May 7, 2018

Irene Paik
Ada D. Sarmento
Office of Healthcare and Insurance
Division of Corporation Finance
Securities and Exchange Commission
100 F Street, N.E.
Washington, D.C. 20549

Re: Magenta Therapeutics, Inc.
Draft Registration Statement on Form S-1
Confidentially Submitted on March 28, 2018
CIK No. 0001690585

Dear Ms. Paik and Ms. Sarmento:

On behalf of our client, Magenta Therapeutics, Inc. (the "***Company***"), we are responding to the comments from the Staff (the "***Staff***") of the Securities and Exchange Commission (the "***Commission***") relating to the Company's confidential draft Registration Statement on Form S-1 (the "***Draft Registration Statement***") contained in the Staff's letter dated April 24, 2018 (the "***Comment Letter***"). In response to the comments set forth in the Comment Letter, the Company has revised the Draft Registration Statement and is confidentially submitting a revised draft of the Draft Registration Statement (the "***Amended DRS***") together with this response letter. The Amended DRS also contains certain additional updates and revisions. We are also sending, under separate cover, a copy of the Amended DRS (including exhibits) and four marked copies of the Amended DRS showing the changes to the Draft Registration Statement confidentially submitted on March 28, 2018.

Set forth below are the Company's responses to the Staff's comments in the Comment Letter. The responses and information below are based on information provided to us by the Company. For convenience, the Staff's comments are repeated below in italics, followed by the Company's response to the comments as well as a summary of the responsive actions taken. We have included page numbers to refer to the location in the Amended DRS submitted herewith where the revised language addressing a particular comment appears. Capitalized terms used but not defined herein are used herein as defined in the Amended DRS.

Draft Registration Statement on Form S-1 submitted March 28, 2018

Prospectus Summary, page 1

1. We note your statements here and in the Business section that your product candidates are first-in-class and that you are developing first-in-class therapeutics. These statements imply an expectation of regulatory approval and are inappropriate given the early stage of development. Please remove or revise these statements.

Response to Comment No. 1: The Company acknowledges the Staff's comment and respectfully advises the Staff that it has removed the phrase "first-in-class" from the Amended DRS.

2. Please disclose here and in the Business section the details of your active IND for MGTA-456, such as the date of filing, the sponsor, the subject matter and the status. Please include similar disclosure with respect to the EMA or any other drug regulatory authorities.

Response to Comment No. 2: The Company acknowledges the Staff's comment and respectfully advises the Staff that it has revised the Amended DRS on pages 6 and 103 to reflect the requested details of our active IND for MGTA-456.

Clinical History of MGTA-456, page 1

3. For each of the clinical trials discussed in this section, to the extent that you have not already done so, please disclose the dates that such trials were conducted, where they were conducted, the number of participants, the method by which your products were administered, all serious adverse effects observed, primary and secondary endpoints and the results of any completed trials.

Response to Comment No. 3: The Company acknowledges the Staff's comment and respectfully advises the Staff that it has revised its disclosure on pages 123 and 124 of the Amended DRS to further clarify the details of the clinical trials discussed.

Our Current Product Pipeline, page 4

4. Please include a column for Phase III in your product pipeline chart on pages 4 and 97. It does not appear that you have selected a development candidate yet for your C100, C200, C300, E478 or G100 programs. If this is the case, please remove these programs from your pipeline chart. If you have not identified a product candidate for these programs, it is premature to include them in a product pipeline table.

Response to Comment No. 4:

With respect to the first part of the Staff's comment, the Company respectfully advises the Staff that it has revised the pipeline chart on pages 4 and 101 of the Amended DRS.

With respect to the second part of the Staff's comment, the Company respectfully advises the Staff that it has revised the pipeline chart and related disclosure on pages 4 and 101 of the Amended DRS to clarify that such chart is intended to summarize both the

Company's clinical and pre-clinical efforts. The Company has also revised its pipeline chart to clarify for readers that the table refers to the Company's product candidates as well as the high-priority areas of focus of the Company's most advanced discovery efforts where development candidates have not yet been identified. While we have not yet selected a development candidate for our C100, C200, C300, E478 and G100 programs, the Company believes this information is important to investors in light of our efforts to provide transplant patients with integrated treatment options as well as our planned use of proceeds, and therefore appropriate to include in the pipeline chart as revised.

Risk Factors
Clinical development involves a lengthy and expensive process..., page 19

5. We note your disclosure on page 20 that the FDA imposed a partial clinical hold on the cryopreserved part of the protocol covered by the IND application for MGTA-456 until Novartis demonstrated comparability between the fresh and cryopreserved product. Please provide additional information regarding the comparability study that caused the FDA to remove the partial clinical hold, such as the results Novartis needed to achieve in order for the FDA to determine that the comparability study was successful. Please also revise the Business section to disclose when MGTA-456 was placed on a partial clinical hold by the FDA and when the partial clinical hold was lifted.

Response to Comment No. 5: The Company acknowledges the Staff's comment and respectfully advises the Staff that it has revised its disclosure on pages 21 and 124 of the Amended DRS.

