

May 21, 2021

VIA EDGAR

U.S. Securities and Exchange Commission
Division of Corporation Finance
100 F Street, NE
Washington, D.C. 20549

Re: Unicycive Therapeutics, Inc.
Draft Registration Statement on Form S-1
Submitted on April 29, 2021
CIK No. 0001766140

Ladies and Gentlemen:

This letter sets forth the responses of Unicycive Therapeutics, Inc., a Delaware corporation (the “**Company**”), to the comments received from the Staff (the “**Staff**”) of the U.S. Securities and Exchange Commission (the “**Commission**”) concerning Amendment No. 3 to its Draft Registration Statement on Form S-1 (CIK No. 0001766140) submitted to the Commission on April 29, 2021 (the “**Registration Statement**”).

References in the text of the responses herein to captions and page numbers refer to the Company’s Registration Statement on Form S-1 (the “**Registration Statement**”), which is being filed herewith.

Amendment No. 3 to Draft Registration Statement on Form S-1 submitted February 18, 2021

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COMMENT 1: Please file your Ascent Master Services Agreement as an exhibit or provide your analysis identifying how you determined that the agreement did not need to be filed as an exhibit. Please refer to Item 601(b)(10) of Regulation S-K.

RESPONSE: The Company has filed the Ascent Master Services Agreement as Exhibit 10.10 to the Registration Statement.

If you have any questions relating to any of the foregoing, please contact Jeffrey Fessler of Sheppard, Mullin, Richter & Hampton LLP at (212) 653-8700.

Very truly yours,

/s/ Jeffrey Fessler
Sheppard, Mullin, Richter & Hampton LLP
