treat women at high risk of breast cancer and for the treatment of conditions known as proliferative epithelial disease (PED). These programs are in the early pre-clinical stage and will require testing and approval and/or clearance from the FDA prior to commercialization.

Our Intraductal Treatment Research Program comprises our patented microcatheter-delivery technology and our patented pharmaceutical formulations for the intraductal treatment of breast pre-cancerous changes and DCIS. The method uses our Mammary Ductal Microcatheter System, invented by Dr. Susan Love, President of the Dr. Susan Love Research Foundation, and her colleagues, and acquired by us, to administer proprietary pharmaceutical formulations into milk ducts that display pre-cancerous changes or DCIS with high local concentrations of the drugs in order to promote greater efficacy and limited systemic exposure, potentially lowering the overall toxicity of the treatment.

An October 2011 peer-reviewed paper published in *Science Translational Medicine* documented a study conducted at the Johns Hopkins Medical School demonstrating the prevention of breast cancer in rats with intraductal non-systemic chemotherapy, and a proof-of-principle Phase 1 clinical trial involving 17 women with breast cancer who subsequently received surgery. An accompanying editorial commented that "intraductal treatment could be especially useful for women with premalignant lesions or those at high risk of developing breast cancer, thus drastically improving upon their other, less attractive options of breast-removal surgery or surveillance (termed 'watch and wait')."

In a December 2012 peer-reviewed paper published in *Cancer Prevention Research*, Dr. Susan Love and her colleagues report a Phase I clinical trial to show the safety and feasibility of intraductal administration of chemotherapy drugs into multiple ducts within one breast in women awaiting mastectomy for treatment of invasive cancer. Thirty subjects were enrolled in this dose escalation study conducted at a single center in Beijing, China. Under local anesthetic, one of two chemotherapy drugs, carboplatin or pegylated liposomal doxorubicin, or PLD, was administered into five to eight ducts at three dose levels. Pharmacokinetic analysis has shown that carboplatin was rapidly absorbed into the bloodstream, whereas PLD, though more erratic, was absorbed after a delay. Pathologic analysis showed marked effects on breast duct epithelium in ducts treated with either drug compared with untreated ducts. The investigators concluded the study showed the safety and feasibility of intraductal administration of chemotherapy into multiple ducts for the purpose of breast cancer prevention and that this was an important step toward implementation of this strategy as a "chemical mastectomy," potentially eliminating the need for surgery.

We intend to build on these academic studies with a research program targeted initially as neoadjuvant therapy in DCIS and to begin preclinical studies during 2014. We may partner with a third party to provide the pharmaceutical for the program. However, we have not as of the date of this prospectus contracted with such a partner. We must perform a significant amount of additional work prior to commercializing an intraductal therapy using our microcatheters, including, for example, developing or otherwise procuring a pharmaceutical candidate alone or with partners, performing pre-clinical studies, developing a clinical trial protocol, successfully completing clinical trials and obtaining FDA approval. We may not be successful in completing any of these tasks or other steps necessary to successfully develop and launch an intraductal treatment program.

Current Operations

Our leading device, the MASCT System (which we currently refer to as the ForeCYTE Breast Aspirator), and our NAF cytology test, were launched in a "field experience" trial in 2012 and nationally in the beginning of 2013. In October 2013, we voluntarily recalled the MASCT System to address concerns raised by the FDA in a Warning Letter we received in February 2013. In December 2013, we submitted a pre-market notification to the FDA for a 510(k) clearance for the ForeCYTE Breast Aspirator, and on February 28, 2014 we received questions from the FDA regarding this submission which we are in the process of addressing as of the date of this prospectus. As a result of this recall, we are not currently marketing this product in the U.S. If we obtain clearance from the FDA, we intend to re-launch the ForeCYTE Breast Aspirator and our NAF cytology test. However, the regulatory pathway to obtaining a 510(k) clearance can be lengthy, expensive and unpredictable; we therefore cannot provide any assurances that we will receive a new 510(k) clearance for ForeCYTE Breast Aspirator or any of our other tests under development in a timely fashion or at all.

Our Voluntary Product Recall

On October 4, 2013 we initiated a voluntary recall to remove the MASCT device (which was also called the "ForeCYTE Test" prior to the recall) from the market. This voluntary recall includes the MASCT System Kit and Patient Sample Kit. The vast majority of these products (approximately ninety percent) were in inventory with our distributors and the remaining quantities were at customer sites across the United States. As of the date of this prospectus, the recall has been substantially completed.

The purpose of this voluntary recall is to address concerns raised by the FDA in a Warning Letter received by Atossa in February 2013. In that Warning Letter, the FDA raised concerns about (1) the current instructions for use, or IFU; (2) certain promotional claims used to market these devices; and (3) the need for FDA clearance for certain changes made to the NAF specimen collection process identified in the current IFU.

The MASCT device was originally cleared by the FDA for use as a sample collection device, with the provision that the fluid collected using this device can be used to determine and/or differentiate between normal, pre-malignant, and malignant cells. The MASCT device has not been cleared by the FDA for the screening or diagnosis of breast cancer. In addition, our NAF cytology test has not been cleared or approved by the FDA for any indication as the company considered this to be a Laboratory Developed Test – or within a class of tests that has historically not required a 510(k) application. Our NAF cytology test and the MASCT device are not intended to serve as a replacement for screening mammograms, diagnostic imaging tests, or biopsies. Patients are instructed to follow the recommendations and instructions of their physician with respect to breast cancer screening and diagnosis.

To date, we are unaware of any adverse incidents or injuries associated with the use of our NAF cytology test and the MASCT device or the processing method identified in the latest version of the IFU. However, there is a risk that these devices may produce false positive or false negative results. Although not cleared or intended for this use, if these devices are used as a substitute for recommended screening or diagnosis of breast cancer, the FDA is concerned that patients may choose to forgo recommended mammograms and necessary biopsies.

We submitted a new 510(k) application to the FDA on December 23, 2013 for the ForeCYTE Breast Aspirator which is intended for use in the collection of nipple aspirate fluid for cytological testing. On February 28, 2014 we received a request from the FDA to submit additional information in support of the application. We have until August 20, 2014 to respond to the FDA. We cannot market or distribute the ForeCYTE Breast Aspirator within the United States until we receive clearance for this device from the FDA.

As of December 31, 2013, we have incurred actual recall expenses of $223,750 and have recorded $211,493 as a loss contingency related to the estimated remaining costs of the recall, including the estimated costs of pursuing the additional 510(k) clearance. The recall and 510(k) process may take longer than expected; for example the FDA may require additional actions that we have not anticipated. As a result, we may incur costs that we have not anticipated. Accordingly, the actual amount of the loss contingency for the recall may be higher than we currently expect. Prior to the commencement of the recall in October 2013, substantially all of our revenue was from sales of the MASCT System and patient collection kits and from testing services performed by our laboratory. As a result of the recall of the MASCT System and patient collection kits, we have ceased generating product revenue. Our laboratory services revenue has also virtually ceased as of October 2013.

If and when we re-launch our ForeCYTE Breast Aspirator, we will incur additional sales and marketing expenses. We will need to revise our sales and marketing tools and continue hiring direct sales employees in an effort to build a regional, and ultimately national, sales force. We also expect to continue to hire clinical consultants to assist in the sale of our NAF cytology tests. The indication for use that we are seeking from the FDA for the ForeCYTE Breast Aspirator may be more limited than the indication sought in our 510(k) pre-market notification and may be more limited that the indication for the MASCT System that we previously marketed. If so, our potential sales will be negatively impacted.

Follow-up FDA Inspection

On March 14, 2014 the FDA completed a follow up inspection at our Seattle facility. A Form 483 was provided to us at the conclusion of the inspection. In the FDA's most recent Form 483, five inspectional observations were identified regarding our quality management system. The FDA inspector also verbally identified five additional discussion points related to our product labeling prior to the recall of the MASCT System; sufficiency of the content of our pending 510(k) submission for the ForeCYTE Breast Aspirator; and other compliance issues. On March 26, 2014, we submitted a response to the FDA, which included our proposed corrective actions to address the FDA's observations and discussion points. Whether the FDA will accept our response is uncertain, particularly in light of the similar nature of certain of the current inspectional observations to previous inspectional observations. If the FDA does not agree with our proposed corrective actions, or accepts them but finds that we have not implemented them adequately, or if we otherwise are found to be out of compliance with applicable regulatory requirements at a later date, the FDA could initiate an enforcement action including additional warning letters, fines and penalties. The FDA also may not clear our pending 510(k) for the ForeCYTE Breast Aspirator or our other devices and services under development. Any of the foregoing would have a material adverse effect on our business.

