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

DIVISION OF
CORPORATION FINANCE

August 29, 2024

Carsten Brunn, Ph.D.
Chief Executive Officer
Cartesian Therapeutics, Inc.
704 Quince Orchard Road
Gaithersburg, MD 20878

Re: Cartesian Therapeutics, Inc.
Registration Statement on Form S-1
Filed August 2, 2024
File No. 333-281204

Dear Carsten Brunn Ph.D.:

We have reviewed your registration statement and have the following comments.

Please respond to this letter by amending your registration statement and providing the requested information. If you do not believe a comment applies to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your registration statement and the information you provide in response to this letter, we may have additional comments.

Registration Statement on Form S-1

Prospectus Summary
Company Overview, page 4

1. Please explain the term "durable clinical benefit" as used on page 4 to briefly describe the results of your Phase 2 clinical trial of Descartes-08 in patients with myasthenia gravis. Please also explain the term "clinically meaningful" as used on page 56, and throughout your business section, to describe results observed from your clinical trials.

Risk Factors
Anti-takeover provisions in our charter documents and under Delaware law..., page 35

2. We note that your forum selection provision identifies the Court of Chancery of the State of Delaware as the exclusive forum for certain litigation, including any “derivative action.” Please disclose whether this provision applies to actions arising under the Securities Act or Exchange Act. In that regard, we note that Section 27 of the Exchange Act creates exclusive federal jurisdiction over all suits brought to enforce any duty or

liability created by the Exchange Act or the rules and regulations thereunder, and Section 22 of the Securities Act creates concurrent jurisdiction for federal and state courts over all suits brought to enforce any duty or liability created by the Securities Act or the rules and regulations thereunder. If the provision applies to Securities Act claims, please also revise your prospectus to state that there is uncertainty as to whether a court would enforce such provision and that investors cannot waive compliance with the federal securities laws and the rules and regulations thereunder. If this provision does not apply to actions arising under the Securities Act or Exchange Act, please also ensure that the exclusive forum provision in your governing documents states this clearly, or tell us how you will inform investors in future filings that the provision does not apply to any actions arising under the Securities Act or Exchange Act. Please also expand your risk factor to indicate that the forum selection provision may increase costs for shareholders to bring a claim.

Management's Discussion of Financial Condition and Results of Operations
Results of Operations
Comparison of the Three Months Ended March 31, 2024 and 2023, page 41

3. Please revise to address the following regarding your disclosure on page 39 that you track your external research and development costs on a program-by-program basis:
   - Please expand your disclosure of the changes in research and development expenses for each period presented to separately quantify the costs incurred for each of your key research and development programs.
   - For the research and development expenses that you do not track by program, provide a breakdown by type or nature of expense.
   - Provide a background discussion of the "strategic reprioritization" that you reference on pages 41 and 42.
   - Confirm that you will provide similar disclosure in your future periodic filings.

Comparison of the Years Ended December 31, 2023 and 2022, page 42

4. We note you included audited financial statements for the three fiscal years ended December 31, 2023 of Cartesian Therapeutics, Inc. in your filing. However, you have only included an annual discussion of the Company's results of operations and cash flows for the year ended December 31, 2023 compared to the year ended December 31, 2022. Please include a discussion of the results of operations and cash flows for the year ended December 31, 2022 compared to the year ended December 31, 2021, or expand your disclosure to provide a statement that identifies the location in a prior filing where the omitted discussion may be found. See Instruction (b)1 to Item 303 of Regulation S-K.

Business
Overview, page 54

5. We note the inclusion of Descartes-08 for the treatment of pediatric autoimmune diseases in your pipeline table. Given the limited disclosure related to this program in your business section, please explain why it is sufficiently material to your business to warrant inclusion in your pipeline table. If it is material, please expand your disclosure in the Business section to provide a more fulsome discussion of this program and shorten the corresponding bar in your pipeline table, as disclosure on page 60 indicates you have not

yet filed an IND for this indication. Alternatively, remove any programs that are not currently material from your pipeline table on page 55.

6. Please remove the statements on page 55 and 56 and elsewhere claiming that Descartes-08 was observed to be "safe" and demonstrated a "favorable safety profile" as safety determinations are within the sole discretion of the FDA and comparable foreign regulators.

Our Product Candidates
Descartes-08, page 57

7. Please remove any references to your Descartes-8 product candidate being potentially "first-in-class" as this is speculative in light of your current regulatory status.

Clinical Development, page 58

8. Please revise this section to disclose if any serious adverse events were observed in your clinical trials of Descartes-08 and quantify them, if applicable.

Descartes-15, page 60

9. Please provide narrative disclosure explaining what is depicted in the graphic appearing on page 61.

Intellectual Property, page 61

10. Please revise to disclose the types of patent protection for the material patents and patent applications disclosed in this section. Please also disclose the potential expiration dates, if granted, for the fourteen patent applications related to your mRNA CAR-T technology and other developments in your mRNA cell therapy pipeline.

Key Agreements, page 62

11. We note your disclosure that the Biogen Agreement will expire when all claims of all issued patents within the patents and patent applications licensed to you under the Biogen Agreement have expired and that the NCI License Agreement terminates upon the expiration of the last to expire of the patent rights licensed thereunder. Please revise to clarify when the patents and patent applications under the Biogen Agreement are expected to expire and when the patent rights licensed under the NCI License Agreement are expected to expire. Please also disclose the exclusivity provisions related to these agreements.

Astellas License Agreement, page 63

12. Please revise your discussion of the Astellas License Agreement to disclose the current status of this agreement as of the latest practicable date. In this regard, we note your disclosure appearing on page 40 stating that you were notified by Astellas of their intention to terminate the Astellas Agreement effective June 6, 2024. If the agreement has been terminated, clearly disclose this and tell us why it is appropriate for you to discuss the agreement in this section. If the agreement remains in place, please file this agreement as exhibit to your registration statement. Refer to Item 601 of Regulation S-K for guidance.

General

13. We note your disclosure on page 126 that your Selling Stockholders may sell all or a portion of the Resale Shares to or through underwriters or purchases by a broker-dealer as principal and resale by the broker-dealer for its account. Please confirm your understanding that the retention by a selling stockholder of an underwriter would constitute a material change to your plan of distribution requiring a post-effective amendment. Refer to your undertaking provided pursuant to Item 512(a)(1)(iii) of Regulation S-K.

14. The forepart of your prospectus should consist of the cover page, summary and risk factors sections. Please relocate the sections "About This Prospectus" and "Cautionary Note Concerning Forward-Looking Statements" appearing after the table of contents to a more appropriate location in the prospectus.

We remind you that the company and its management are responsible for the accuracy and adequacy of their disclosures, notwithstanding any review, comments, action or absence of action by the staff.

Refer to Rules 460 and 461 regarding requests for acceleration. Please allow adequate time for us to review any amendment prior to the requested effective date of the registration statement.

Please contact Tracie Mariner at 202-551-3744 or Kevin Vaughn at 202-551-3494 if you have questions regarding comments on the financial statements and related matters. Please contact Tyler Howes at 202-551-3370 or Tim Buchmiller at 202-551-3635 with any other questions.

Sincerely,

Division of Corporation Finance
Office of Life Sciences

cc: Sarah C. Griffiths, Esq.