Use of Proceeds, page 70

6. We note that you intend to use the net proceeds from this offering to fund the development of MGTA-145, including a first-in-human study and proof-of-concept trial. Please revise your disclosure to clarify whether the net proceeds will be sufficient to complete the first-in-human study and proof-of-concept trial. If any material amounts of other funds are necessary to accomplish these specified purposes, state the amounts and sources of such other funds needed for each such specified purpose and the sources thereof. Refer to Instruction 3 to Item 504 of Regulation S-K.

Response to Comment No. 6: The Company acknowledges the Staff's comment and respectfully advises the Staff that it has revised its disclosure on page 71 of the Amended DRS to further clarify our intended use of proceeds in connection with the development of MGTA-145.

Management's Discussion and Analysis of Financial Condition and Results of Operations Critical Accounting Policies and Significant Judgments and Estimates Stock-Based Compensation, page 85

7. Once you have an estimated offering price or range, please explain to us the reasons for any differences between the recent valuations of your common stock leading up to the IPO and the estimated offering price. This information will help facilitate our review of your

accounting for equity issuances including stock compensation and beneficial conversion features.

Response to Comment No. 7: The Company acknowledges the Staff's comment and respectfully advises the Staff that it will supplementally provide an analysis explaining the differences in valuations once it has a preliminary estimated offering price range.

Emerging Growth Company Status, page 91

8. At this time, you must make your choice whether to opt out of the transition period for complying with new or revised accounting standards pursuant to Section 107 (b)(1) of the JOBS Act. Please indicate your choice in your next amendment.

Response to Comment No. 8: The Company acknowledges the Staff's comment and respectfully advises the Staff that it has revised its disclosure on pages 65 and 95 of the Amended DRS.

9. Please supplementally provide us with copies of all written communications, as defined in Rule 405 under the Securities Act, that you, or anyone authorized to do so on your behalf, present to potential investors in reliance on Section 5(d) of the Securities Act, whether or not they retain copies of the communications.

Response to Comment No. 9: The Company acknowledges the Staff's comment and respectfully advises the Staff that it will supplementally provide copies of all written communications, as defined in Rule 405 under the Securities Act, whether or not recipients retain copies of the communications.

Business, page 92

10. Please define "SEM" and "PBMC" at first use. In addition, where you first provide p-values, please explain for the benefit of the lay reader the significance of p-values and clarify the threshold p-value that corresponds to statistical significance.

Response to Comment No. 10: The Company acknowledges the Staff's comment and respectfully advises the Staff that it has revised its disclosure on pages 112, 113 and 119 of the Amended DRS.

Hematopoietic Stem and Progenitor Cell Number in Bone Marrow, page 108

11. Please define "PBS" and "ns" as used in this table.

Response to Comment No. 11: The Company acknowledges the Staff's comment and respectfully advises the Staff that it has revised its disclosure on page 113 of the Amended DRS.

C300 Program, page 112

12. Please define CFU-GM in the chart on page 114 and clarify what each of the colored lines represents. It is not clear from the legend in the top right corner.

Response to Comment No. 12: The Company acknowledges the Staff's comment and respectfully advises the Staff that it has revised its disclosure on page 119 of the Amended DRS.

Alliance with Novartis, page 135

13. We note your disclosure that Novartis is entitled to receive tiered mid-single digit to "double digit royalties" under the license agreement. Please revise your disclosure to narrow the royalty range of the highest tier of royalty to no more than ten percentage points.

Response to Comment No. 13: The Company acknowledges the Staff's comment and respectfully advises the Staff that it has revised its disclosure on page 142 of the Amended DRS. Additionally, the Company advises the Staff that it will subsequently revise its confidential treatment request under separate cover to address this comment.

Harvard University License Agreement, page 136

14. Please revise to disclose to which of your product candidates or programs the license from Harvard University relates.

Response to Comment No. 14: The Company acknowledges the Staff's comment and respectfully advises the Staff that it has revised its disclosure on page 143 of the Amended DRS.

Narrative to Summary Compensation Table, page 168

15. We note your disclosure that you have entered into offer letters with each of your named executive officers. Please file these offer letters as exhibits or tell us why you believe that you are not required to do so pursuant to Item 601(b)(10) of Regulation S-K.

Response to Comment No. 15: The Company acknowledges the Staff's comment and respectfully advises the Staff that prior to effectiveness of the Registration Statement, the Company intends to enter into new employment agreements with its named executive officers that supersede and replace their existing offer letters in all respects. The Company undertakes to update the Registration Statement with appropriate disclosure regarding such new employment agreements, and to file such agreements as exhibits prior to the effectiveness of the Registration Statement.

General

16. Please provide us proofs of all graphics, visual, or photographic information you will provide in the printed prospectus prior to its use, for example in a preliminary prospectus. Please note that we may have comments regarding this material.

Response to Comment No. 16: The Company acknowledges the Staff's comment and respectfully advises the Staff that the graphics included in the Draft Registration Statement are the only graphics the Company intends to use. If the Company decides to use additional graphics, it will provide those graphics to the Staff for its review.

Should you have any further comments or questions with regard to the foregoing, please contact the undersigned at 617-570-1447.

Sincerely,

/s/ William D. Collins
William D. Collins

Enclosures

cc: Jason Gardner, *Magenta Therapeutics, Inc.*
Zoran Zdraveski, *Magenta Therapeutics, Inc.*
Mitchell S. Bloom, *Goodwin Procter LLP*
Deanna L. Kirkpatrick, *Davis Polk & Wardwell LLP*