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

DIVISION OF
CORPORATION FINANCE

July 15, 2015

Via E-mail
Steven M. Paul, M.D.
President and Chief Executive Officer
Voyager Therapeutics, Inc.
75 Sidney Street
Cambridge, Massachusetts 02139

Re: Voyager Therapeutics, Inc.
Draft Registration Statement on Form S-1
Submitted June 19, 2015
CIK No. 0001640266

Dear Dr. Paul:

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.

Prospectus Summary

1. Please clarify the meaning of any significant scientific or technical terms the first time they are used in your prospectus in order to ensure that lay readers will understand the disclosure. For example, please define each of the following at their first use:
    - clinically meaningful
    - adeno-associated virus
    - AAV vectors
    - oncogenesis
    - modalities

- baculovirus AAV
- refractory to levodopa
- monogenic amytotrophic lateral sclerosis

2. We refer to your disclosure in the third paragraph on page 1, that "AAV is able to transfer a therapeutic gene, or transgene, into target cells in the CNS and is believed to be safe." We note your first full risk factor on page 20, "[t]here have been several significant side effects caused by gene therapy treatments in the past, including reported cases of leukemia and death." We also note, "[i]n previous Phase 1 clinical trials conducted by others, several patients experienced hemorrhages following the surgical procedures" following the administration of the proposed therapy. In view of your disclosures relating to severe adverse effects in other clinical trials and gene therapy, please expand your disclosure in your prospectus summary to explain to potential investors why you believe AAV is "believed to be safe."

3. Please revise your disclosure to include a general description of the administration of your AAV gene therapy in patients. For example, please disclose how the therapy is delivered, whether the therapy is injected into patients, if surgery is required and the intended injection or surgical sites in patients.

4. We refer to your disclosure in the third paragraph on page 1, "CNS diseases are a leading driver of global disease burden and represent the single largest biopharmaceutical market with estimated worldwide annual sales of over $125 billion in 2013." Please revise your estimated amount of worldwide annual sales to quantify the individual amounts relative to your five indications currently under development. Please make any corresponding changes throughout your prospectus.

Preclinical Programs, page 4

5. We refer to your first bullet point regarding Monogenic ALS Program: VY-SOD101. We note your approximation of 30,000 patients in the United States with ALS, the percentage of familial ALS patients, and the subset of patients with familial ALS caused by mutations in the SOD1 gene. The disclosed patient numbers and percentages suggest that your actual potential patient population for VY-SOD101 is 600 patients. If so, please disclose your actual potential population for VY-SOD101 for patients with ALS caused by mutations in the SOD1 gene.

Manufacturing at Commercial Quality and Scale, page 5

6. We refer to your fourth bullet point regarding an established regulatory framework for the baculovirus AAV production system. We also note your disclosure that no gene therapy has been approved by the FDA and only one therapy was approved by the European Union. In addition, we also note your first risk factor on page 30 that to date

no cGMP gene therapy manufacturing facility has received FDA approved. Please revise your disclosure to further explain to investors how your AAV gene therapy manufactured with the baculovirus system has the attribute of manufacturing under an established regulatory framework.

Risk Factors, page 6

7. Please expand your fifth bulleted risk factor to include a brief discussion of the severe adverse effects that have been associated with gene therapy.

Risk Factors, page 12

8. We refer to your disclosure in the third full paragraph on page 151 under Anti-Takeover Provisions. Please add a risk factor describing the disadvantages to stockholders attendant to the exclusive forum provision contained in your amended and restated certificate of incorporation.

9. We refer to your risk factor on page 17 and the subsequent risk factor on page 19. We note that these risk factors appear to be substantially similar and repetitive. Please revise these risk factors to provide one concise risk factor to discuss the risks described therein.

10. We refer to your risk factor on page 17 and your use of the Clearpoint System in your Phase1b clinical trial. Please expand your risk factor to briefly disclose why the Clearpoint System is being utilized, the previous problem(s) the system is intended to solve, and how the system works differently from earlier methods used in previous clinical trials. In addition, please briefly describe the "Clearpoint System" in your business section.

Use of Proceeds, page 61

11. Please revise your disclosure to quantify the amount of cash, including current available cash, you anticipate after the completion of the offering and how you intend to apply the entire amount of cash.

12. Please revise your disclosure to provide your best reasonable estimate of how the proceeds from this offering and available cash will enable you to advance your identified use of proceeds:
    - the VY-AADC01 program for advanced Parkinson's disease, including relevant clinical and manufacturing expenses; and
    - the advancement of your four preclinical pipeline products (i.e. VY-SOD101, VY-FXN01, VY-HTT01 and VY-SMN101) and in each case preclinical development, drug manufacturing, clinical development and internal personnel costs.

