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

DIVISION OF
CORPORATION FINANCE

November 22, 2021

Joshua B. Cohen, Justin B. Klee
Co-Chief Executive Officers
Amylyx Pharmaceuticals, Inc.
43 Thorndike St.
Cambridge, Massachusetts 02141

Re: Amylyx Pharmaceuticals, Inc.
Amendment No. 1 to Draft Registration Statement on Form S-1
Submitted October 20, 2021
CIK No, 0001658551

Dear Mr. Cohen:

We have reviewed your amended 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.

Amendment No. 1 to Draft Registration Statement submitted October 20, 2021

Summary, page 1

1. With reference to the disclosure on page 127, please revise the second paragraph of the Overview to describe briefly the type of "models" that you reference.

2. We note your revised disclosure in response to prior comment 2. Please revise the disclosure on pages 1 and 4 to clarify why you plan in Q4 to submit an NDA to FDA while also commencing the Phase 3 PHOENIX trial. To the extent that it is atypical to submit an NDA in advance of, or in connection with, a Phase 3 trial, the circumstances and material discussions with FDA should be highlighted. With reference to disclosures on pages 21 and 27, also revise to explain that FDA may determine, among other things, to not approve your NDA because it disagrees with your data and rationale, or to require

completion of your planned Phase 3 PHOENIX global clinical trial before issuing an approval decision.

3. We note your revised disclosure on page 6 in response to prior comment 6. Please revise the Summary to highlight your disclosure on page 33 indicating that there are risks that the Humanitas Mirasole SpA Phase 3 trial could result in a competitive commercialized product. Also, revise the disclosure on page 6 to avoid the implication that you are collaborating with Humanitas Mirasole SpA, or advise.

Pipeline Overview, page 2

4. We note your revised Pipeline Overview disclosure in response to prior comment 3. Please revise the Canadian ALS graphic so that Phase 3 is in grey and add "N/A" or something similar to depict visually that such trial is not required.

5. Please revise to remove the two unidentified neurodegenerative indications that you added to the table. In this regard, it appears premature to highlight these unidentified indications in the Summary, particularly given that the Business section does not contain any discussion regarding these indications or the development work that has been conducted to date.

Clinical Development of AMX0035 for Wolfram Syndrome, page 136

6. Please revise to provide support for your statement that AMX0035 has shown beneficial effects in a variety of models of Wolfram syndrome, including cellular models, patient derived cell lines, and a knockout mouse model.

Intellectual Property, page 141

7. We note your responses to prior comments 6 and 16 and reissue in part. Please revise to identify the issued patent having claims that cover the composition of matter of AMX0035.

You may contact Christine Torney at (202) 551-3652 and Al Pavot at (202) 551-3738 if you have questions regarding comments on the financial statements and related matters. Please contact Daniel Crawford at (202) 551-7767 or Joe McCann at (202) 551-6262 with any other questions.

Sincerely,

Division of Corporation Finance
Office of Life Sciences

cc: Benjamin K. Marsh, Esq.