

CONFIDENTIAL TREATMENT REQUESTED BY KALEIDO BIOSCIENCES, INC.

CERTAIN PORTIONS OF THIS LETTER AS FILED VIA EDGAR HAVE BEEN OMITTED AND FILED SEPARATELY WITH THE COMMISSION. CONFIDENTIAL TREATMENT HAS BEEN REQUESTED WITH RESPECT TO THE OMITTED PORTIONS. OMITTED INFORMATION HAS BEEN REPLACED IN THIS LETTER AS FILED VIA EDGAR WITH A PLACEHOLDER IDENTIFIED BY THE MARK “[*].”**

January 18, 2019

VIA EDGAR

U.S. Securities and Exchange Commission
Office of Healthcare and Insurance
Division of Corporation Finance
100 F Street, N.E.
Washington, D.C. 20549
Attention: Irene Paik

**Re: Kaleido Biosciences, Inc.
Registration Statement on Form S-1
File No. 333-229204
CIK No. 0001751299**

Ladies and Gentlemen:

On behalf of Kaleido Biosciences, Inc. (the “Company”), in response to comments from the staff (the “Staff”) of the Securities and Exchange Commission (the “Commission”) received by letter dated October 23, 2018 (the “Original Comment Letter”) relating to the Company’s Registration Statement on Form S-1, originally confidentially submitted to the Commission on September 25, 2018, resubmitted to the Commission on October 26, 2018 and November 21, 2018, and subsequently filed by the Company with the Commission on January 11, 2019 (File No. 333-229204) (the “Registration Statement”), we submit this supplemental letter to further address comment 16 of the Original Comment Letter.

Because of the commercially sensitive nature of information contained herein, this submission is accompanied by the Company’s request for confidential treatment for selected portions of this

letter. The Company has concurrently filed a separate letter with the Office of Freedom of Information and Privacy Act Operations in connection with the confidential treatment request, pursuant to Rule 83 of the Commission's Rules on Information and Requests, 17 C.F.R. § 200.83. For the Staff's reference, we have enclosed a copy of the Company's letter to the Office of Freedom of Information and Privacy Act Operations.

For the convenience of the Staff, we have recited the prior comment from the Staff in the Original Comment Letter in italicized type and have followed the comment with the Company's response.

16. *Once you have an estimated offering price range, please explain to us how you determined the fair value of the common stock underlying your equity issuances and the reasons for any differences between the recent valuations of your common stock leading up to the IPO and the estimated offering price. This information will help facilitate our review of your accounting for equity issuances including stock compensation and beneficial conversion features.*

The Company respectfully submits the below additional information to assist the Staff in its review of the Company's position with respect to its determination of the fair value of its common stock underlying its outstanding equity awards and the reasons for the differences between the recent valuation of its common stock and the estimated offering price for its initial public offering ("IPO").

Preliminary IPO Price Range

The Company advises the Staff that it estimates a preliminary price range of approximately \$[***] to \$[***] per share (the "Preliminary Price Range") for its IPO, which reflects a two for one split of the Company's common stock expected to be effected prior to the IPO (the "Stock Split"). The actual price range to be included in a subsequent amendment to the Registration Statement (which will comply with the Staff's interpretation regarding the parameters of a *bona fide* price range) has not yet been determined and remains subject to adjustment based on factors outside of the Company's control. However, the Company believes that the foregoing indicative price range will not be subject to significant change.

Determining the Fair Value of Common Stock Prior to the IPO

As there has been no public market for the Company's common stock to date, the estimated fair value of its common stock has been determined by the Company's board of directors (the "Board") as of the date of each option grant, with input from management, considering the Company's most recent third-party valuations of its common stock and the Board's assessment of additional objective and subjective factors that it believed were relevant and which may have changed from the date of the most recent third-party valuation through the date of the grant. As

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disclosed in the Registration Statement, the Company's most recent third-party valuations of its common stock were prepared as of March 31, 2017, June 30, 2017, March 31, 2018, August 9, 2018, August 23, 2018, September 30, 2018, November 15, 2018 and December 31, 2018. These third-party valuations were performed in accordance with the guidance outlined in the American Institute of Certified Public Accountants' Accounting and Valuation Guide, *Valuation of Privately-Held-Company Equity Securities Issued as Compensation*, and were prepared using a hybrid method, which is a probability-weighted expected return method where the equity value in one or more of the scenarios is calculated using an option pricing method.