Recent Developments

On October 10, 2013, a putative securities class action complaint, captioned Cook v. Atossa Genetics, Inc., et al., No. 2:13-cv-01836-RSM, was filed in the United States District Court for the Western District of Washington against us, certain of our directors and officers and the underwriters of our November 2012 initial public offering. The complaint alleges that all defendants violated Sections 11 and 12(a)(2), and that we and certain of our directors and officers violated Section 15, of the Securities Act by making material false and misleading statements and omissions in the offering's registration statement, and that we and certain of our directors and officers violated Sections 10(b) and 20A of the Exchange Act and SEC Rule 10b-5 promulgated thereunder by making false and misleading statements and omissions in the registration statement and in certain of our subsequent press releases and SEC filings with respect to our NAF specimen collection process, our ForeCYTE Breast Health Test and our MASCT device. This action seeks, on behalf of persons who purchased our common stock between November 8, 2012 and October 4, 2013, inclusive, damages of an unspecified amount.

On February 14, 2014, the Court appointed plaintiffs Miko Levi, Bandar Almosa and Gregory Harrison (collectively, the "Levi Group") as lead plaintiffs, and approved their selection of co-lead counsel and liaison counsel. The Court also amended the caption of the case to read In re Atossa Genetics, Inc. Securities Litigation, No. 2:13-cv-01836-RSM. An amended complaint was filed on April 15, 2014.

We believe this lawsuit is without merit and plan to defend ourselves vigorously; however, any failure by us to obtain a favorable resolution of the claims set forth in the complaint could have a material adverse effect on our business, results of operations and financial condition. Currently, the amount of such material adverse effect cannot be reasonably estimated, and no provision or liability has been recorded for these claims as of December 31, 2013. The costs associated with defending and resolving the lawsuit and ultimate outcome cannot be predicted. These matters are subject to inherent uncertainties and the actual cost, as well as the distraction from the conduct of our business, will depend upon many unknown factors and management's view of these may change in the future.

Risk Factors

Our business is subject to numerous risks as discussed more fully in the section entitled "Risk Factors" beginning on page 11. Principal risks of our business include, but are not limited to, the following:

- our existing capital resources may only be sufficient for the next eight to twelve months and, as a result, we may face issues related to a lack of funding;
- if we are not successful, or are delayed, in obtaining a new 510(k) clearance from the FDA for our ForeCYTE Breast Aspirator, our operations will be significantly and adversely affected;
- the scope of any 510(k) clearance that we might receive from the FDA covering our ForeCYTE Breast Aspirator could be more limited than we expect, potentially limiting our ability to market the test;
- our voluntary recall and market withdrawal of the MASCT device, and any future recalls and/or product withdrawals, will significantly and adversely affect our business, prospects, financial condition and results of operations;
- we will need significant additional capital to execute our business strategy as currently contemplated and additional capital may not be available from Aspire Capital or otherwise;
- we have a history of operating losses and expect to incur losses for the foreseeable future and may never achieve profitability;
- our business may be affected by legal proceedings;
- the products and services that we have developed or may develop may never achieve significant commercial market acceptance;
- additional shares becoming available for sale on the market, for example because of the sale and subsequent resale of shares we may sell to Aspire Capital or other sources of capital, could adversely affect our stock price and could dilute our existing stockholders; and
- if our patents do not adequately protect our products, others could compete with us more directly, which would adversely affect our business.

Implications of being an Emerging Growth Company

As a company with less than $1 billion in revenue during our last fiscal year, we qualify as an "emerging growth company" as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. As an emerging growth company, we may take advantage of specified reduced disclosure and other requirements that are otherwise applicable generally to public companies. These provisions include:

- only two years of audited financial statements in addition to any required unaudited interim financial statements with correspondingly reduced "Management's Discussion and Analysis of Financial Condition and Results of Operations" disclosure;
- reduced disclosure about our executive compensation arrangements;

- not having to obtain non-binding advisory votes on executive compensation or golden parachute arrangements; and

- exemption from the auditor attestation requirement in the assessment of our internal control over financial reporting.

We may take advantage of these exemptions for up to five years from our initial public offering or such earlier time that we are no longer an emerging growth company. We would cease to be an emerging growth company if we have more than $1 billion in annual revenue, we have more than $700 million in market value of our stock held by non-affiliates, or we issue more than $1 billion of non-convertible debt over a three-year period. We may choose to take advantage of some but not all of these reduced burdens. We have taken advantage of these reduced reporting burdens in this prospectus, and the information that we provide may be different than what you might get from other public companies in which you hold stock.

Corporate Information

We were incorporated in Delaware in April 2009. Our principal executive offices are located at 1616 Eastlake Ave. East, Suite 510, Seattle, Washington 98102 and our telephone number is (800) 351-3902. Our corporate website is located at *www.atossagenetics.com* and our laboratory website is located at *www.nrlbh.com*. Information contained on, or that can be accessed through, our websites is not a part of this prospectus.

MASCT is our registered trademark and Oxy-MASCT and our name and logo are our trademarks. ForeCYTE, FullCYTE, NextCYTE, ForeCYTE Breast Aspirator and ArgusCYTE are our service marks. 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:	Up to 4,200,000 shares of Common Stock, including shares previously issued to Aspire Capital.
Common stock outstanding as of March 31, 2014:	24,428,568 shares, including shares previously issued to Aspire Capital.
Use of proceeds:	Aspire Capital will receive all of the proceeds from the sale of the shares offered for sale by it under this prospectus. We will not receive proceeds from the sale of the shares by Aspire Capital. However, we may receive up to $25 million in gross proceeds from the sale of our Common Stock to Aspire Capital under the Purchase Agreement described below, which we currently intend to use for working capital and general corporate purposes. See "Use of Proceeds."
Risk factors:	The shares offered hereby involve a high degree of risk. See "Risk Factors" beginning on page 11.
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".

Our Common Stock Purchase Agreements with Aspire Capital Fund, LLC

On March 27, 2013 we entered into a stock purchase agreement with Aspire Capital Fund, LLC, and pursuant to that agreement we have sold Common Stock to Aspire with aggregate gross proceeds to us of approximately $11.3 million. On November 8, 2013 we terminated that agreement and entered into a new stock purchase agreement with Aspire Capital.

The November 8, 2013 stock purchase agreement with Aspire Capital (the "***Purchase Agreement***") provides that, upon the terms and subject to the conditions and limitations set forth therein, Aspire Capital is committed to purchase up to an aggregate of $25 million of shares of our Common Stock (this amount is in addition to the proceeds we received from sales to Aspire Capital under the March 27, 2013 agreement with them) over the 30-month term of the agreement. Certain terms and conditions of the Purchase Agreement are described below. In connection with our January 2014 public offering we agreed not to utilize the financing arrangement with Aspire for 120 days following completion of that offering.

Concurrent with entering into the Purchase Agreement, we also entered into a registration rights agreement with Aspire Capital. The registration rights agreement provides that the Company will file one or more registration statements, as necessary, to register under the Securities Act the sale of the shares of Common Stock that have been and may be issued to Aspire Capital under the Purchase Agreement. The Company agreed to file an initial registration statement registering the sale of the shares by Aspire Capital with the SEC within 10 days of entering into the Purchase Agreement. We further agreed to keep the registration statement effective and to indemnify Aspire Capital for liabilities in connection with the sale of the shares under the terms of the registration rights agreement.

As described in more detail below, generally under the Purchase Agreement we have two ways we can elect to sell shares of Common Stock to Aspire Capital on any business day we select: (1) through a regular purchase of up to 150,000 shares (but not to exceed a value of $500,000) at a known price based on the market price of our Common Stock prior to the time of each sale, and (2) through a volume-weighted average price ("***VWAP***") purchase of a number of shares up to 30% of the volume traded on the purchase date at a price equal to the lesser of the closing sale price on the purchase date or 95% of the next business day's VWAP. Additionally, there are two milestone stock sales to Aspire Capital described below.

Under the Purchase Agreement, we issued 375,000 shares of our Common Stock (the "***Commitment Shares***") to Aspire Capital in consideration for entering into the Purchase Agreement. The SEC declared the initial registration statement effective on December 13, 2013. Accordingly, on any business day on which the closing sale price of our Common Stock equals or exceeds $0.25 per share, over the 30-month term of the Purchase Agreement, we have the right, in our sole discretion, to present Aspire Capital with a purchase notice (each, a "***Purchase Notice***") directing Aspire Capital to purchase up to 150,000 shares of our Common Stock per business day; however, no sale pursuant to such Purchase Notice may exceed $500,000 per business day. The purchase price per share (the "***Regular Purchase Price***") is the lower of (i) the lowest sale price for our Common Stock on the purchase date or (ii) the arithmetic average of the three lowest closing sale prices for our Common Stock during the 12 consecutive business days ending on the business day immediately preceding the purchase date. The applicable purchase price will be determined prior to delivery of any Purchase Notice.

