UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

DIVISION OF
CORPORATION FINANCE

April 24, 2018

Ted White
Chief Executive Officer and President
Magenta Therapeutics, Inc.
200 Garrett Street, Suite S
Charlottesville, Virginia 22902

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

Dear Mr. White:

We have reviewed your draft registration statement and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by providing the requested information and either submitting an amended draft registration statement or publicly filing your registration statement on EDGAR. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing the information you provide in response to these comments and your amended draft registration statement or filed registration statement, we may have additional comments.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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

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

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.

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.

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.

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.

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.

You may contact Vanessa Robertson at 202-551-3649 or Sharon Blume at 202-551-3474 if you have questions regarding comments on the financial statements and related matters. Please contact Irene Paik at 202-551-6553 or Ada D. Sarmento at 202-551-3798 with any other questions.

Division of Corporation Finance
Office of Healthcare & Insurance

cc: William D. Collins - Goodwin Procter