June 18, 2012

Via EDGAR and Overnight Delivery

Amanda Ravitz
U.S. Securities and Exchange Commission
100 F Street, N.E.
Mail Stop 3030
Washington, D.C. 20549

Re: Atossa Genetics Inc.
Amendment No. 3 to Registration Statement on Form S-1
Filed June 11, 2012
File No. 333-179500

Dear Ms. Ravitz:

On behalf of Atossa Genetics Inc. ("***Atossa***" or the "***Company***"), we are responding to the Staff's letter dated June 11, 2012 (the "***Comment Letter***"), relating to the above-referenced Amendment No. 3 to Registration Statement on Form S-1 (the "***Registration Statement***"). In response to the comments set forth in the Comment Letter, the Registration Statement has been amended and Atossa is filing pre-effective Amendment No. 4 to the Registration Statement ("***Amendment No. 4***") with this response letter. For your convenience, we have repeated the Staff's comments below in bold face type before each of our responses below. The numbered paragraphs of this letter correspond to the numbered paragraphs of the Comment Letter. References to "we," "our" or "us" mean the Company or its advisors, as the context indicates.

Prospectus Cover Page

1. Please revise your disclosure throughout to fully reflect the type of underwriting. If this is an "all or nothing" type of best efforts underwriting, please indicate this on the cover page. If the underwriting is a "best efforts" no minimum offering, revise throughout to reflect this by indicating various scenarios, based upon various possible levels of proceeds, such as 25%, 50% and 100%. Your revisions should also give investors a clear picture of the risks associated with the type of underwriting, if any. For example, if the underwriting type is a no minimum best efforts offering, your disclosure must make clear that the company may receive minimal proceeds, and the stock may be illiquid. This impacts your disclosure on the cover page, use of proceeds, dilution, capitalization and plan of distribution.

As previously described in our telephonic conversations with the Staff, the offering is on a "best efforts" basis with no minimum offering amount. The Company has accordingly revised its disclosure on the front and back cover pages and in the "Use of Proceeds," "Dilution" and "Plan of Distribution" sections to reflect a "best efforts" no minimum offering and to clarify that the Company may not sell all 1,000,000 shares and may raise substantially less proceeds than currently contemplated. The revisions also clarify the mechanics of the proposed offering (i.e., that only one closing will occur within four days of pricing, that the Company will not accept funds from investors until the closing date, that investors will not be required to enter into subscription agreements, etc.) (see the front cover page of the prospectus and "Plan of Distribution" on page 87). We have also expanded our disclosures to more clearly identify the risks to investors of the "no-minimum" nature of the offering on pages 5 and 19. In light of guidance from the Division of Corporate Finance's Financial Reporting Manual indicating that pro forma capitalization tables may not reflect the receipt of offering proceeds in a "best efforts" no minimum offering, the Company has elected not to include a "Capitalization" section. Additionally, the Company has decided not to grant an over-allotment option to the placement agent and all references to the over-allotment option have been removed from the prospectus. We have made all necessary conforming changes to the form of placement agent agreement and are re-filing the form of placement agent agreement as Exhibit 1.1 to Amendment No. 4.

2. Please remove the name of the placement agent from the cover page.

In response to the Staff's comment, the Company has removed the name of the placement agent from the bottom of the front cover page and from the back cover page. The Company has retained the name of the placement agent in the second to last paragraph of the front cover page, but without giving the name any prominence in the form of bold or larger font. The Company respectfully submits that including the name of the placement agent on the front cover provides meaningful disclosure to the potential investors and that disclosing the name of the placement agent on the front cover page is consistent with Item 501 of Regulation S-K.

The Company, page 1

3. We note your response to prior comment 3. Please revise throughout the prospectus to clarify the extent to which the technologies underlying your products are patented and the extent to which these technologies are not patented. For example, we note that the text of Exhibit 10.25 implies that the technologies underlying your NextCYTE Test are not patented.

