



VIA EDGAR

James Pennington
+1 858 550 6029
jpennington@cooley.com

June 28, 2018

United States Securities and Exchange Commission
Division of Corporation Finance
Mail Stop 3030
100 F Street, N.E.
Washington, D.C. 20549
Attn: Amanda Ravitz

**Re: Bionano Genomics, Inc.
Amendment No. 1 to
Draft Registration Statement on Form S-1
Submitted June 12, 2018
CIK No. 0001411690**

Dear Ms. Ravitz:

On behalf of Bionano Genomics, Inc. ("**Bionano**" or the "**Company**"), we are responding to the comments (the "**Comments**") of the staff (the "**Staff**") of the Securities and Exchange Commission (the "**Commission**") contained in its letter, dated June 26, 2018 (the "**Comment Letter**"), relating to the above referenced confidential draft Registration Statement on Form S-1 (the "**Amended DRS**").

In response to the Comments set forth in the Comment Letter, the Company has revised the Amended DRS and is publicly filing via EDGAR a revised Registration Statement on Form S-1 (the "**Registration Statement**") with this response letter.

For ease of reference, set forth below are the Company's responses to the Comments. The numbering of the paragraphs below corresponds to the numbering of the Comments, which for your convenience we have incorporated into this response letter. Page references in the text of this response letter correspond to the page numbers of the Registration Statement. Capitalized terms used in this letter but not otherwise defined herein shall have the meanings set forth in the Registration Statement.

Staff Comments and Company Responses

Overview, page 1

1. *It appears from your response to comment 3 that your beliefs regarding cost-effectiveness of your products are based on your expectations rather than existing facts. If so, please revise to disclose the basis of your beliefs. Also, tell us whether "small variations" and "large variations" are industry terms of art. In this regard, it is unclear whether sequencing systems could detect "large variations," given the number of base pairs you indicate in your response.*

Response: The Company respectfully advises the Staff that the following facts are the basis for its belief that its products are cost-effective:

Cooley LLP 4401 Eastgate Mall San Diego, CA 92121
t: (858) 550-6000 f: (858) 550-6420 cooley.com

United States Securities and Exchange
Commission
June 28, 2018
Page Two

- a) Saphyr provides a comprehensive list of large variations (greater than 500 base pairs each) across a whole human genome for approximately \$500.
- b) Illumina is broadly recognized throughout the industry for offering cost-effective products for the detection of variations less than 1,000 base pairs. Those products provide such detection for \$1,000 per whole human genome.

In addition, the Company respectfully advises the Staff that the terms “small variations” and “large variations” are not industry terms of art.

Large variations, as the Company describes them, include those that are between 500 base pairs and entire chromosomal arms (up to around 100 million base pairs). The sequencing systems that represent nearly the entire sequencing industry (Illumina’s systems) can reliably detect only an extremely limited subset of large variations – specifically only those between 500 base pairs and 1,000 base pairs. The base pairs within the large variations detected by Illumina represent a very small fraction of the base pairs within all large variations in a human genome.

2. *We note your response to comment 4. Please revise to disclose the significance to your business of each of the customers named in your disclosure.*

Response: The Company respectfully advises the Staff that the purpose of the Company’s disclosure of the named customers is to (i) identify notable examples of its customers that are well-known in the Company’s industry and (ii) reflect that the Company’s customer base is comprised of a broad range of types of companies and institutions. The Company respectfully submits that the existing disclosure in the immediately preceding sentence discloses the significance of these customers to the Company’s business in that it states that the Company’s customers include “some of the world’s most prominent clinical, translational research, basic research, academic and government institutions as well as leading pharmaceutical and diagnostic companies.”

3. *Please expand your revisions in response to comment 5 to clarify how the market data in your submission reflects the research use only designation of your product. Also, we note the revisions regarding laboratory developed tests. Please tell us how regulatory approval of laboratory developed tests would impact your addressable market, and revise your disclosure to briefly describe any regulatory uncertainty regarding laboratory developed tests.*

Response: The Company respectfully acknowledges the Staff’s comment with respect to the research use only designation of its product. Accordingly, the Company has updated the references to the market data regarding high throughput sequencers on pages 1, 66 and 68 of the Registration Statement to clarify that this data is related to research use only high throughput sequencers.