In addition, on any date on which we have submitted a purchase notice to Aspire Capital in the amount of 150,000 shares, we also have the right, in our sole discretion, to present Aspire Capital with a volume-weighted average price purchase notice (each, a "***VWAP Purchase Notice***") directing Aspire Capital to purchase an amount of our Common Stock equal to a percentage (not to exceed 30%) of the aggregate shares of Common Stock traded on the next business day subject to a maximum number of shares determined by us. The purchase price per share pursuant to such VWAP Purchase Notice shall be generally the lower of (i) the closing sale price on the purchase date, and (ii) 95% of the VWAP of our Common Stock traded on the NASDAQ Capital Market on the next business day.

In addition to the regular purchase and VWAP purchase describe above, we are also obligated to sell, and Aspire Capital is obligated to purchase, $1 million worth of our Common Stock upon the occurrence each of two milestone events (each, a "***Milestone Purchase***"), for total potential proceeds to us of $2 million. The first Milestone Purchase occurred on December 23, 2013, when we filed with the FDA a premarket notification, or 510(k) application, covering the collection, preparation, and processing of nipple aspirate fluid specimens in regard to the ForeCYTE Breast Aspirator and the MASCT device. The purchase price for this milestone event was $2.00 per share with gross proceeds to us of $1 million. The second Milestone Purchase will occur upon the clearance by the FDA of the foregoing 510(k) application and the purchase price for the shares sold upon the occurrence of this Milestone Purchase is the lower of $4.00 per share or the Regular Purchase Price on the date of the event.

We have the right to sell up to $25 million of our shares of Common Stock to Aspire Capital, $1 million of which had been sold as of the date of this prospectus. We are obligated to register these shares with the SEC and have initially registered the Commitment Shares issued to Aspire Capital plus an additional 3,825,000 shares which we may sell to Aspire Capital in the future. Under the rules of the NASDAQ Capital Market, in no event may we issue more than 19.99% of our shares outstanding (which is approximately 3,528,199 shares based on 17,649,824 shares outstanding prior to the signing of the Purchase Agreement and is referred to as the "Exchange Cap") under the Purchase Agreement unless we obtain stockholder approval or an exception pursuant to the rules of the NASDAQ Capital Market is obtained to issue more than 19.99%. This limitation shall not apply if, at any time the Exchange Cap is reached and at all times thereafter, the average price paid for all shares issued and sold under the Purchase Agreement is equal to or greater than $1.98, which was the closing sale price of our Common Stock on November 7, 2013. We are not required or permitted to issue any shares of Common Stock under the Purchase Agreement if such issuance would breach our obligations under the rules or regulations of the NASDAQ Capital Market.

The number of Purchase Shares covered by, and the timing of, each purchase are determined by us, at our sole discretion; *provided*, *however*, that the Milestone sales described above are mandatory. We may deliver multiple purchase notices to Aspire Capital from time to time during the term of the Purchase Agreement, so long as the most recent purchase has been completed. There are no trading volume requirements or other restrictions under the Purchase Agreement. Aspire Capital has no right to require any sales from us, but is obligated to make purchases as directed in accordance with the Purchase Agreement.

The Purchase Agreement contains customary representations, warranties, covenants, closing conditions and indemnification and termination provisions. The Purchase Agreement may be terminated by us at any time, at our discretion, without any cost or penalty. Aspire Capital has covenanted not to cause or engage in any manner whatsoever, any direct or indirect short selling or hedging of our Common Stock. We did not pay any additional amounts to reimburse or otherwise compensate Aspire Capital in connection with the transaction other than the Commitment Shares. There are no limitations on use of proceeds, financial or business covenants, restrictions on future financings, rights of first refusal, participation rights, penalties or liquidated damages in the Purchase Agreement.

Our gross proceeds will depend on the purchase prices and the frequency of sales of shares to Aspire Capital; *provided*, *however*, that the maximum aggregate proceeds from sales of shares is $25 million. As of the date of this prospectus, we have sold $1 million of common stock to Aspire under the November 2013 agreement with them. In connection with the financing we completed on January 29, 2014, we agreed not to utilize the facility with Aspire for 120 days from that date (other than the potential milestone sale of $1 million of common stock to Aspire upon receipt of a 510(k) clearance for the ForeCYTE Breast Aspirator). The actual maximum proceeds we receive from sales of stock to Aspire Capital will depend on the price of our stock at the time of sales to Aspire Capital. Our delivery of purchase notices will be made subject to market conditions, in light of our anticipated capital needs from time to time and under the limitations contained in the purchase agreement. We expect to use proceeds from sales of shares for general corporate purposes and working capital requirements.

The issuance of the all shares to Aspire Capital under the Purchase Agreement is 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.

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 risks and uncertainties discussed in our Annual Report on Form 10-K for the fiscal year ended December 31, 2013, as updated in our Quarterly Reports on Form 10-Q. All of these risk factors are incorporated by reference herein in their entirety. 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.

USE OF PROCEEDS

The Selling Stockholder will receive all of the proceeds from the sale of the shares offered for sale by it under this prospectus. We will not receive proceeds from the sale of the shares by the Selling Stockholder. However, we may receive up to an aggregate of $25 million in proceeds from the sale of our Common Stock to the Selling Stockholder under the Purchase Agreement. We will bear all reasonable expenses incident to the registration of the shares under federal and state securities laws other than expenses incident to the delivery of the shares to be sold by the Selling Stockholder. Any transfer taxes payable on these shares and any commissions and discounts payable to underwriters, agents, brokers or dealers will be paid by the Selling Stockholder.

Assuming the sale by us of all $25 million of shares of our Common Stock to the Selling Stockholder and estimated expenses of $100,000, the total net proceeds to us under the Purchase Agreement would be $24.9 million, which we currently intend to use for general corporate purposes, including capital expenditures, re-launch of the ForeCYTE Breast Aspirator, the advancement of NextCYTE, ArgusCYTE, NAF cytology testing and our intraductal treatment program and to meet working capital needs. The amounts and timing of the expenditures will depend on numerous factors, such as if and when we are able to re-launch our ForeCYTE Breast Aspirator and our research and development efforts. We expect from time to time to evaluate the acquisition of businesses, products and technologies for which a portion of the net proceeds may be used, although we currently are not planning or negotiating any such transactions. As of the date of this prospectus, we cannot specify with certainty all of the particular uses for the net proceeds to us from the sale of shares to the Selling Stockholder. Accordingly, we will retain broad discretion over the use of these proceeds, if any.

DIVIDEND POLICY

We have has 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.

SELLING STOCKHOLDER

We have included in this prospectus 375,000 shares of Common Stock issued to the Selling Stockholder, Aspire Capital Fund, LLC, on November 8, 2013 and up to an additional 3,825,000 shares of Common Stock that may be issued in the future to Aspire Capital pursuant to the Purchase Agreement.

The following table sets forth certain information regarding the Selling Stockholder and the shares of Common Stock beneficially owned by it prior to the offering (which information is as of December 9, 2013). The Selling Stockholder may offer shares under this prospectus from time to time and may elect to sell none, some or all of the shares set forth below. As a result, we cannot estimate the number of shares of Common Stock that the Selling Stockholder will beneficially own after termination of sales under this prospectus. However, for the purposes of the table below, we have assumed that the Selling Stockholder will sell all shares covered by this prospectus.

Selling Stockholder	Shares Beneficially Owned Before Offering (1)	Percentage of Outstanding Shares Beneficially Owned Before Offering	Shares to be Sold in the Offering	Shares Beneficially Owned After Offering	Percentage of Outstanding Shares Beneficially Owned After Offering
Aspire Capital Fund, LLC (2)	886,200(3)	4.9%	4,200,000	511,200(4)	2.3%

(1) Beneficial ownership is determined in accordance with the rules and regulations of the SEC. In general, a person is deemed to be the beneficial owner of (i) any shares of our Common Stock over which such person has sole or shared voting power or investment power, plus (ii) any shares which such person has the right to acquire beneficial ownership of within 60 days, whether through the exercise of options, warrants or otherwise. The percentage of ownership set forth above assumes the sale by the Company to Aspire Capital of all shares being offered pursuant to this prospectus and is based on 18,024,824 shares of our Common Stock outstanding as of December 9, 2013, which includes the 375,000 commitment shares previously issued to Aspire Capital pursuant to the Purchase Agreement, together with securities exercisable or convertible into shares of Common Stock within 60 days of the date hereof for the Selling Stockholder, plus the additional 3,825,000 shares of Common Stock being offered pursuant to this prospectus.

(2) Steven G. Martin, Erik J. Brown and Christos Komissopoulos, who are the principals of Aspire Capital, are deemed to be beneficial owners of all of the shares of Common Stock owned by Aspire Capital. Although Messrs. Martin, Brown and Komissopoulos are deemed to have shared voting and investment power over the shares being offered under the prospectus filed with the SEC in connection with the transactions contemplated under the Purchase Agreement, each disclaims beneficial ownership of these shares except to the extent of their pecuniary interest therein. Aspire Capital is not a licensed broker dealer or an affiliate of a licensed broker dealer.