Determination of Fair Value of Common Stock on Grant Dates, page 77

13. We may have additional comments on your accounting for equity issuances including stock based compensation and convertible instruments. Once you have an estimated offering price, please provide us an analysis explaining the reasons for the differences between the recent valuations of your common stock leading up to the IPO and the estimated offering price.

Vector Engineering and Optimization, page 92

14. We note your disclosure on the top of page 93 stating that FXN expression "was normalized as a fold increase relative to FXN expression" in a human brain reference sample. As this is not a term that is familiar to non-specialists, please briefly describe the meaning and significance of "normalized as a fold increase relative to FXN expression."

Phase 1 Clinical Trials, page 99

15. Please expand your disclosure to briefly describe the primary endpoint for each of the Phase 1 clinical trials and whether each endpoint was achieved.

16. We note your chart on the top on page 100. Please expand your disclosure to provide, through a legend or other explanatory narrative:
    - what each figure represents and what each number measured; and
    - the control used and what the p-value measured.

    In addition, please discuss the reliability of the p-values in view of the small number of subjects in the study.

Our Program Status, page 101

17. Please revise your disclosure to include the primary endpoints of your Phase 1b clinical trials. In that regard, we note your disclosure on the top of page 102, "clinical readouts will include standard endpoints, such as UPDRS…" Please briefly explain how the UPDRS is anticipated to be used in the analysis of trial results and how it will be considered in regard to all endpoint measurements.

Collaborations and License Agreements, page 111

18. We refer to your announcement of the entry into a license agreement with REGENX Biosciences, LLC. Please revise your prospectus to describe the material terms of the agreement including:
    - the nature and scope of the intellectual property rights transferred and whether such rights are exclusive;
    - each parties' rights and obligations;

- duration and termination provisions;
- material payment provisions, which may include up-front or execution payments;
- milestones, royalty rates or revenue sharing; and
- aggregate amounts paid or received to date.

In addition, please file the agreement as an exhibit in accordance with Item 601 of Regulation S-K. In the alternative, please advise us as to why the agreement is not material and the exhibit need not be filed.

License Agreement with the University of Massachusetts, page 113

19. Please revise your disclosure to provide a royalty range for your tiered minimum annual royalty payments and a percentage range relating to the sublicensing income.

MassBiologics and UMass Collaboration Agreement, page 113

20. Please revise your disclosure to discuss the material terms of the agreement including:
    - nature and scope of each party's intellectual property rights in the manufacturing of recombinant AAV products;
    - each parties' material rights and obligations; and
    - duration and termination provisions

    In addition, please file the agreement as an exhibit to your Form S-1 in accordance with Item 601 of Regulation S-K.

Executive Officers and Directors, page 128

21. We refer to the signature page of Amendment 1 to your draft registration statement submitted on June 29, 2015. We also note the reference to Perry Karsen as a director of the company. Please update your disclosure here and throughout your Form S-1 to include the disclosures required for Mr. Karsen.

Summary Compensation Table, page 136

22. We note your inclusion of $50,000 to Dr. Pietrusko in the bonus column of your summary compensation table. Please revise your table to include Dr. Pietrusko's relocation expenses in the "all other compensation" column in accordance with Item 402 of Regulation S-K.

Genzyme Collaboration Agreement, page F-20

23. Please disclose, separately, the amount of specified regulatory milestones in total and commercial milestones in total, and the nature of the milestones within these two categories. Refer to 605-28-50.

24. Please disclose the nature and amount of costs incurred under the agreement and where they are classified within your statement of operations for the three months ended March 31, 2015, and thereafter for each period presented.

Other Agreements, page F-24

25. Please disclose the aggregate potential milestone payments under these agreements herein and in your contractual obligations table.

Other Comments

26. Please submit all exhibits as soon as practicable. We may have further comments upon examination of these exhibits.

27. Please confirm that the graphics included in your registration statement are the only graphics you will use in your prospectus. If those are not the only graphics, please provide any additional graphics prior to their use for our review.

28. 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.

You may contact Keira Nakada at (202) 551-3659 or James Rosenberg at 202-551-3679 if you have questions regarding comments on the financial statements and related matters. Please contact Tara Keating Brooks at (202) 551-8336 or me at (202) 551-3715 with any other questions.

Sincerely,

/s/ Jeffrey P. Riedler

Jeffrey P. Riedler
Assistant Director

cc: Via E-mail
Mitchell S. Bloom, Esq.
Goodwin Procter LLP