The Company's most recent third-party valuations, which do not reflect the anticipated Stock Split and were used by the Board to determine the fair value of the Company's common stock as of the grant date of each option award, considered a combination of the following four future-event scenarios: an IPO scenario (occurring in the short-term), an IPO scenario (occurring in the long-term), a sale scenario and a liquidation scenario. The equity value of the Company in the IPO scenarios and the sale scenarios was determined using market approaches. The IPO scenario assumed that all shares of preferred stock would convert into shares of common stock and would no longer have the liquidation preferences and preferential rights attributable to the preferred stock as compared to the common stock prior to the IPO. Each valuation probability-weighted the future-event scenarios based on the Company's assessment of its development pipeline and market conditions at that time. For each of the IPO scenarios and the sale scenario, the Company then applied a discount for lack of marketability ("DLOM"), each determined by a put option analysis that considered the timing of each future-event scenario. Key assumptions used by the Company in its most recent valuations, and the resulting indicated fair value of common stock, were as follows:

Valuation Date	IPO Scenario (Short-Term ¹)		IPO Scenario (Long-Term ²)		Sale Scenario		Sale at or Below Liquidation Preference Scenario		Indicated Fair Value per Share of Common Stock
	Probability Weighting	DLOM	Probability Weighting	DLOM	Probability Weighting	DLOM	Probability Weighting	DLOM	
March 31, 2017	[***]	[***]	[***]	[***]	[***]%	[***]%	[***]%	[***]	\$1.09
June 30, 2017	[***]	[***]	[***]	[***]	[***]%	[***]%	[***]%	[***]	\$1.11
March 31, 2018	[***]%	[***]%	[***]	[***]	[***]%	[***]%	[***]%	[***]	\$2.95
August 9, 2018	[***]%	[***]%	[***]%	[***]%	[***]%	[***]%	[***]%	[***]	\$5.14
August 23, 2018	[***]%	[***]%	[***]%	[***]%	[***]%	[***]%	[***]%	[***]	\$5.89
September 30, 2018	[***]%	[***]%	[***]%	[***]%	[***]%	[***]%	[***]%	[***]	\$7.60
November 15, 2018	[***]	[***]	[***]%	[***]%	[***]%	[***]%	[***]%	[***]	\$8.70
December 31, 2018	[***]	[***]	[***]%	[***]%	[***]%	[***]%	[***]%	[***]	\$8.90

¹ Assumed the Company would target fourth quarter 2018 for the IPO.

² Assumed the Company would target first quarter 2019 for the IPO.

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March 31, 2017 Valuation

The Company relied, in part, on the results of the March 31, 2017 valuation in its determination of the fair value of common stock of \$1.09 per share as of June 6, 2017, when the Board granted options for the purchase of 4,670,923 shares to employees, directors and non-employees. The March 31, 2017 valuation was prepared taking into account the sale of shares of the Company's Series B preferred stock in February 2017 at a price of \$3.89 per share, for aggregate proceeds of \$36.9 million. In particular, the March 31, 2017 valuation determined the Company's equity value by considering multiple scenarios, including using an option-pricing model ("OPM") backsolve approach that was based on the \$3.89 price paid per share of its Series B preferred stock in the contemporaneous, arm's-length transaction with new and existing investors.

June 30, 2017 Valuation

The Company relied, in part, on the results of the June 30, 2017 valuation in its determination of the fair value of common stock of \$1.11 per share as of October 10, 2017, October 26, 2017, November 28, 2017 and December 6, 2017, when the Board granted options for the purchase of an aggregate of 2,021,500 shares to employees, directors and non-employees. The June 30, 2017 valuation was prepared taking into account the sale of shares of the Company's Series B preferred stock in February 2017. Since the time of the closing of the Series B financing in February 2017, the Company has not achieved any clinical or other material milestones that would require the Company to change its OPM backsolve approach described above.

March 31, 2018 Valuation

The Company relied, in part, on the results of the March 31, 2018 valuation in its determination of the fair value of common stock of \$2.95 per share as of May 30, 2018, when the Board granted options for the purchase of an aggregate of 2,538,000 shares to employees, directors and non-employees. The March 31, 2018 valuation was prepared taking into account the sale of shares of the Company's Series C preferred stock, which initially closed in February 2018, at a price of \$9.99 per share, for aggregate proceeds of \$100.9 million. In particular, the March 31, 2018 valuation determined the Company's equity value by considering multiple scenarios, including using an OPM backsolve approach that was based on the \$9.99 price paid per share of its Series C preferred stock in the contemporaneous, arm's-length transaction with new and existing investors.

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August 9, 2018 Valuation

The Company relied, in part, on the results of the August 9, 2018 valuation in its determination of the fair value of common stock of \$5.14 per share as of August 16, 2018, when the Board granted options for the purchase of an aggregate of 2,337,075 shares to employees, directors and non-employees. The August 9, 2018 valuation was prepared taking into account the sale of shares of the Company's Series C preferred stock from February 2018 through June 2018. Since the time of the closing of the Series C financing in June 2018, the Company has not achieved any clinical milestones so no increase in the enterprise values from the March 31, 2018 valuation were warranted under either the short-term or long-term IPO scenarios. An additional factor contributing to the increase in the fair value of common stock from the March 31, 2018 valuation to the August 9, 2018 valuation was the increase by management and the Board in the probability-weighting of the short-term IPO scenario to [***]% and the probability-weighting of the long-term IPO scenario to [***]%, taking into account that the Company's IPO preparations were in-process.

