May 24, 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.
Amendment No. 1 to Draft Registration Statement on Form S-1
Confidentially Submitted on May 7, 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 Amendment No. 1 to Draft Registration Statement on Form S-1 (the "***Draft Registration Statement***") contained in the Staff's letter dated May 16, 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 publicly filing its Registration Statement on Form S-1 (the "***Registration Statement***") together with this response letter. The Registration Statement also contains certain additional updates and revisions. We are also sending, under separate cover, a copy of the Registration Statement (including exhibits) and four marked copies of the Registration Statement showing the changes to the Draft Registration Statement confidentially submitted on May 7, 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 Registration Statement 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 Registration Statement.

Amendment No. 1 to Draft Registration Statement on Form S-1

Prospectus Summary
Our Current Program Pipeline, page 4

1. *We note your response to our prior comment 4. Please remove C100, C200, C300, E478 and G100 from the pipeline table. We do not object to a discussion of each program below the table, but research and discovery activities that precede the identification of a product candidate are too remote to be highlighted in the pipeline table.*

Response to Comment No. 1: The Company acknowledges the Staff's comment and respectfully advises the Staff that the Company made adjustments on pages 4, 101, and 102 of the Registration Statement to address the Staff's request by further clarifying that C100, C200, C300, E478 and G100 are early stage development programs. Specifically, we:

- Separated and differentiated the relevant graphics to reflect the separation between our preclinical development programs on the one hand and our IND-enabling and clinical stage programs on the other. To highlight this distinction, we inserted additional lead-in disclosure about the intent of the graphic to appropriately orient the reader. In addition, each graphic has its own sub-header to reinforce the distinction between our preclinical development programs and IND-enabling and clinical-stage product candidates.
- Revised the header of the graphic to clarify that we are disclosing our current programs across all stages of maturity (instead of a more developed product pipeline), as we believe it is important for investors to understand the scope of our current and potential product candidates from our discovery programs given the potentially integrated nature of our future offerings to patients.
- Retained the asterisked information in the graphic from our May 7, 2018 confidential submission to clarify for readers that the graphic covers both our IND-enabling and clinical stage product candidates as well as high-priority areas of focus of our most advanced discovery efforts where development candidates have not yet been identified.

Business
Clinical history of MGTA-456
Initial first-in-human studies: double blood cord transplant, page 123

2. *We note your statement on page 124 that infusion of MGTA-456 showed a "favorable safety profile" overall. This is a conclusion that is within the FDA's authority. Please remove this statement.*

Response to Comment No. 2: The Company acknowledges the Staff's comment and respectfully advises the Staff that the Registration Statement has been revised to remove the above-referenced statement.

Principal Stockholders, page 189

3. *Please revise your disclosure to identify the natural person or persons who have voting and investment control of the shares held by the entities affiliated with Casdin Partners, LP.*

Response to Comment No. 3: The Company acknowledges the Staff's comment and respectfully advises the Staff that it has revised its disclosure on page 194 of the Registration Statement.

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*