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June 2, 2022

VIA EDGAR

United States Securities and Exchange Commission
Division of Corporation Finance
100 F Street, N.E.
Washington, D.C. 20549
Attention: Alan Campbell and Celeste Murphy

Re: Comera Life Sciences Holdings, Inc.
Registration Statement on Form S-1
Filed May 5, 2022
File No. 333-264686

Dear Mr. Campbell and Ms. Murphy:

On behalf of our client, Comera Life Sciences Holdings, Inc., a Delaware corporation (the “**Company**”), we submit to the staff (the “**Staff**”) of the U.S. Securities and Exchange Commission (the “**SEC**”) this letter setting forth the Company’s response to the comments contained in the Staff’s letter dated May 16, 2022 (the “**Comment Letter**”) regarding the Company’s Registration Statement on Form S-1 (the “**Form S-1**”).

Please note that our responses below, insofar as relevant information relates to OTR Acquisition Corp., a Delaware corporation (“**OTR**”), or matters arising from OTR’s participation in the preparation of the Form S-1, are based on our discussions with and information received from OTR or its counsel, Greenberg Traurig, P.A., who have similarly participated in the preparation and review of this response letter.

The Company has filed via EDGAR an Amendment No. 1 to the Form S-1 (the “**Amended Form S-1**”), which reflects the Company’s responses to the Comment Letter and certain updated information. For ease of reference, each comment contained in the Comment Letter is printed below and is followed by the Company’s response. All page references in the responses set forth below refer to the page numbers in the Amended Form S-1. All capitalized terms used but not defined in this response letter have the meanings ascribed to such terms in the Amended Form S-1.

Registration Statement on Form S-1Cover Page

1. We note the significant number of redemptions of OTR Acquisition Corp.'s Class A common stock in connection with your business combination and that the shares being registered for resale will constitute a considerable percentage of your public float. We also note that all of the shares being registered for resale were purchased by the selling securityholders for prices considerably below the current market price of OTR Acquisition Corp.'s Class A common stock. Highlight the significant negative impact sales of shares on this registration statement could have on the public trading price of the Class A common stock following your business combination.

Response: The cover page of the Amended Form S-1 has been revised in accordance with the Staff's comment.

2. Please revise here and throughout to update your disclosures throughout the filing and address areas that appear to need updating or that present inconsistencies. Non-exclusive examples of areas where disclosure should be updated are as follows:

- Disclose whether the Business Combination has been completed. To the extent the Business Combination has been consummated, please tell us why it is material to investors to present a discussion of the mechanics of the Business Combination in the Prospectus Summary.
- Your disclosure on page 108 indicates that the results of one of your clinical studies are "expected to be available by February 2022."
- Your disclosure on page 133 indicates that you expect to pay an annual basis to certain of your named executive officers in the first quarter of calendar year 2022.
- Your Principal Stockholders table should show beneficial ownership following the Business Combination.

Response: The Amended Form S-1 has been revised throughout to disclose that the Business Combination has closed and the results thereon and to eliminate the detailed discussion of the Business Combination Agreement, including the structure of the transaction. The Amended Form S-1 also reflects updated financial and other data for March 31, 2022 and other updated information since the Form S-1 was filed. With respect to the other enumerated bullet points:

- The disclosure on page 103 regarding the results of the study has been updated;
- The Summary Compensation Table on page 127 has been updated to reflect the bonuses paid in 2022 with respect to 2021.
- Principal Stockholder Table has been updated to show actual beneficial ownership.

Management's Discussion and Analysis of Financial Condition and Results of Operations, page 93

3. *In light of the significant number of redemptions and the possibility that the company will not receive significant proceeds from exercises of the warrants, expand your discussion of capital resources to address any changes in the company's liquidity position since the business combination. If the company is likely to have to seek additional capital, discuss the effect of this offering on the company's ability to raise additional capital.*

Response: The MD&A has been revised on page 85 in response to the Staff's comment

4. *Please expand your discussion on page 94 regarding the impact of sales of common stock made pursuant to the registration statement on the price of your common stock to highlight the fact that, based on the disclosure in the Principal Stockholders table and data regarding redemptions of OTR Acquisition Corp.'s Class A common stock, four beneficial owners whose aggregate ownership totals approximately 95% of your outstanding shares, will be able to sell all of their shares for so long as the registration statement of which this prospectus forms a part is available for use.*

Response: The referenced section as well as other sections of the Amended S-1 have been revised in accordance with the Staff's comment..

Please do not hesitate to contact Janeane Ferrari at (212) 407-4209 of Loeb & Loeb LLP with any questions or comments regarding this letter.

Sincerely,

/s/ Loeb & Loeb LLP

Loeb & Loeb LLP

cc: Jeffrey S. Hackman
Flora Perez, Esq. (Greenberg Traurig, P.A.)