August 23, 2018 Valuation

The Board relied, in part, on the results of the August 23, 2018 valuation in its determination of the fair value of common stock of \$5.89 per share as of September 5, 2018, when it granted options for the purchase of an aggregate of 2,290,917 shares to employees and a director. The August 23, 2018 valuation was prepared taking into account the sale of shares of the Company's Series C preferred stock from February 2018 through June 2018. Since the time of the closing of the Series C financing in June 2018, the Company has not achieved any clinical milestones so no increase in the enterprise values from the March 31, 2018 valuation were warranted under either the short-term or long-term IPO scenarios. An additional factor contributing to the increase in the fair value of common stock from the August 9, 2018 valuation to the August 23, 2018 valuation was the increase by management and the Board in the probability-weighting of the short-term IPO scenario to [***]% and the probability-weighting of the long-term IPO scenario to [***]%, taking into account that the Company's IPO organizational meeting with its management, underwriters and advisers was held on August 23, 2018.

September 30, 2018 Valuation

The Board relied, in part, on the results of the September 30, 2018 valuation in its determination of the fair value of common stock of \$7.60 per share as of October 16, 2018, when it granted options for the purchase of an aggregate of 110,000 shares to a director and an employee. The September 30, 2018 valuation was prepared taking into account the sale of shares of the Company's Series C preferred stock from February 2018 through June 2018. Since the time of the closing of the Series C financing in June 2018, the Company has not achieved any clinical milestones so no increase in the enterprise values from the March 31, 2018 valuation were warranted under either the short-term or long-term IPO scenarios. An additional factor

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contributing to the increase in the fair value of common stock from the August 23, 2018 valuation to the September 30, 2018 valuation was the increase by management and the Board in the probability-weighting of the short-term IPO scenario to [***]% and the probability-weighting of the long-term IPO scenario to [***]%, taking into account that the Company's IPO organizational meeting with its management, underwriters and advisers was held on August 23, 2018 and additional progress made by the Company since August 23, 2018, including confidentially submitting the first draft registration on Form S-1 to the Commission on September 25, 2018.

November 15, 2018 Valuation

The Board relied, in part, on the results of the November 15, 2018 valuation in its determination of the fair value of common stock of \$8.70 per share as of December 4, 2018 and December 19, 2018, when it granted options for the purchase of an aggregate of 1,433,000 shares to employees and a director. The November 15, 2018 valuation was prepared taking into account the sale of shares of the Company's Series C preferred stock from February 2018 through June 2018. Since the time of the closing of the Series C financing in June 2018, the Company has not achieved any clinical milestones so no increase in the enterprise values from the March 31, 2018 valuation were warranted under the IPO scenario. An additional factor contributing to the increase in the fair value of common stock from the September 30, 2018 valuation to the November 15, 2018 valuation was the increase by management and the Board in the probability-weighting of the IPO scenario to [***]%, taking into account that the additional progress made by the Company towards completing the IPO since September 30, 2018, including:

- On October 24, 2018, the Company applied for the listing of its common stock on The Nasdaq Global Market; and
- On October 26, 2018, the Company confidentially submitted Amendment No.1 to its draft registration statement on Form S-1 to the Commission.

December 31, 2018 Valuation

The December 31, 2018 valuation was prepared taking into account the sale of shares of the Company's Series C preferred stock from February 2018 through June 2018. Since the time of the closing of the Series C financing in June 2018, the Company has not achieved any clinical milestones so no increase in the enterprise values from the March 31, 2018 valuation were warranted under the IPO scenario. A factor contributing to the increase in the fair value of common stock from the November 15, 2018 valuation to the December 31, 2018 valuation was the additional progress made by the Company towards completing the IPO since November 15, 2018, including confidentially submitting Amendment No. 2 to its draft registration statement on Form S-1 to the Commission on November 21, 2018.

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Between December 31, 2018 and January 18, 2019, the Company continued to operate its business in the ordinary course and there were no significant developments in its business. As a result, the Board determined that the fair value of the Company's common stock remained \$8.90 per share from December 31, 2018 and January 18, 2019.

