February 22, 2019

VIA EDGAR AND FEDERAL EXPRESS

United States Securities and Exchange Commission
Division of Corporation Finance
Mail Stop 4561
100 F Street, N.E.
Washington, D.C. 20549

Re: Kaleido Biosciences, Inc.
Amendment No. 1 to Registration Statement on Form S-1
Filed February 19, 2019
File No. 333-229204

Dear Ms. Paik:

This letter is confidentially submitted on behalf of Kaleido Biosciences, Inc. (the "**Company**") in response to the comments of the Division of Corporation Finance (the "**Staff**") of the U.S. Securities and Exchange Commission (the "**Commission**") with respect to Amendment No. 1 to the Company's Registration on Form S-1, filed on February 19, 2019 (the "**Amendment No. 1**), as set forth in the Staff's letter dated February 20, 2019 addressed to Alison Lawton, Chief Executive Officer of the Company (the "**Comment Letter**"). The Company is concurrently filing Amendment No. 2 to the Registration Statement ("**Amendment No. 2**"), which includes changes to reflect responses to the Staff's comments.

For reference purposes, the text of the Comment Letter has been reproduced herein with responses below each numbered comment. For your convenience, we have italicized the reproduced Staff comments from the Comment Letter. Unless otherwise indicated, page references in the descriptions of the Staff's comments refer to Amendment No. 1, and page references in the responses refer to Amendment No. 2. All capitalized terms used and not otherwise defined herein shall have the meanings set forth in Amendment No. 2).

The responses provided herein are based upon information provided to Goodwin Procter LLP by the Company. In addition to submitting this letter via EDGAR, we are sending via Federal Express four (4) copies of each of this letter and Amendment No. 2 (marked to show changes from Amendment No. 1).

Amendment No. 1 to Registration Statement on Form S-1 filed February 19, 2019

Use of Proceeds, page 84

1. *We note that you have not addressed our prior comment 15 in our letter dated October 23, 2018. Please revise your disclosure to specify whether you will be able to complete the Phase 2 clinical trials for your hyperammonemia programs and whether this covers completion of Phase 2 trials for both UCD and HE. Please also disclose how far in the development of your other pipeline product candidates you expect to reach using proceeds from the offering. If any material amounts of other funds are necessary to accomplish the specified purposes for which the proceeds are to be obtained, state the amounts and sources of such other funds needed for each such specified purpose and the sources thereof. Refer to Instruction 3 to Item 504 of Regulation S-K.*

RESPONSE: The Company respectfully advises the Staff that it has revised the disclosure on page 84 of Amendment No. 2 in response to the Staff's comment to further clarify how far proceeds from this offering will get the Company in its development efforts for its various programs. The Company further informs the Staff that it has not yet determined the specific amount of proceeds necessary for initiation and completion of any Phase 2 trial in HE, and therefore the Company has not included the specific amount of funds that would be needed for such purpose.

Business Future plans for clinical development in UCD, page 130

2. *We note your disclosure that UCD primarily affects pediatric patients. We further note that your planned Phase 2 clinical trial will enroll only adults but is intended to allow for you to evaluate the efficacy of KB195 in reducing ammonia in UCD patients so that you can support the inclusion of pediatric patients as soon as possible. Please clearly state why you cannot include pediatric patients in your Phase 2 clinical trial and what specifically you must demonstrate in the trial in order to support the inclusion of pediatric patients. Please also clearly state in your summary and elsewhere that you discuss the Phase 2 trial that UCD is primarily a pediatric disease but you only have approval for clinical testing of adults. Please state the potential impact or adverse effects if you are unable to extend clinical testing to pediatric patients. Please also include relevant risk factor disclosure.*

RESPONSE: The Company respectfully advises the Staff that it has revised the disclosure on pages 4, 17, 111, 131 and 149 of Amendment No. 2 in response to the Staff's comment (i) to further clarify that the Company does not yet have sufficient data to enroll pediatric patients in its Phase 2 clinical trial of KB195 in UCD patients and (ii) to provide additional risk factor language around the risk of potentially being unable to expand its Phase 2 clinical trial of KB195 to include pediatric UCD patients.

Future pipeline opportunities, page 138

3. *We note your statement on page 139 that the MMT you evaluated in your non-IND human clinical study demonstrated favorable safety and tolerability. Findings of safety and efficacy are determinations that are solely within the authority of the FDA. Please delete this statement.*

RESPONSE: The Company respectfully advises the Staff that it has revised the disclosure on page 140 of Amendment No. 2 in response to the Staff's comment to remove the statement that the MMT that the Company evaluated in its non-IND human clinical study demonstrated favorable safety and to clarify that the Company observed favorable tolerability in this study.

Description of Capital Stock Choice of forum, page 198

4. *We note your disclosure on page 80 that if the Court of Chancery of the State of Delaware does not have jurisdiction, the federal district court for the District of Delaware or other state courts of the State of Delaware shall be the exclusive forum for certain state law claims. However, we note that these alternative forums are not listed in your Amended and Restated By-Laws or in your disclosure on page 198. Please revise your disclosure and/or your Amended and Restated By-Laws to reconcile this discrepancy.*

RESPONSE: The Company respectfully advises the Staff that it has revised the disclosure on page 80 of Amendment No. 2 to remove references to alternative forums not listed in the Company's Amended and Restated By-Laws or in the disclosure on page 199 of Amendment No. 2.

* * *

If you should have any questions concerning the enclosed matters, please contact the undersigned at (617) 570-1879.

Sincerely,

/s/ Laurie A. Burlingame

Laurie A. Burlingame, Esq.

cc: Alison M. Lawton, *Kaleido Biosciences, Inc.*
Joshua Brumm, *Kaleido Biosciences, Inc.*
Kingsley L. Taft, *Goodwin Procter LLP*
Peter N. Handrinos, *Latham & Watkins LLP*
Wesley C. Holmes, *Latham & Watkins LLP*