The Company acknowledges the Staff's comment and directs the Staff to the "Intellectual Property" section of the Registration Statement on page 53, which indicates the number of issued and pending U.S. patents, as well as the number of issued and pending foreign patents, with respect to the various technologies underlying the Company's products. The intellectual property chart on page 53 currently correctly states that the Company owns one pending Foreign/PCT application for NextCYTE. The technology which is the basis of Exhibit 10.25 is intended to augment the Company's existing technology. In response to the Staff's comment, the Company has also revised its disclosure on pages 3, 32, 44, 48, F-19, and F-41 to reflect the extent to which technologies underlying its products are patented or not.

Our Diagnostic tests, page 2

4. We note that you have revised your disclosure in response to prior comment 4 to state that your FullCYTE Breast Health Test analyzes "the samples by molecular and cellular biomarkers, in a fashion similar to the ForeCYTE test." Please revise to clarify specifically how your FullCYTE Breast Health Test differs from your ForeCYTE test, clarify what your FullCYTE laboratory tests detect and identify the molecular and biomarkers that are analyzed and how they are analyzed to ascertain the individual duct that contains the pre-malignant or malignant changes. Please also clarify how your various tests differ from traditional biopsies and may allow a physician to better target treatment.

In response to the Staff's comment, the Company has revised its disclosure on pages 3 and 44 to clarify how the FullCYTE tests differs from the ForeCYTE test, what the FullCYTE test detects and how the Company's tests differ from traditional biopsies.

5. We note your response to prior comment 3. Please revise to clarify how you are developing the NextCYTE technology given that it appears that the University of Oslo owns this technology. Please also revise to describe the research you are conducting to verify the superiority of the technology regarding the NextCYTE Breast Cancer Test and describe any results of this research, including any negative results. For example, please revise to clarify if you or anyone involved with the NextCYTE Breast Cancer Test are conducting clinical trials and the results of any such clinical trials.

As mentioned in the Company's response to Comment 3 above, the Company owns one pending Foreign/PCT application for NextCYTE. The Company also has an option to license additional technology from the University of Oslo that augments the Company's existing technology. The Company has revised its disclosure to clarify this, as described in more detail in the Company's response to Comment 3 above. Additionally, the Company has revised pages 3 and 44 to describe the research it is conducting on the NextCYTE test.

Management's Discussion and Analysis…, page 27
Critical Accounting Policies and Estimates, page 29

6. Please revise to provide a critical accounting policy for inventory that includes a discussion of significant judgments required in recording the lower of cost or market adjustments and how you determine market value for purposes of applying lower of cost or market accounting to inventory. We see that the sales price of your MASCT System is substantially lower than its cost. Please refer to FRR-72.

In response to the Staff's comment, the Company has included a discussion of its inventory policy on pages 28 and 29.

Results of Operations, page 34
Comparison of the Three Months Ended March 31, 2012 and 2011…, page 35

7. We reference the disclosure that revenue for the three months ended March 31, 2012 consisted of sales of your MASCT System and ForeCYTE test. Please revise to disclose the amount of revenue associated with product sales and services from the MASCT and ForeCYTE test. Please also clarify whether the revenue generated from ForeCYTE is entirely related to testing services rather than sales of the ForeCYTE kit.

In response to the Staff's comment, the Company has revised its disclosure accordingly on pages 34 and 35. The Company also advises the Staff that the revenue generated from ForeCYTE was entirely related to testing services.

8. As a related matter, you disclose that cost of goods sold consisted of $7,760 in *direct costs* related to the production of the MASCT systems. Since you wrote off inventory to zero in the prior period, please tell us the nature of these direct costs.

The Company acknowledges the Staff's comment and advises the Staff that these direct costs are the cost of MASCT Systems sold during the quarter as automated by the Company's accounting system. Because the Company wrote off inventory to zero in the prior period, the $7,760 associated with the cost of MASCT Systems sold during the quarter should be reclassified to loss on reduction of inventory to lower of cost or market. Consistent with the Company's response to Comment 13 below, the Company has revised its statement of operations for the three months ended March 31, 2012 to reflect such reclassification for proper presentation. The related disclosure in the Registration Statement has also been revised accordingly.