(3) As of December 9, 2013, 375,000 shares of our Common Stock have been acquired by Aspire Capital under the Purchase Agreement. The Company may elect in its sole discretion to sell to Aspire Capital up to an additional number of shares under the Purchase Agreement equal to $25 million in value, but Aspire Capital does not presently beneficially own those shares as determined in accordance with the rules of the SEC.

(4) Amount equals 886,200 shares of Common Stock less 375,000 shares of Common Stock beneficially owned before the offering that are being sold in the offering and assumes no additional sales of the remaining 511,200 shares of Common Stock.

THE ASPIRE CAPITAL TRANSACTION

General

On November 8, 2013, we entered into the Purchase Agreement, which provides that, upon the terms and subject to the conditions and limitations set forth therein, Aspire Capital is committed to purchase up to an aggregate of $25 million of shares of our Common Stock over the 30-month term of the Purchase Agreement. In consideration for entering into the Purchase Agreement, concurrently with the execution of the Purchase Agreement we issued to Aspire Capital the Commitment Shares. Concurrently with entering into the Purchase Agreement, we also entered into the registration rights agreement, in which we agreed to file one or more registration statements, as permissible and necessary to register under the Securities Act, the sale of the shares of our Common Stock that have been and may be issued to Aspire Capital under the Purchase Agreement.

As of December 9, 2013, there were 18,024,824 shares of our Common Stock outstanding, including the Commitment Shares, but excluding the additional 3,825,000 shares offered pursuant to this prospectus that may be sold to Aspire Capital pursuant to the Purchase Agreement. If all of the 4,200,000 shares of our Common Stock offered hereby were issued and outstanding as of December 9, 2013, such shares would represent approximately 19.2% of the total Common Stock outstanding or approximately 25.0% of the non-affiliate shares of Common Stock outstanding as of December 9, 2013. The number of shares of our Common Stock ultimately offered for sale by Aspire Capital is dependent upon the number of shares purchased by Aspire Capital under the Purchase Agreement.

Pursuant to the Purchase Agreement and the Registration Rights Agreement, we are registering under the Securities Act 4,200,000 shares of our Common Stock, which includes the Commitment Shares that have already been issued to Aspire Capital, as well as an additional 3,825,000 shares of Common Stock that we may issue to Aspire Capital in the future. All 4,200,000 shares of Common Stock are being offered pursuant to this prospectus.

Under the Purchase Agreement, we have the right, but not the obligation, to sell more than the 4,200,000 shares of Common Stock offered by this prospectus. The Purchase Agreement provides that the number of shares that may be sold pursuant to the Purchase Agreement shall be limited to 3,528,199, or the "Exchange Cap," which represents 19.99% of our outstanding shares as of November 8, 2013, unless shareholder approval or an exception pursuant to the rules of the NASDAQ Capital Market is obtained to issue more than 19.99%. This limitation shall not apply if, at any time the Exchange Cap is reached and at all times thereafter, the average price paid for all shares issued and sold under the Purchase Agreement is equal to or greater than $1.98, which was the closing sale price of our Common Stock on November 7, 2013. We are not required or permitted to issue any shares of Common Stock under the Purchase Agreement if such issuance would breach our obligations under the rules or regulations of the NASDAQ Capital Market. If we elect to sell more than the 4,200,000 shares of Common Stock offered hereby, we must first obtain the approval of our stockholders to do so, if necessary, and register under the Securities Act the sale of any additional shares we may elect to sell to Aspire Capital before we can put such additional shares to Aspire Capital under the Purchase Agreement.

Under the Purchase Agreement, Aspire Capital is obligated to purchase $2 million of our Common Stock in two separate $1 million Milestone Purchases. The first Milestone Purchase occurred on December 23, 2013 when we submitted a new 510(k) application to the FDA that covers the collection, preparation, and processing of NAF specimens in regard to the ForeCYTE Breast Aspirator and the MASCT device. The purchase price for this first Milestone Purchase equaled $2.00 per share with gross proceeds to us of $1 million. The second Milestone Purchase shall occur on the date of clearance by the FDA of the 510(k) Application that covers the collection, preparation, and processing of NAF specimens in regard to the ForeCYTE test and the MASCT device. The purchase price for this second Milestone Purchase shall be equal to the lower of $4.00 per share or the Regular Purchase Price on the date of clearance by the FDA of the 510(k) application.

We have the right, in our sole discretion, to present Aspire Capital with a Purchase Notice, directing Aspire Capital (as principal) to purchase up to 150,000 shares of our Common Stock per business day, up to $23 million of our Common Stock in the aggregate (not including the $2 million of our Common Stock purchased pursuant to the Milestone Purchases) at a purchase price calculated by reference to the prevailing market price of our Common Stock (as more specifically described below); however, no sale pursuant to a Purchase Notice may exceed $500,000 per trading day.

In addition, on any date on which (1) we submit a Purchase Notice to Aspire Capital in an amount equal to 150,000 shares and (2) the closing sale price of our Common Stock exceeds $0.50, we also have the right, in our sole discretion, to present Aspire Capital with a VWAP Purchase Notice directing Aspire Capital to purchase an amount of stock equal to up to 30% of the aggregate shares of the Company's Common Stock traded on the NASDAQ Capital Market on the purchase date, subject to the VWAP Purchase Share Volume Maximum and the VWAP Minimum Price Threshold. The VWAP Purchase Price is calculated by reference to the prevailing market price of our Common Stock (as more specifically described below).

The Purchase Agreement provides that in no event will any shares of Common Stock be sold on any date that the closing sale price of our Common Stock is less than $0.25 (the "***Floor Price***"). This Floor Price and the respective prices and share numbers in the preceding paragraphs shall be appropriately adjusted for any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split or other similar transaction. Additionally, the Purchase Agreement provides that the Company and Aspire Capital shall not effect any sales under the Purchase Agreement if such shares proposed to be issued and sold, when aggregated with all other shares of the Company's Common Stock that Aspire Capital and its affiliates beneficially own, would result in Aspire Capital and its affiliates beneficially owning more than 19.99% of the Company's then issued and outstanding Common Stock.

There are no trading volume requirements or restrictions under the Purchase Agreement, and we will control the timing and amount of any sales of our Common Stock to Aspire Capital. Aspire Capital has no right to require any sales by us, but is obligated to make purchases from us as we direct in accordance with the Purchase Agreement. There are no limitations on use of proceeds, financial or business covenants, restrictions on future financings, rights of first refusal, participation rights, penalties or liquidated damages in the Purchase Agreement. The Purchase Agreement may be terminated by us at any time, at our discretion, without any penalty or cost to us. The rights and obligations of Aspire Capital under the Purchase Agreement are not assignable or transferable.

Purchase of shares under the Purchase Agreement

Under the Purchase Agreement, on any trading day selected by us on which the closing price of our Common Stock is not less than $0.25 per share, we may direct Aspire Capital to purchase up to 150,000 shares of our Common Stock per trading day so long as sales pursuant to such Purchase Notice do not exceed $500,000 per trading day. The purchase price of such shares (*i.e.*, the Regular Purchase Price) is equal to the lesser of:

- the lowest sale price of our Common Stock on the purchase date; or

- the arithmetic average of the three lowest closing sale prices for our Common Stock during the twelve consecutive trading days ending on the trading day immediately preceding the purchase date.

In addition, on any date on which (1) we submit a Purchase Notice to Aspire Capital in an amount equal to 150,000 shares and (2) the closing sale price of our Common Stock is higher than $0.50 per share, we also have the right to direct Aspire Capital to purchase an amount of stock equal to up to 30% of the aggregate shares of the Company's Common Stock traded on the NASDAQ Capital Market on the purchase date, subject to the VWAP Purchase Share Volume Maximum and the VWAP Minimum Price Threshold, which is equal to the greater of (a) 90% of the closing price on the NASDAQ Capital Market on the business day immediately preceding the VWAP Purchase Date or (b) such higher price as set forth by the Company in the VWAP Purchase Notice. The VWAP Purchase Price of such shares is the lower of:

- the closing sale price on the VWAP Purchase Date; or

- 95% of the volume-weighted average price for our Common Stock traded on the NASDAQ Capital Market during normal trading hours:

    a. on the VWAP Purchase Date, if the aggregate shares traded on the NASDAQ Capital Market have not exceeded the VWAP Purchase Share Volume Maximum; or

    b. the portion of the VWAP Purchase Date until such time as the sooner to occur of (i) the time at which the aggregate shares traded on the NASDAQ Capital Market has exceeded the VWAP Purchase Share Volume Maximum or (ii) the time at which the sale price of the Common Stock falls below the VWAP Minimum Price Threshold.

