SheppardMullin

Sheppard, Mullin, Richter & Hampton LLP
30 Rockefeller Plaza
New York, New York 10112-0015
212.653.8700 main
212.653.8701 fax
www.sheppardmullin.com

April 29, 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 February 18, 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. 2 to its Draft Registration Statement on Form S-1 (CIK No. 0001766140) submitted to the Commission on February 18, 2021 (the "**Registration Statement**").

References in the text of the responses herein to captions and page numbers refer to Amendment No. 3 to the Company's Draft Registration Statement on Form S-1 (the "**Amended Draft Registration Statement**"), which is being filed herewith.

Amendment No. 2 to Draft Registration Statement on Form S-1 submitted February 18, 2021

Background on Renazorb, page 52

COMMENT 1: We note your statement here and on page 53 that "Renazorb was minimally absorbed to the systemic circulation and was safe...." Please revise these and all similar statements throughout your prospectus that state or imply that your product candidates are safe or effective as these determinations are solely within the authority of the FDA and comparable regulatory bodies.

RESPONSE: The Company has revised its Amended Draft Registration Statement to remove and/or revise these an all similar statements throughout the prospectus that state or imply that its product candidates are safe or effective.

General

COMMENT 2: We note your response to prior comment 4 and reissue. The pipeline table on page 49 and on your website indicates that Renazorb has completed Phase 3 clinical trials. However, we note your disclosure on page 1 that "Spectrum conducted a Phase 1 clinical trial with Renazorb in 2012 prior to the grant of [your] license in 2018." To the extent that you have completed Phase 2 and 3 clinical trials, please include disclosure that complies with prior comment 3. Otherwise, revise the pipeline table on page 49 and on your website to illustrate the product candidate's current status.

RESPONSE: The Company has revised both its website and its disclosure included in its Amended Draft Registration Statement to reconcile this issue. Please see page 48 of the Amended Draft 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,

Jeffrey Fessler
Sheppard, Mullin, Richter & Hampton LLP