9. Since you record inventory at net realizable value, which you have determined to be zero, please revise to disclose the impact on gross margin of the sales of inventory written down with no corresponding cost of goods sold in each period presented.

In response to the Staff's comment, the Company has revised its disclosure accordingly on pages 34 and 35.

The FullCYTE Breast Health Test, page 47

10. We note your response to prior comment 2 and your statement that you have studied the use of the FullCYTE microcatheter in six patients. Please revise to describe this study and its results, including any negative results.

The Company has revised its disclosure on page 47 to describe the study of the FullCYTE microcatheter in six patients in more detail and to note that results of such study will not be available until the fourth quarter of 2012.

Plan of Distribution, page 87

11. We note the placement agent agreement filed as Exhibit 1.1 to your most recent amendment. Please revise to ensure that this section describes the material terms of the offering process, including without limitation the length of the offering period, the materials to be provided to investors and any right to reject subscriptions. To the extent that you intend to use a subscription agreement in this offering, please file the agreement as an exhibit with your next amendment.

The Company has revised the "Plan of Distribution" section to describe the material terms of the "best efforts" no minimum offering and has also revised Exhibit 1.1 accordingly.

Consolidated Financial Statements for the three months ended March 31, 2012
Consolidated Statements of Operations, page F-2

12. Please revise to separately present sales and cost of goods sold of products and services to provide transparent disclosure and enhance an investor's understanding of the nature of the revenues recorded each period.

In response to the Staff's comment, the Company has revised its financial statements accordingly.

13. We reference your response to comment 11 and our telephone conversation on June 12, 2012. We understand that you write down inventory to zero in the period purchased and the cost of goods sold related to the MASCT System in the statements of operations is an allocation of the lower of cost or market adjustment for inventory purchased during the period rather than the direct costs of MASCT Systems sold during the period. Please revise to reclassify the allocated cost of goods sold to loss on reduction of inventory to lower of cost or market.

In response to the Staff's comment, the Company has revised its financial statements accordingly.

14. As a related matter, please revise to reclassify the cost of the ForeCYTE kits that you provide to customers at no cost to selling or general and administration expenses.

In response to the Staff's comment, the Company has revised its financial statements to reclassify the cost of goods sold back to the loss on lower of cost or market adjustment line item.

Note 3. Inventories, pages F-6 and F-28

15. Consistent with your response to comment 11, please revise your accounting policy for inventory to accurately reflect your accounting for the MASCT inventory, including how you determine the lower of cost or market adjustment each period. Your revised disclosure should also include a discussion of your accounting for the ForeCYTE kits, including how you account for the cost of the kits that you provide to customers free of charge.

In response to the Staff's comment, the Company has revised its disclosure accordingly.

Exhibit 10.27

16. We note the disclosure in Section 7.1 that the AdnaTest kits and supplies are not approved by the FDA and must not be used for diagnostic purposes. Given that it appears that these kits and suppliers are used for the ArgusCYTE test, please tell us and clarify throughout your disclosure whether these kits and supplies have received FDA approval.

The Company advises the Staff that the ArgusCYTE Breast Health Test has been registered with the FDA since 2011. The blood collection system is 510(k) exempt, but the registration assures the FDA that the Company has set specifications for the medical device and that the Company is assuring the FDA that the device is manufactured under current good manufacturing practices. The laboratory testing portion of the ArgusCYTE test has been validated as a Laboratory Developed Test in the Company's CLIA-certified laboratory. The Company has revised its disclosure on pages 2 and 44 to clarify this.

For the Staff's convenience, we have enclosed a marked copy of Amendment No. 4 indicating the revisions made in response to the Staff's comments.

Sincerely,
/s/ Lisa M. Kahle
Lisa M. Kahle