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

DIVISION OF
CORPORATION FINANCE

December 22, 2021

David Hilbert
President and Chief Executive Officer
Arcellx, Inc.
25 West Watkins Mill Road, Suite A
Gaithersburg, MD 20878

Re: Arcellx, Inc.
Amendment No. 2 to Draft Registration Statement on Form S-1
Submitted November 19, 2021
CIK No. 0001786205

Dear Dr. Hilbert:

We have reviewed your amended draft registration statement and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by providing the requested information and either submitting an amended draft registration statement or publicly filing your registration statement on EDGAR. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing the information you provide in response to these comments and your amended draft registration statement or filed registration statement, we may have additional comments.

Amendment No. 2 to Draft Registration Statement on Form S-1 Submitted November 19, 2021

Prospectus Summary
Overview, page 1

1. Please revise the Overview to provide a balanced presentation of the status and capabilities of the platforms you are developing and the preliminary Phase 1 data that you prominently highlight concerning your CART-ddBCMA candidate. For instance, we note several statements in the Overview regarding validation of “meaningful clinical benefits", "higher transduction efficiency”, “improved lasting therapeutic benefit and reduced toxicity" and "potential for best-in class treatment." With reference to your disclosure on page 14, we note that it should be clear in the Overview that you are still developing each of these three platforms, and that you have treated a small number of patients using a

product developed under the D-Domain and ddCAR platforms and that those results are preliminary in nature. With respect to ARC-SparX platform, please revise the disclosure to explain, if applicable, that your statements of belief are based on preclinical testing that you have conducted.

2. Please revise the second and third paragraphs of the Overview to define or explain briefly the following scientific terms:
   - refractory
   - cytogenetics
   - extramedullary
   - bone marrow blasts

   Also, revise to explain the terms “overall response rate” and “complete response rate” and clarify, if true, that these response rates do not indicate that the patient was cured of the condition.

3. We refer to prior comment 1 and your June 9, 2021 response to prior comment 5. Without revision to the table, it appears that you intend to both develop and commercialize your CART-ddBCMA technology. Please advise and revise the Summary discussion to clarify your development plans for this product, including any changes with respect to clinical advancement and commercialization.

4. Please revise the pipeline table as follows:
   - Replace the term "Pivotal" with "Phase III." If "Pivotal" is intended to mean something other than Phase III, please provide disclosure to clarify. Make similar revisions throughout your prospectus for consistency.
   - Provide an additional column for Phase III that is no less prominent than the other columns, or tell us the basis for your belief that you will be able to combine Phase II and Phase III for all of your product candidates.
   - Given the status of development and the lack of Business section discussion, remove the AML-2, AML-3, AML-4 and the solid tumor programs from the pipeline table.

Management's Discussion and Analysis of Financial Condition and Results of Operations
Contractual Obligations, page 86

5. Please expand your disclosure of the agreements CMOs and other third party vendors to disclose the amount of milestone payments that you are subject to pay to the extent that those milestones are met.

Critical Accounting Policies and Estimates
Determining the fair value of our common stock and fair value of total equity, page 89

6. As previously requested in comment 13 in our letter dated May 29, 2020, please expand your disclosure to provide the specific valuation approaches and methods used to estimate the fair value of your common stock and total equity that are consistent with the American Institute of Certified Public Accountants’ Audit and Accounting Practice Aid Series: Valuation of Privately Held Company Equity Securities Issued as Compensation,

including the nature of the material assumptions used in each method.

Business
CART-ddBCMA: Phase 1 Trial Preliminary Results, page 112

7. Revise the graphics on page 115 so the font is large enough to be readable.

8. Revise the discussion of the discussion on page 115 to clarify if cytokine release syndrome (CRS) and immune effector cell-associated neurotoxicity syndrome (ICANS) were the only adverse events that occurred in connection with the clinical trial, or revise to disclose all adverse events.

Intellectual Property, page 125

9. Please revise your intellectual property disclosure to clearly describe on an individual or patent family basis the type of patent protection granted for each product, the number of patents held, the expiration year of each patent held, and the jurisdiction of each patent. In this regard it may be useful to provide tabular disclosure. Please clearly indicate the number of U.S. patents, the number of foreign patents, and name the jurisdictions for the foreign patents or applications.

12. Share-Based Compensation
Restricted Stock Units, page F-35

10. We note your disclosure that the fair value of the RSUs was determined by an independent valuation specialist. Please tell us the nature and extent of the specialist's involvement and whether you believe the specialist was acting as an expert as defined under Section 11(a) of the Securities Act of 1933 and Section 436(b) of Regulation C, such that you must disclose the name of the specialist in the Form S-1 along with a consent from the specialist once the Form S-1 is publicly filed. If you conclude the specialist is not considered an expert under the Securities Act, please revise your disclosures to clarify.

You may contact Tracey Houser at (202) 551-3736 or Al Pavot at (202) 551-3738 if you have questions regarding comments on the financial statements and related matters. Please contact Abby Adams at (202) 551-6902 or Joe McCann at (202) 551-6262 with any other questions.

Sincerely,

Division of Corporation Finance
Office of Life Sciences

cc: Dan Koeppen