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VIA EDGAR

July 13, 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.
Registration Statement on Form S-1
Filed June 28, 2018
File No. 333-225970**

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 July 12, 2018 (the "**Comment Letter**"), relating to the above referenced Registration Statement on Form S-1 (the "**Registration Statement**").

In response to the Comments set forth in the Comment Letter, the Company has revised the Registration Statement and is publicly filing via EDGAR an Amended Registration Statement on Form S-1 (the "**Amended 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 Amended Registration Statement. Capitalized terms used in this letter but not otherwise defined herein shall have the meanings set forth in the Amended Registration Statement.

Staff Comments and Company Responses

Overview, page 1

1. *We note your response to prior comment 2. Please revise to disclose the amount of revenue received from each of the customers you mention.*

Response: The Company respectfully acknowledges the Staff's comment and has revised pages 1 and 66 of the Registration Statement.

Use of Proceeds, page 46

2. *Please expand your response to prior comment 5 to clarify why you will be unable to identify the amount to be used for each purpose disclosed. Otherwise, revise to provide the approximate amount intended to be used for each purpose you disclose. Refer to Item 504 of Regulation S-K.*

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Page Two

Response: The Company respectfully acknowledges the Staff's comment and has revised page 46 of the Registration Statement.

Results of Operations, page 56

3. *It appears from your revisions in response to prior comment 7 that product volume decreased for the period ended March 31, 2018. If so, quantify and explain the reasons for the decrease.*

Response: The Company respectfully acknowledges the Staff's comment and has revised page 56 of the Registration Statement with respect to the financial information as of the interim period ended June 30, 2018.

Government Regulation, page 84

4. *We note your response to prior comment 3. Please revise your disclosure to discuss the regulatory requirements regarding laboratory developed tests and how these regulatory requirements differ when the tests are developed wholly or partly outside of the laboratory that offers them. Also address in your disclosure whether you have pursued or intend to pursue regulatory approval prior to sale to cytogenetics labs.*

Response: The Company respectfully acknowledges the Staff's comment and has revised page 86 of the Registration Statement.

The Company respectfully requests the Staff's assistance in completing the review of the Amended 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 Amended 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.

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