Comparison of Most Recent Valuation and the Preliminary Price Range

As is typical in initial public offerings, the Preliminary Price Range was not derived using a formal determination of fair value, but was determined based on discussions between the Company and the underwriters. Prior to January 14, 2019, the Company and the underwriters had not had any specific discussions regarding the Preliminary Price Range. Among the factors that were considered in setting the Preliminary Price Range were the following:

- the general conditions of the securities market and the recent market prices of, and the demand for, publicly traded common stock of comparable companies;
- the Company's financial condition and prospects;
- estimates of business potential and earnings prospects for the Company and the industry in which it operates;
- valuations metrics for and recent performance of initial public offerings of companies in the biotechnology sector; and
- progress and stage of development of the Company's development programs.

The Company believes that the difference between the fair value of its common stock as of December 31, 2018 of \$8.90 per share, which does not reflect the anticipated Stock Split, and the Preliminary Price Range of \$[***] to \$[***] per share is the result of the factors above and the following factors and positive developments with respect to the Company's business that occurred subsequent to December 31, 2018, the date of the Company's most recent determination of the fair value of its common stock.

- The Preliminary Price Range is based only upon a scenario in which the Company completes the IPO and is not probability weighted, in contrast to the Company's prior valuations of its common stock, which considered multiple potential outcomes, which would result in a lower valuation of the Company's common stock than its IPO. In the December 2018 valuation, the probability weighting of the IPO scenario was [***]%. If the Company had instead applied a weighting of [***]% to the IPO scenario, the fair value of the Company's common stock in the December 2018 valuation would have been

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\$12.13 per share (before giving effect to any discount for lack of marketability or time value of money).

- The Preliminary Price Range necessarily assumes that the IPO has occurred and that a public market for the Company's common stock has been created, and, therefore, excludes any discount for lack of marketability of the Company's common stock or impact of the time value of money, which were appropriately taken into account in the December 2018 valuation.
- The Preliminary Price Range assumes the conversion of all of the Company's outstanding preferred stock. The Company's preferred stock currently has substantial economic rights and preferences over the Company's common stock including (i) the right to receive dividends prior to any dividends declared or paid on any shares of the Company's common stock and (ii) liquidation payments in preference to holders of the Company's common stock. Upon the closing of the IPO, all outstanding shares of the Company's preferred stock will convert into common stock, thus eliminating the superior rights and preferences of the preferred stock as compared to the common stock.
- The Preliminary Price Range represents a future price for shares of the Company's common stock that, if issued in the IPO, will be immediately freely tradable in a public market, whereas the estimated fair value of the Company's common stock as of December 31, 2018, represents a contemporaneous estimate of the fair value of shares that were then illiquid, might never become liquid and, even if an IPO were successfully completed, would remain illiquid at least until the expiration of the 180-day lockup period following the IPO.
- Since December 31, 2018, the Company has taken several steps towards the completion of an IPO, including publicly filing the Registration Statement with the Commission on January 11, 2019.
- Since December 31, 2018, the Company made further progress in the advancement of its lead development programs and the execution of its business strategies, including continuing to progress its product candidates, including continuing the non-IND human clinical study of KB195 in patients with urea cycle disorders. On January 18, 2019, the Company received notification from the Food and Drug Administration that its IND for KB195 had been cleared.
- Since December 31, 2018, the Company held many "testing-the-waters" meetings, at which the Company received positive feedback from potential investors. Further positive feedback from potential investors was received through the underwriters on January 18, 2019.

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- The proceeds of a successful IPO would substantially strengthen the Company's balance sheet by increasing its cash resources. In addition, the completion of the IPO would provide the Company with ready access to the public equity and debt markets.

The Company respectfully submits that the deemed per share fair values used as the basis for determining stock-based compensation expense in connection with its grants of equity awards are reasonable and appropriate for the reasons described herein and in the Registration Statement.

We hereby further request, pursuant to Rule 418(b) under the Securities Act of 1933, as amended, the return of the unredacted version of this letter. The Company believes that the return of the supplemental information contained in this letter will protect the interests of investors and is consistent with the provisions of the Freedom of Information Act by maintaining in confidence the potential valuation of the Company that may, if disseminated, negatively impact the trading in the common stock of the Company following the IPO. The Company advises the Staff that it has not filed the supplemental information subject to this request in electronic format. Please return this letter to the Company, in care of the undersigned, a responsible representative of the Company, at 100 Northern Avenue, Boston, Massachusetts 02210.

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If you have any questions or comments with regard to this matter, please do not hesitate to contact the undersigned at (617) 570-1879.

Respectfully submitted,

GOODWIN PROCTER LLP

By /s/ Laurie A. Burlingame

Laurie A. Burlingame, Esq.

cc: Alison Lawton, *Kaleido Biosciences, Inc.*
Joshua Brumm, *Kaleido Biosciences, Inc.*
Kingsley L. Taft, *Goodwin Procter LLP*
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