With respect to the SECs comment as it relates to how regulatory approval of laboratory developed tests (“LDTs”) will impact the Company’s addressable market, the Company does not believe that regulatory approval of LDTs would impact the addressable market, which is comprised of the 2,500 clinical cytogenetics labs existing worldwide. However, the Company respectfully acknowledges that regulatory uncertainty regarding LDTs could delay the Company’s ability to sell its products to this addressable market and has revised the risk factor disclosure on page 23 of the Registration Statement accordingly.

Cooley LLP 4401 Eastgate Mall San Diego, CA 92121
t: (858) 550-6000 f: (858) 550-6420 cooley.com

United States Securities and Exchange
Commission
June 28, 2018
Page Three

Market Opportunity, page 2

4. *We note your response to comment 6. Please tell us whether any of the installed base of high throughput sequencers are marketed as other than research use only.*

Response: The Company respectfully advises the Staff that the installed base of 6,000 high throughput sequencers are marketed for research use only, and has updated the disclosure on pages 1, 66 and 68 of the Registration Statement accordingly.

Use of Proceeds, page 46

5. *We note your response to comment 10 regarding possible “more specific determinations” about the use of proceeds. Please expand to clarify whether you intend to quantify the amount of proceeds to be used for each of the purposes to which you refer.*

Response: The Company respectfully acknowledges the Staff’s comment and advises the Staff that, prior to the completion of the offering, it does not anticipate being able to make specific determinations as to the amount of proceeds to be used for each of the purposes to which it refers.

Capitalization, page 48

6. *We note your response to comment 11 but also note that the amounts presented in the capitalization table do not sum up to \$(20,522,150). Please correct the presentation in your next amendment.*

Response: The Company respectfully acknowledges the Staff’s comment and has revised the presentation in the capitalization table on page 48 of the Registration Statement.

Comparison of the Three Months Ended March 31, 2017 and 2018, page 56

7. *Please revise to clarify and quantify how changes in volume of instruments and consumables sold affected your results for the three months ended March 31, 2018 compared to the same period in 2017.*

Response: The Company respectfully acknowledges the Staff’s comment and will revise the next amendment of the Registration Statement accordingly.

Comparison of the Years Ended December 31, 2016 and 2017, page 57

8. *Please revise your disclosure in response to comment 12 to provide quantifications of revenue increases in volume and price as well as the growth rate in revenue from sales of instruments versus consumables.*

Response: The Company respectfully acknowledges the Staff’s comment and has revised page 58 of the Registration Statement.

Cooley LLP 4401 Eastgate Mall San Diego, CA 92121
t: (858) 550-6000 f: (858) 550-6420 cooley.com



United States Securities and Exchange
Commission
June 28, 2018
Page Four

Principle Stockholders, page 109

9. *While we note your revisions in note 1 in response to comment 19, those revisions appear to refer only to who disclaims beneficial ownership rather than who has beneficial ownership. Please revise to identify the natural persons who have or share voting and/or investment power over the referenced shares.*

Response: The Company respectfully acknowledges the Staff's comment and has revised page 110 of the Registration Statement.

Note 2. Summary of Significant Accounting Policies, page F-8

Revenue Recognition, page F-10

10. *We note that your response to comment 22 appears to only address software upgrades and indicates that this is deemed incidental to the hardware. However, the disclosure on page 80 indicates that performance enhancements will be delivered on a regular basis through software and hardware upgrades. Please revise further to disclose your accounting for hardware upgrades.*

Response: The Company respectfully acknowledges the Staff's comment and has revised page F-10 of the Registration Statement.

The Company respectfully requests the Staff's assistance in completing the review of the Registration Statement as soon as possible. Please advise us if we can provide any further information or assistance to facilitate your review. Please direct any further comments or questions regarding the Registration Statement or this response letter to me at (858) 550-6029.

Sincerely,

Cooley LLP

/s/ James Pennington

James Pennington

cc: R. Erik Holmlin, Ph.D., Bionano Genomics, Inc.

Cooley LLP 4401 Eastgate Mall San Diego, CA 92121
t: (858) 550-6000 f: (858) 550-6420 cooley.com