Cooley

September 18, 2020

U.S. Securities and Exchange Commission
Division of Corporation Finance
100 F Street, N.E.
Washington, D.C. 20549
Attn: Deanna Virginio and Tim Buchmiller

Re: Kronos Bio, Inc.
Amendment No. 1 to Draft Registration Statement on Form S-1
Submitted September 3, 2020
CIK No. 0001741830

Ladies and Gentlemen:

On behalf of Kronos Bio, Inc. ("***Kronos***" or the "***Company***"), we are responding to the comments (the "***Comments***") of the staff (the "***Staff***") of the Securities and Exchange Commission (the "***Commission***") contained in its letter, dated September 16, 2020 (the "***Comment Letter***"), relating to the above referenced confidential Amendment No. 1 to Draft Registration Statement on Form S-1 (the "***Amended DRS***").

In response to the Comments set forth in the Comment Letter, the Company has revised the Amended DRS and is publicly filing via EDGAR a revised Registration Statement on Form S-1 (the "***Registration Statement***") with this response letter

For ease of reference, set forth below are the Company's responses to the Comments. The numbering of the paragraphs below corresponds to the numbering of the Comments, which for your convenience we have incorporated into this response letter. Page references in the text of this response letter correspond to the page numbers of the Registration Statement. Capitalized terms used in this letter but not otherwise defined herein have the meanings set forth in the Registration Statement.

Amendment No. 1 to Draft Registration Statement on Form S-1

Overview, page 1

1. *We note your disclosure on page 4 that you anticipate making your first IND submission from among the discovery programs in 2022. We also note that the milestones column in the discovery program table indicates an IND submission in 2022 and appears to apply to all programs. Please revise your disclosure to clarify whether a IND submission is expected for each discovery program in 2022 or revise the table accordingly. Additionally, we note that the MYC discovery program does not include a specific indication. Please explain why such discovery program is sufficiently material to include in the table or remove the program.*

   Response: In response to the Staff's comment, the Company has revised the discovery program table on pages 2, 93 and 113 of the Registration Statement, as well as its disclosure appearing immediately above the table on each of those pages.

2. *Please remove the timeline associated with the initiation of the Phase 2/3 program for KB-0742 from the anticipated milestones column in your pipeline table, as it appears to be premature and speculative, or explain why such disclosure is appropriate.*

   Response: In response to the Staff's comment, the Company has removed the timeline associated with the initiation of the Phase 2/3 program for KB-0742.

3. *We not your disclosure that you are currently planning to initiate a single-arm Phase 1/ 2 clinical trial in 2021 for ENTO in subjects with relapsed or refractory FLT3 mutated AML. However, your pipeline table suggests that you have already completed a Phase 1 clinical trial. Please shorten the second arrow for ENTO as appropriate to illustrate the product candidate's current status.*

   Response: In response to the Staff's comment, the Company has shortened the second arrow for ENTO to illustrate the product candidate's current status.

4. *We note your disclosure that your End of Phase 2 meeting with the FDA and similar discussions with European regulatory agencies are not expected to occur until the first half of 2021 and that following and subject to such discussions you plan to proceed to a registrational Phase 2/3 trial. Please revise your disclosure throughout the prospectus to make it clear that you have not yet discussed with the FDA the potential of your Phase 2/3 clinical trial to serve as a registrational trial. For example, please include such disclosure on page 1 where you first discuss your plans to initiate a registrational Phase 2/3 clinical trial in 2021.*

   Response: In response to the Staff's comment, the Company has revised its disclosure throughout the prospectus to make it clear that the Company has not yet discussed with the FDA the potential of its Phase 2/3 clinical trial to serve as a registrational trial.

SYK Program: ENTO and LANRA, page 2

5. *Please revise your disclosure to include the actual results observed in the retrospective analysis, including with respect to CR rates and overall survival. Please also indicate the number of subjects analyzed. In an appropriate location in your prospectus, please also explain how you determined which subjects had high HOX/MEIS mRNA expression and which subjects had low HOX/MEIS mRNA expression.*

   Response: In response to the Staff's comment, the Company has revised its disclosure on pages 3 and 125 of the Registration Statement.

Prior Development of ENTO, page 119

6. *We note your response to prior comment 9 and your revised disclosure that five subjects reported serious AEs assessed by the investigator as related to ENTO. To the extent there was a serious AE that the investigator could not determine was unrelated to treatment, please clearly disclose the event and the number of affected patients.*

   Response: In response to the Staff's comment, the Company has revised its disclosure on page 122 of the Registration Statement.

Therapeutic Rationale and Clinical Data in HOX/MEIS-High AML, page 120

7. *We note your disclosure that retrospective biomarker analysis of Arm A explored the hypothesis that patients with high HOX/MEIS mRNA are more likely to benefit from the addition of ENTO to IC. We also note your discussion of CR rates in the genetic subsets associated with high HOX/MEIS expression (NPM1 and MLL-r) compared to patients with neither mutation. Please clarify whether an analysis was conducted comparing CR rates in patients with these genetic subsets receiving combined ENTO and IC therapy to CR rates in patients with these genetic subsets of patients receiving IC alone or whether there are historical CR rates in these genetic subsets for IC therapy alone.*

Response: In response to the Staff's comment, the Company has revised its disclosure on page 125 of the Registration Statement.

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The Company respectfully requests the Staff's assistance in completing the review of the Registration Statement as soon as possible. Please advise us if we can provide any further information or assistance to facilitate your review. Please contact me at (858) 550-6142 or Charles S. Kim of Cooley LLP at (858) 550-6049 with any questions or further comments regarding our responses to the Comments.

Sincerely,

/s/ Charles J. Bair

Charles J. Bair
Cooley LLP

cc: Norbert Bischofberger, Ph.D., Kronos Bio, Inc.
Charles S. Kim, Cooley LLP
Chadwick L. Mills, Cooley LLP
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