The Purchase Price will be adjusted for any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split or other similar transaction occurring during the period(s) used to compute the Regular Purchase Price. We may deliver multiple Purchase Notices and VWAP Purchase Notices to Aspire Capital from time to time during the term of the Purchase Agreement, so long as the most recent purchase has been completed.

Minimum Share Price

Under the Purchase Agreement, the Company and Aspire Capital may not effect any sales of shares of our Common Stock on any trading day that the closing sale price of our Common Stock is less than $0.25 per share.

Compliance with the NASDAQ Capital Market Price

The Purchase Agreement provides that the number of shares that may be sold pursuant to the Purchase Agreement shall be limited to 3,528,199, or the Exchange Cap, which represents 19.99% of our outstanding shares as of November 8, 2013, unless shareholder approval or an exception pursuant to the rules of the NASDAQ Capital Market is obtained to issue more than 19.99%, to be in compliance with the applicable listing maintenance rules of the NASDAQ Capital Market. This limitation shall not apply if, at any time the Exchange Cap is reached and at all times thereafter, the average price paid for all shares issued and sold under the Purchase Agreement is equal to or greater than $1.98, which was the closing sale price of our Common Stock on November 7, 2013. We are not required or permitted to issue any shares of Common Stock under the Purchase Agreement if such issuance would breach our obligations under the rules or regulations of the NASDAQ Capital Market.

Beneficial Ownership Limitation

Under the Purchase Agreement, we and Aspire Capital may not effect any sales of shares of our Common Stock if such shares proposed to be issued and sold, when aggregated with all other shares of our Common Stock beneficially owned by Aspire Capital and its affiliates, would result in the beneficial ownership by Aspire Capital and its affiliates of more than 19.99% of our then issued and outstanding shares of Common Stock.

Events of Default

Generally, Aspire Capital may terminate the Purchase Agreement upon the occurrence of any of the following events of default:

- the effectiveness of any registration statement that is required to be maintained effective pursuant to the terms of the registration rights agreement between us and Aspire Capital lapses for any reason (including, without limitation, the issuance of a stop order) or is unavailable to Aspire Capital for sale of our shares of Common Stock, and such lapse or unavailability continues for a period of ten consecutive business days or for more than an aggregate of thirty business days in any 365-day period, which is not in connection with a post-effective amendment to any such registration statement; provided, however, that in connection with any post-effective amendment to such registration statement that is required to be declared effective by the SEC, such lapse or unavailability may continue for a period of no more than twenty consecutive business days, which such period shall be extended for an additional thirty business days if we receive a comment letter from the SEC in connection therewith;

- the suspension from trading or failure of our Common Stock to be listed on a Principal Market (as defined in the Purchase Agreement) for a period of three consecutive business days;

- the delisting of our Common Stock from the NASDAQ Capital Market, provided our Common Stock is not immediately thereafter trading on the New York Stock Exchange, the NASDAQ Global Select Market, the NASDAQ Global Market, the NYSE MKT, the OTC Bulletin Board or the OTCOB or OTCOX market places of the OTC markets;

- our transfer agent's failure to issue to Aspire Capital shares of our Common Stock which Aspire Capital is entitled to receive under the Purchase Agreement within five business days after an applicable purchase date;

- any breach by us of the representations, warranties, covenants or other term or condition contained in the Purchase Agreement or any related agreements that would reasonably be expected to have a material adverse effect except, in the case of a breach of a covenant which is reasonably curable, only if such breach continues for a period of at least five business days;

- if at any time the issuance of shares of Common Stock upon the submission of a Purchase Notice or VWAP Purchase Notice under the Purchase Agreement would result in the issuance of an aggregate of number of shares of Common Stock that would exceed the number of shares of Common Stock that we may issue under this agreement without breaching our obligations under the rules or regulations of the NASDAQ Capital Market;

- if we become insolvent or are generally unable to pay our debts as they become due; or

- any participation or threatened participation in insolvency or bankruptcy proceedings by or against us.

Our Termination Rights

The Purchase Agreement may be terminated by us at any time after the completion of both Milestone Purchases, at our discretion, without any cost to us.

No Short-Selling or Hedging by Aspire Capital

Aspire Capital has agreed that neither it nor any of its agents, representatives and affiliates shall engage in any direct or indirect short-selling or hedging, which establishes a net short position with respect to our Common Stock during any time prior to the termination of the Purchase Agreement.

Effect of Performance of the Purchase Agreement on Our Stockholders

The Purchase Agreement does not limit the ability of Aspire Capital to sell any or all of the 4,200,000 shares registered in this offering. It is anticipated that shares registered in this offering will be sold over a period of up to approximately 30 months from the date we entered into the Purchase Agreement. The sale by Aspire Capital of a significant amount of shares registered in this offering at any given time could cause the market price of our Common Stock to decline or to be highly volatile. Sales to Aspire Capital by us pursuant to the Purchase Agreement also may result in dilution to the interests of other holders of our Common Stock. However, we have the right to control the timing and amount of sales of our shares to Aspire Capital, and the Purchase Agreement may be terminated by us at any time at our discretion without any penalty or cost to us.

Amount of Potential Proceeds to be Received under the Purchase Agreement

In connection with entering into the Purchase Agreement, we authorized the sale to Aspire Capital of up to $25 million of shares of our Common Stock. However, we estimate that we will sell no more than 4,200,000 shares to Aspire Capital under the Purchase Agreement (inclusive of the Commitment Shares), all of which are included in this offering. Subject to any required approval by our Board of Directors and our stockholders, we have the right but not the obligation to issue more than the 4,200,000 shares included in this prospectus to Aspire Capital under the Purchase Agreement. In the event we elect to issue more than 4,200,000 shares under the Purchase Agreement, we will be required to file a new registration statement and have it declared effective by the SEC. The number of shares ultimately offered for sale by Aspire Capital in this offering is dependent upon the number of shares purchased by Aspire Capital under the Purchase Agreement. The following table sets forth the number and percentage of outstanding shares to be held by Aspire Capital after giving effect to the sale of shares of Common Stock issued to Aspire Capital covered by the registration statement, and irrespective of any applicable Exchange Cap, of which this prospectus is a part at varying purchase prices in addition to the Commitment Shares.

Assumed Average Purchase Price of the Additional Shares Sold Under the Purchase Agreement	Number of Additional Shares to be Sold if Full Purchase (1)	Percentage of Outstanding Shares After Giving Effect to the Aspire Capital Transaction (2)	Proceeds from the Sale of Shares to Aspire Capital Under the Purchase Agreement
$ 0.25	3,825,000	17.51%	$ 956,250
$ 1.00	3,825,000	17.51%	$ 3,825,000
$ 2.00	3,825,000	17.51%	$ 7,650,000
$ 4.00	3,825,000	17.51%	$ 15,300,000
$ 6.00	3,825,000	17.51%	$ 22,950,000
$ 8.00	3,125,000	14.78%	$ 25,000,000
$ 10.00	2,500,000	12.18%	$ 25,000,000
$ 12.00	2,083,333	10.36%	$ 25,000,000
$ 14.00	1,785,714	9.01%	$ 25,000,000

(1) Based on total aggregate sales of the lesser of (a) $25 million of shares of Common Stock and (b) the 3,825,000 additional Purchase Shares registered herein. Excludes the Commitment Shares.

(2) The denominator is based on 18,024,824 shares outstanding on December 9, 2013, plus the number of shares set forth in the adjacent column which we would have sold to Aspire Capital at the assumed price in the first column. The numerator is based on the number of shares which we would have sold under the Purchase Agreement at the corresponding assumed purchase price set forth in the first column and assuming a maximum of $25 million of shares are sold to Aspire Capital.

PLAN OF DISTRIBUTION

The shares may be sold or distributed from time to time by the Selling Stockholder directly to one or more purchasers or through brokers, dealers, or underwriters who may act solely as agents at market prices prevailing at the time of sale, at prices related to the prevailing market prices, at negotiated prices, or at fixed prices, which may be changed. The sale of the shares offered by this prospectus may be effected in one or more of the following methods:

- ordinary brokers' transactions;
- transactions involving cross or block trades;
- through brokers, dealers, or underwriters who may act solely as agents;
- "at the market" into an existing market for the Common Stock;
- in other ways not involving market makers or established business markets, including direct sales to purchasers or sales effected through agents in privately negotiated transactions; or any combination of the foregoing.

In order to comply with the securities laws of certain states, if applicable, the shares may be sold only through registered or licensed brokers or dealers. In addition, in certain states, the shares may not be sold unless they have been registered or qualified for sale in the state or an exemption from the registration or qualification requirement is available and complied with.

The Selling Stockholder may also sell shares of Common Stock under Rule 144 promulgated under the Securities Act, if available, rather than under this prospectus. In addition, the Selling Stockholder may transfer the shares of Common Stock by other means not described in this prospectus.

Brokers, dealers, underwriters, or agents participating in the distribution of the shares as agents may receive compensation in the form of commissions, discounts, or concessions from the Selling Stockholder and/or purchasers of the Common Stock for whom the broker-dealers may act as agent. The Selling Stockholder has informed us that each such broker-dealer will receive commissions from Aspire Capital which will not exceed customary brokerage commissions.

The Selling Stockholder and its affiliates have agreed not to engage in any direct or indirect short selling or hedging of our Common Stock during the term of the Purchase Agreement.

The Selling Stockholder is an "underwriter" within the meaning of the Securities Act.

We have advised Selling Stockholder that while it is engaged in a distribution of the shares included in this prospectus it is required to comply with Regulation M promulgated under the Exchange Act. With certain exceptions, Regulation M precludes the Selling Stockholder, any affiliated purchasers, and any broker-dealer or other person who participates in the distribution from bidding for or purchasing, or attempting to induce any person to bid for or purchase any security which is the subject of the distribution until the entire distribution is complete. Regulation M also prohibits any bids or purchases made in order to stabilize the price of a security in connection with the distribution of that security. All of the foregoing may affect the marketability of the shares offered hereby this prospectus.

We may suspend the sale of shares by Aspire Capital pursuant to this prospectus for certain periods of time for certain reasons, including if the prospectus is required to be supplemented or amended to include additional material information.

This offering will terminate on the date that all shares offered by this prospectus have been sold by the Selling Stockholder.

CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS

The following is a description of transactions since January 1, 2011 to which we have been a party, in which the amount involved exceeds 1% of our average total assets for the last two completed fiscal years, and in which any of our directors, executive officers or holders of more than 5% of our capital stock, or an affiliate or immediate family member thereof, had or will have a direct or indirect material interest. We believe the terms obtained or consideration that we paid or received, as applicable, in connection with the transactions described below were comparable to terms available or the amounts that would be paid or received, as applicable, from unaffiliated third parties.

Employment Agreements

On January 4, 2013, we entered into an employment agreement with Kyle Guse, our Chief Financial Officer and General Counsel that provides for an annual base salary of $225,000 and a target bonus of up to 40% of his then-current base salary. On March 20, 2014, we entered into a letter agreement with Ben Chen, our Senior Vice President Global Regulatory Affairs and Quality Assurance, that provides for an annual base salary of $280,000 and a target bonus of up to 20% of his then-current base salary. Mr. Chen's employment commenced April 1, 2014.

Share-Based Compensation

The bonuses payable to Drs. Quay and Chen, our Chief Executive Officer and Chief Scientific Officer, respectively, for their service in fiscal 2012, in the amount of $72,590 and $43,554, respectively, were paid on March 11, 2013 in the form of fully-vested options. Dr. Quay received an option to purchase 44,194 shares of Common Stock at $6.57 per share, the fair market value of our Common Stock on the date of grant, and Dr. Chen received an option to purchase 26,516 shares at $6.57 per share, the fair market value of our Common Stock on the date of grant.

On April 30, 2012, 19,757 non-qualified stock options were granted under the 2010 Stock Option and Incentive Plan to Stephen J. Galli, a non-employee director, for serving as a director of the Company, at an exercise price of $6.00 per share. These options have a ten-year term and shall vest and become exercisable in full immediately as of the grant date.

On January 4, 2013, an option to purchase 500,000 shares of Common Stock at an exercise price of $4.11 per share was granted to Kyle Guse in connection with his commencement of employment with us. The option vests with respect to 25% of the underlying shares upon the first anniversary of the date of grant and then with respect to the remaining shares quarterly thereafter over the next three years.

On May 7, 2013, an option to purchase 40,030 shares of Common Stock at an exercise price of $6.595 per share was granted to Stephen Galli for prior service on the board of directors. The option was fully vested and exercisable on the date of grant. Also on May 7, 2013, an option to purchase 40,030 shares of Common Stock at an exercise price of $6.595 per share was granted to Stephen Galli for future service on the board of directors. The option vests and becomes exercisable with respect to 25% of the underlying shares quarterly over one year from the date of grant.

On May 7, 2013, an option to purchase 41,243 shares of Common Stock at an exercise price of $6.595 per share was granted to Alexander Cross for prior service on the board of directors. The option was fully vested and exercisable on the date of grant. Also on May 7, 2013, an option to purchase 41,243 shares of Common Stock at an exercise price of $6.595 per share was granted to Alexander Cross for future service on the board of directors. The option vests and becomes exercisable with respect to 25% of the underlying shares quarterly over one year from the date of grant.

On May 7, 2013, an option to purchase 44,882 shares of Common Stock at an exercise price of $6.595 per share was granted to John Barnhart for prior service on the board of directors. The option was fully vested and exercisable on the date of grant. Also on May 7, 2013, an option to purchase 44,882 shares of Common Stock at an exercise price of $6.595 per share was granted to John Barnhart for future service on the board of directors. The option vests and becomes exercisable with respect to 25% of the underlying shares quarterly over one year from the date of grant. This option ceased vesting on February 28, 2014 when Mr. Barnhart retired from the Board of Directors.

On June 4, 2013, an option to purchase 60,000 shares of Common Stock at an exercise price of $4.31 per share was granted under the 2010 Stock Option and Incentive Plan to Mr. Guse in lieu of a signing and relocation bonus payable to him by the Company. The option vested and became exercisable upon the achievement of certain performance goals by the Company.

On October 10, 2013, 24,510 shares of restricted stock that vest quarterly over one year from October 10, 2013, as well as an option to purchase 57,190 shares of Common Stock was granted under the 2010 Stock Option and Incentive Plan to Gregory Weaver for serving as director of the Company through the 2014 annual meeting of stockholders, at an exercise price of $2.04 per share. The option vests and becomes exercisable in three equal installments between the date of grant and the 2014 annual meeting of stockholders.

On January 8, 2014, an option to purchase 140,000 shares of Common Stock was granted to Mr. Guse at an exercise price of $2.20 per share. The option vests quarterly over four years.

On March 1, 2014, we became obligated to issue 22,728 shares of restricted stock that vest quarterly over one year from March 1, 2014, and we issued an option to purchase 16,484 shares of Common Stock, which were granted under the 2010 Stock Option and Incentive Plan to Richard Steinhart for serving as a director of the Company through the 2014 annual meeting of stockholders, at an exercise price of $2.20 per share. The option vests and becomes exercisable at the 2014 annual meeting of stockholders.

On April 1, 2014, an option to purchase 300,000 shares of Common Stock was granted to Mr. Chen at an exercise price of $1.69 per share. The option vests with respect to 25% of the underlying shares at the end of the first year of employment and quarterly thereafter over the following three years.

Indemnification Agreements

The Company has entered into indemnification agreements with each of its directors and its executive officers. These agreements require the Company to indemnify these individuals to the fullest extent permitted under Delaware law against liabilities that may arise by reason of their service to the Company, and to advance expenses incurred as a result of any proceeding against them as to which they could be indemnified.

Related Party Transaction Policies

Related party transactions that the Company is required to disclose publicly under the federal securities laws will require prior approval of the Company's independent directors without the participation of any director who may have a direct or indirect interest in the transaction in question. Related parties include directors, nominees for director, principal stockholders, executive officers and members of their immediate families. For these purposes, a "transaction" will include all financial transactions, arrangements or relationships, ranging from extending credit to the provision of goods and services for value and will include any transaction with a company in which a director, executive officer immediate family member of a director or executive officer, or principal stockholder (that is, any person who beneficially owns five percent or more of any class of the Company's voting securities) has an interest by virtue of a 10% or greater equity interest. The Company's policies and procedures regarding related party transactions are not expected to be a part of a formal written policy, but rather, will represent a course of practice determined to be appropriate by the Board of Directors of the Company.

PRINCIPAL STOCKHOLDERS

The following table sets forth information as of March 31, 2014 regarding the beneficial ownership of our Common Stock by each of our executive officers and directors, individually and as a group and by each person who beneficially owns in excess of five percent of the Common Stock after giving effect to any exercise of warrants or options held by that person within 60 days after March 31, 2014. Unless indicated otherwise, the address for the beneficial holders is c/o Atossa Genetics Inc., 1616 Eastlake Ave. E., Suite 510, Seattle, Washington, 98102.

Name of Beneficial Owner	Shares Beneficially Owned	Percentage of Common Stock Beneficially Owned (1)
Steven C. Quay, M.D., Ph.D. (2)	5,041,052	20.4%
Shu-Chih Chen, Ph.D. (3)	4,394,831	17.9%
Kyle Guse (4)	225,000	*
Stephen Galli, M.D. (5)	143,661	*
H. Lawrence Remmel, Esq. (6)	4,000	*
Gregory Weaver (7)	91,700	*
Richard Steinhart (8)	39,212	*
All Current Officers and Directors as a Group (7 persons)	5,671,141	22.4%

* Less than 1%

(1) Based on 24,428,568 shares of Common Stock issued and outstanding as of March 31, 2014.

(2) Consists of (i) 478,543 shares of Common Stock directly owned by Dr. Quay, (ii) 4,268,315 shares of Common Stock owned by Ensisheim and (iii) 294,194 shares of Common Stock issuable upon the exercise of stock options held by Dr. Quay and exercisable within 60 days after March 31, 2014. Drs. Quay and Chen share voting and investment power over the securities held by Ensisheim. Ensisheim is solely owned and controlled by Drs. Quay and Chen, and, as a result, Drs. Quay and Chen are deemed to be beneficial owners of the shares held by this entity.

(3) Consists of (i) 4,268,315 shares of Common Stock owned by Ensisheim and (ii) 126,516 shares of Common Stock issuable upon the exercise of stock options held by Dr. Chen and exercisable within 60 days after March 31, 2014. Drs. Quay and Chen share voting and investment power over the securities held by Ensisheim. Ensisheim is solely owned and controlled by Drs. Quay and Chen, and, as a result, Drs. Quay and Chen are deemed to be beneficial owners of the shares held by this entity.

(4) Consists of 225,000 shares of Common Stock issuable upon the exercise of stock options held by Mr. Guse and exercisable within 60 days of March 31, 2014.

(5) Consists of 17,674 shares of Common Stock held by Dr. Galli and 125,987 shares of Common Stock issuable upon the exercise of stock options held by Dr. Galli and exercisable within 60 days of March 31, 2014.

(6) Consists of 2,000 shares of Common Stock held by Mr. Remmel and 2,000 shares of Common Stock held by Mr. Remmel's spouse. Mr. Remmel disclaims beneficial ownership of the 2,000 shares of Common Stock held by his spouse.

(7) Consists of 34,510 shares of Common Stock held by Mr. Weaver and 57,190 shares of Common Stock issuable upon exercise of stock options held by Mr. Weaver and exercisable within 60 days of March 31, 2014.

(8) Consists of 22,728 shares of Common Stock issuable to Mr. Steinhart and 16,484 shares of Common Stock issuable upon exercise of stock options held by Mr. Steinhart and exercisable within 60 days of March 31, 2014.

DESCRIPTION OF SECURITIES TO BE REGISTERED

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

As of March 31, 2014, there were approximately 42 record holders of the Company's Common Stock. The number of shares of our Common Stock outstanding as of March 31,2014 is 24,428,568, which excludes the following as of March 31, 2014:

- 1,812,405 shares of Common Stock issuable upon the exercise of options outstanding under our 2010 Stock Option and Incentive Plan, or 2010 Plan;
- 897,617 shares of Common Stock reserved for future issuance under our 2010 Plan;
- 768,000 shares of Common Stock issuable upon exercise of options granted outside of our 2010 Plan as inducement grants;
- 4,292,050 shares of Common Stock issuable upon exercise of warrants with an exercise price of $1.60 per share;
- 325,000 shares of Common Stock issuable upon the exercise of warrants with an exercise price of $5.00 per share;
- 47,500 shares of Common Stock issuable upon the exercise of a warrant with an exercise price of $4.25 per share;
- 1,341,874 shares of Common Stock issuable upon exercise of warrants at an exercise price of $3.00 per share; and
- 67,000 shares of Common Stock issuable to a placement agent in connection with warrants issued into 2013 with exercise prices ranging from $2.12 to $12.43 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 condition 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.

Transfer Agent and Registrar

We have appointed VStock Transfer, LLC, 77 Spruce Street, Suite 201, Cedarhurst, New York 11516 (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 Ropes & Gray LLP, San Francisco, California.

EXPERTS

KCCW Accountancy Corp., an independent PCAOB registered public accounting firm, has audited the Company's consolidated balance sheets as of December 31, 2013 and 2012 and the related consolidated statements of operations, stockholders' equity, and cash flows for the years then ended and since inception (April 30, 2009), which are incorporated by reference in this prospectus. The consolidated financial statements are included in reliance on the report of KCCW Accountancy Corp., given their authority as experts in accounting and auditing.

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 for the year ended December 31, 2013, filed with the SEC on March 27, 2014;
- portions of our definitive Proxy Statement on Schedule 14A, filed with the SEC on April 11, 2014; and
- our current reports on Form 8-K filed with the SEC on January 24, 2014, February 5, 2014 and March 5, 2014.

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., 1616 Eastlake Ave. E., Suite 510, Seattle, Washington, 98102, telephone: (800) 351-3902. Copies of the above reports may also be accessed from our web site at *http://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.

Up to 4,200,000 shares of Common Stock

ATOSSA GENETICS INC.

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.

	Amount to be paid ($)
SEC registration fee	1,077
Printing expense	2,000
Legal fees and expenses	25,000
Accounting fees and expenses	5,000
Transfer Agent Fees	1,000
Miscellaneous Fees	5,923
Total	40,000

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 of 1933:

Between April 2011 and June 2011, the Company issued a total of 5,256,800 shares of the Company's Common Stock and warrants to purchase up to an additional 5,256,800 shares of Common Stock at a price of $1.25 per share, for aggregate gross proceeds of $6,571,000 (the "***Private Placement***"). All purchasers in the Private Placement were accredited investors, as defined under Regulation D under the Securities Act, and this offering was exempt from registration under Rule 506 under the Securities Act. In connection with the completion of the Private Placement, the Company issued Common Stock warrants to Dawson James Securities ("***Dawson James***"), the placement agent for the Private Placement, representing the right to purchase up to 788,520 shares of Common Stock at a price of $1.25 per share, plus the right to purchase up to 788,520 additional shares of Common Stock at a price of $1.60 per share. The issuance of the warrants to Dawson James was exempt from registration under Section 4(a)(2) of the Securities Act, as a transaction by an issuer not involving a public offering.

On April 30, 2012, 19,757 non-qualified stock options were granted under the 2010 Stock Option and Incentive Plan to non-employee directors for serving as directors of the Company, at an exercise price of $6.00 per share. We claimed exemption from registration under the Securities Act for these issuances under Rule 701 promulgated under the Securities Act, in that they were offered and sold either pursuant to written compensatory plans or pursuant to a written contract relating to compensation, as provided by Rule 701.

On September 30, 2012, in connection with its acquisition of substantially all of the assets of Acueity Healthcare, Inc. ("***Acueity***"), the Company issued to the stockholders of Acueity 862,500 shares of Common Stock and warrants to purchase up to 325,000 shares of Common Stock at an exercise price of $5.00 per share, subject to a six-month lock up agreement. The warrants, which have a five-year term, do not have a cashless exercise provision. The shares and warrants were issued as consideration for the assets acquired from Acueity to manufacture, use and sell a number of diagnostic tools, including: the Viaduct Miniscope and accessories, the Manoa Breast Biopsy system, the Excisor Bioptome, the Acueity Medical Light Source, the Viaduct Microendoscope and accessories. We also acquired cash in the amount of $400,000. The microendoscopes are less than 0.9 mm outside diameter and can be inserted into a milk duct. This permits a physician to pass a microendoscope into the milk duct system of the breast and view the duct system via fiberoptic video images. Abnormalities that are visualized can then be biopsied from inside the duct with the biopsy tools that are inserted adjacent to the microendoscope. Based on a recent periodic review of the Acueity patent estate, these tools are covered by 15 issued patents (13 U.S. patents, one U.K. patent and one German patent). The issuance of the shares and the warrants was exempt from registration under Section 4(a)(2) of the Securities Act, as a transaction by an issuer not involving a public offering. The Common Stock was valued at $5.00 per share and the warrants were valued at $2.3457 per warrant.

On December 20, 2012, the Company issued an option to purchase 200,000 shares of its Common Stock to Christopher Destro as an inducement grant for the employment of Mr. Destro as the Company's Vice President of Sales and Marketing. The option is exercisable at $4.11 per share which was the fair market value on the date of grant. 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 January 4, 2013, the Company issued options to purchase 500,000 shares of its Common Stock, exercisable at $4.11 per share which was the fair market value on the date of grant, to Kyle Guse as an inducement grant for the employment of Mr. Guse as the Company's Chief Financial Officer, General Counsel and Secretary. 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 January 13, 2013, the Company issued a warrant to purchase 60,000 shares of Common Stock to a consultant as compensation for services to the Company. The warrant has an exercise price of $4.25 per share which was the fair market value of the Company's Common Stock on the date of grant. The warrant has a net-exercise feature and it vests monthly over one year so long as the consultant continues to provide services to the Company. 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 January 24, 2013, the Company issued 32,186 shares of Common Stock to consultants as compensation for the performance of services to the Company. The aggregate value of shares issued was $143,550, or $4.46 per share, the fair market value of the Company's Common Stock on the date of issuance. 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 February 25, 2013 the Company issued 1,081,782 shares of Common Stock and on February 28, 2013 the Company issued 139,971 shares of Common Stock, each upon exercise of outstanding warrants. These warrants were exercised on a "net" basis without additional consideration received by the Company. These warrants were originally issued in 2011 in connection with the Company's private placement to accredited investors pursuant to Rule 506 of Regulation D under the Act. 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 March 27, 2013 we entered into a stock purchase agreement with Aspire Capital Fund, LLC, and pursuant to that agreement we have sold common stock to Aspire with aggregate gross proceeds to us of approximately $11.3 million. 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 through November 2013, as placement agent fees in connection with the March 31, 2013 stock purchase agreement with Aspire Capital, we issued warrants to Dawson James Securities, or its designee, to purchase a total of 67,000 shares of common stock at exercise prices ranging from $2.12 to $12.43 per share. 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 June 3, 2013, the Company issued options to purchase 250,000 shares of its Common Stock, exercisable at $4.58 per share which was the fair market value on the date of grant, to Peter Carbonaro as an inducement grant for the employment of Mr. Carbonaro 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 November 8, 2013 the 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 is committed to purchase up to an aggregate of $25 million of shares of the Company's Common Stock over the 30-month term of the agreement. Under the agreement, on November 8, 2013, 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 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.

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:

(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 a 20 percent 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) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser: 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.

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 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 whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, 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 Post-Effective Amendment No. 1 to the 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 April 18, 2014.

Atossa Genetics Inc.

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

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Steven C. Quay, M.D., Ph.D. and Kyle Guse as attorneys-in-fact, with power of substitution, in any and all capacities, to sign any and all amendments and post-effective amendments to this registration statement, and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that said attorneys-in-fact, or their substitute or substitutes, may do or cause to be done by virtue thereof.

Pursuant to the requirements of the Securities Act of 1933, this Post-Effective Amendment No. 1 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)	April 18, 2014
/s/ Kyle Guse **Kyle Guse**	Chief Financial Officer, General Counsel and Secretary (Principal Financial and Accounting Officer)	April 18, 2014
* **Shu-Chih Chen, Ph.D.**	Director	April 18, 2014
* **Stephen J. Galli, M.D.**	Director	April 18, 2014
* **H. Lawrence Remmel**	Director	April 18, 2014
* **Gregory L. Weaver**	Director	April 18, 2014
/s/ Richard Steinhart **Richard I. Steinhart**	Director	April 18, 2014

*By: /s/ Steven C. Quay
Attorney-in-fact

EXHIBIT INDEX

Exhibit No.	Description	Incorporated by Reference Herein	
		Form	Date
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	Certificate of Incorporation of Atossa Genetics Inc.	Registration Statement on Form S-1, as Exhibit 3.2	June 11, 2012
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
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	Registration Rights 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 4.1	November 12, 2013
4.6	Form of Warrant Agreement from January 2014 Public Offering	Current Report on Form 8-K, as Exhibit 4.1	January 20, 2014
4.7	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
5.1	Opinion of Ropes & Gray LLP	Registration Statement on Form S-1/A, as Exhibit 5.1	December 11, 2013
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	Registration Statement on Form S-1, as Exhibit 10.6	June 11, 2012
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	Sublease Agreement with CompleGen, Inc. dated September 29, 2010	Registration Statement on Form S-1, as Exhibit 10.11	February 14, 2012
10.10	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
10.11#	Form of Restricted Stock Award Agreement	Registration Statement on Form S-1, as Exhibit 10.13	June 11, 2012
10.12	Business Consultant Agreement with Edward Sauter	Registration Statement on Form S-1, as Exhibit 10.16	February 14, 2012
10.13	Prototype Development Proposal and Terms and Conditions, between the Company and HLB, LLC	Registration Statement on Form S-1, as Exhibit 10.17	February 14, 2012
10.14	Office Lease with Sander Properties, LLC, dated March 4, 2011	Registration Statement on Form S-1, as Exhibit 10.20	April 6, 2012
10.15	Office Lease with Sander Properties, LLC, dated July 8, 2011	Registration Statement on Form S-1, as Exhibit 10.21	April 6, 2012
10.16	Office Lease with Sander Properties, LLC, dated September 20, 2011	Registration Statement on Form S-1, as Exhibit 10.22	April 6, 2012
10.17	Sublease with Fred Hutchinson Cancer Research Center, dated December 9, 2011	Registration Statement on Form S-1, as Exhibit 10.23	April 6, 2012
10.18	Promissory Note — Line of Credit, effective November 3, 2010, by and between the Company and Steven C. Quay	Registration Statement on Form S-1, as Exhibit 10.24	May 21, 2012
10.19†	Term Sheet for License Agreement between the Company and Inven2 AS	Registration Statement on Form S-1, as Exhibit 10.25	June 25, 2012
10.20†	Agreement between the Company and Accellent Inc., dated August 8, 2011	Registration Statement on Form S-1, as Exhibit 10.26	June 25, 2012
10.21†	Supply Agreement between the Company and Biomarker LLC, dated June 24, 2011	Registration Statement on Form S-1, as Exhibit 10.27	June 18, 2012
10.22†	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
10.23	Agreement between the Company and Biomarker LLC, dated June 22, 2012	Registration Statement on Form S-1, as Exhibit 10.29	June 25, 2012
10.24	Form of Investor Lock-Up Agreement	Registration Statement on Form S-1, as Exhibit 10.30	August 30, 2012
10.25†	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

10.26	Employment Agreement between the Company and Kyle Guse dated January 4, 2013#	Registration Statement on Form S-1, as Exhibit 10.31	January 28, 2013
10.27	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
10.28	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
10.29	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
10.30	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
10.31	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
10.32	Common Stock 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
10.33	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
10.34	Offer Letter Agreement dated March 20, 2014 between the Company and Ben Chen#	Filed herewith	
21.1	List of Subsidiaries	Registration Statement on Form S-1, as Exhibit 21.1	October 4, 2012
23.1	Consent of KCCW Accountancy Corp.	Filed herewith	
23.2	Consent of Ropes & Gray LLP (included in Exhibit 5.1)	Registration Statement on Form S-1/A, as Exhibit 5.1	December 11, 2013
24.1	Powers of Attorney	Included on the signature page in Part II of this Registration Statement on Form S-1	

# 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 the Registration Statement and submitted separately to the Securities and Exchange Commission.

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

Exhibit 10.34

March 20, 2014
Ben Chen

Re: Offer of Employment
Re: Revised to reflect the full time start date, no signature required.

Dear Ben,

I would like to formally extend you an offer of employment as followed:

Starting date: 4/1/2014, starting 20 hours per week till May 31st, 2014. Beginning June 23rd as a full time employee.
Title: Senior VP of Global Regulatory Affairs and Quality Assurance
Location: currently at 1616 Eastlake Avenue East, Seattle, WA 98102
Duties: See attached
Starting salary: **$280,000** per annum, paid twice a month.
Report to: CEO
Health and Dental Insurance: 25% of premium paid by employee starting June 1st, 2014.
Equity: An option to 300,000 shares of Atossa Genetics common stock at the closing stock price on the later of the date approved by the board or your first date of employment which vests over four years of employment, 25% at the end of the first year and quarterly after that. The option is subject to the terms and condition of our option plan.
Bonus: Up to 20% of prorated annual salary for the months worked based on the performance review on goals and objectives set following employment.
PTO: 120 hour of accrual paid time off per year, subject to reset annually on March 31st the following year or per company policy.
Benefit: a 4% matching 401k with a 365 day waiting period.
Relocation: per relocation policy attached.
Parking: paid parking
Sick/Holiday: per Seattle Paid Sick Day policy, and 10 holidays per Atossa holiday calendar.

Your employment is contingent upon successful completion of reference checks and a background investigation.

> *Candidate is not currently nor in the past year employed with, nor does Candidate have any consultancy or other relationship with, any distributor of Atossa Genetics, Inc.'s products and services nor any competitor of Atossa Genetics, Inc. Candidate is not a party to any agreement or is otherwise restricted in accepting an employment or consultancy position with Atossa Genetics, Inc.*

This is an At Will employment position, and the first three months of your employment will be an introductory period to evaluate if your skill set and performance meet the requirements.

We truly look forward to meeting you and to working with you to help us build Atossa into a great company.

Regards,

/S/ Steve Quay

Steven C. Quay, MD, PhD, FCAP
CEO and President
cc: Shu-Chih Chen, PhD, Chief Scientific Officer, HR Director

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the use in this Post-Effective Amendment No. 1 to Form S-1 Registration Statement of Atossa Genetics Inc. (a development stage company) of our report dated March 26, 2014 relating to the consolidated financial statements as of and for the years ended December 31, 2013 and 2012 appearing in the Prospectus, which is part of this Registration Statement. We also consent to the reference to us under the heading "Experts" in such Prospectus.

/s/ KCCW Accountancy Corp.

Diamond Bar, California
April 17, 2014

KCCW Accountancy Corp.
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