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VIA EDGAR AND FEDEX

October 10, 2013

United States Securities and Exchange Commission
Division of Corporation Finance
Mail Stop 6010
100 F Street, N.E.
Washington, D.C. 20549
Attn: Jeffrey Riedler
Daniel Greenspan

Re: Celladon Corporation
Confidential Draft Registration Statement on Form S-1
Submitted September 6, 2013
File No. 377-00304

Dear Mr. Riedler:

Enclosed for electronic filing via EDGAR pursuant to the Securities Act of 1933, as amended, on behalf of our client, Celladon Corporation (the "***Company***"), is a registration statement on Form S-1 ("***Registration Statement***"). The Registration Statement updates the Company's draft registration statement on Form S-1 (the "***Confidential Draft Registration Statement***") submitted confidentially to the Securities and Exchange Commission (the "***Commission***") on September 6, 2013. The copy of the Registration Statement that is enclosed with the paper copy of this letter is marked to show changes from the Confidential Draft Registration Statement.

The Registration Statement is being submitted in response to comments received from the staff of the Commission (the "***Staff***") by letter dated October 3, 2013 with respect to the Confidential Draft Registration Statement (the "***Comment Letter***"). The numbering of the paragraphs below corresponds to the numbering in the Comment Letter, the text of which we have incorporated into this response letter for convenience. Except where otherwise indicated, page references in the text of the responses below correspond to the page numbers of the Registration Statement.

Staff Comments and Company Responses

General

1. *Please file all exhibits as soon as practicable. We may have further comments upon examination of these exhibits.*

Response: The Company acknowledges the Staff's comment, has filed certain outstanding exhibits with the Registration Statement, and will file the remaining exhibits as soon as practicable.

2. *Please provide us proofs of all graphic, visual or photographic information you will provide in the printed prospectus prior to its use, for example in a preliminary prospectus. Please note that we may have comments regarding this material.*

Response: The Company respectfully advises the Staff that it does not currently intend to include any additional graphic, visual or photographic material in the printed prospectus other than the Company's logo which currently appears on the front and back cover pages of the Registration Statement and the other graphics that are presently included in Registration Statement. If, following the date of this letter, the Company determines to include additional graphic, visual or photographic material in the printed prospectus, it will provide proofs of such material to the Staff prior to its use.

3. *Please supplementally provide us with any written materials that you or anyone authorized to do so on your behalf provides in reliance on Section 5(d) of the Securities Act to potential investors that are qualified institutional buyers or institutional accredited investors. Similarly, please supplementally provide us with any research reports about you that are published or distributed in reliance upon Section 2(a)(3) of the Securities Act of 1933 added by Section 105(a) of the Jumpstart Our Business Startups Act by any broker or dealer that is participating or will participate in your offering.*

Response: The Company is supplementally providing the Staff with a copy of a presentation of the type referenced in the first sentence of the Staff's comment. The Company respectfully advises the Staff that at present there are no research reports of the type referenced in the second sentence of the Staff's comment. If, following the date of this letter, any such reports are published or distributed, the Company will supplementally provide such reports to the Staff.

4. *Comments to your application for confidential treatment will be delivered under separate cover.*

Response: The Company acknowledges the Staff's comment.

Prospectus Summary
Overview, page 1

5. *Please define the following terms:*

- *Heart failure;*
- *Systolic heart failure;*
- *Diastolic heart failure; and*
- *AV fistula maturation failure.*

Response: In response to the Staff's comment, the Company has revised the disclosure on pages 1, 2, 83 and 84 of the Registration Statement as requested.

Risk Factors
We may find it difficult to enroll patients . . ., page 16

6. *We note that you have significant obstacles in the timely recruitment and enrollment of eligible patients in your CUPID 2 trial. We also note that the FDA has approved a 572 patient Phase 3 trial. Please expand your disclosure to discuss the difficulty of enrolling patients for a 572 patient Phase 3 trial.*

Response: In response to the Staff's comment, the Company has revised the disclosure on page 17 of the Registration Statement as requested.

The results from our CUPID 2 trial may not be sufficiently robust . . ., page 19

7. *We note on page 3 that the FDA has discussed proceeding to a Phase 3 clinical trial with high-dose MYDICAR, and that the FDA has approved a 572 patient Phase 3 trial. We also note on page 19 that if the FDA or the EMA requires additional studies, including Phase 3 trials, you would incur increased costs and delays in the marketing approval process, which would require you to expend more resources than you have available. Please revise your disclosure on these pages and throughout the registration statement, as applicable, to clarify that the FDA currently requires you to complete the Phase 3 trial. Additionally, please expand your disclosure to include any communications with the FDA or reasoning that leads you to believe that a Phase 3 clinical trial may not be necessary.*

Response: In response to the Staff's comment, the Company has revised the disclosure on pages 4, 19, and 83 of the Registration Statement as requested.

We intend to rely on third parties to produce our viral vectors, page 26

8. *We note that you filed your manufacturing services agreement with Lonza as Exhibit 10.23 and that on page 80 you state that you have entered into an agreement with Lonza. We also note that you state that you have entered into a non-binding letter of intent with Lonza. Please clarify if you have a binding agreement with Lonza at this time. Additionally, to the extent material, please disclose the material terms of your manufacturing agreement, including the material rights and obligations of the parties, duration of the agreement and termination provisions.*

Response: The Company respectfully advises the Staff that, as disclosed on pages 26, 27 and page 114 of the Registration Statement, the only binding agreement it has entered into with Lonza is the manufacturing services agreement which the Company filed as Exhibit 10.23 to the Registration Statement. The Company has described the material terms of such manufacturing agreement on page 114 of the Registration Statement.

Changes in U.S. patent law could diminish the value of patents, page 47

9. *We note that you state that the recent U.S. Supreme Court rulings have created uncertainty with respect to the value of patents. Please identify any of your licensed or owned patents that may be vacated or adversely affected by the U.S. Supreme Court decision in Association for Molecular Pathology v. Myriad Genetics, Inc.*

Response: In response to the Staff's comment, the Company has revised the disclosure on page 47 of the Registration Statement as requested.

Use of Proceeds, page 56

10. *We note that you state that you believe funding from this offering will allow you to complete your CUPID 2 clinical trial and initiate your planned AAV1 NAb positive and viral shedding trials, as well as the development of manufacturing capabilities for the commercial production of MYDICAR, including commercial scale-up and validation and automation of our companion diagnostic. Please amend your disclosure to include an approximate amount of the proceeds you plan to allocate to the CUPID 2 clinical trial, each of the AAV1 Nab positive and viral shedding trials, and the development of manufacturing capabilities. Additionally, please expand your disclosure to state the stage of development of your planned AAV1 NAb positive and viral shedding trials that you expect to reach using the allocated proceeds.*

Response: In response to the Staff's comment, the Company has revised the disclosure on page 56 of the Registration Statement as requested.

Management's Discussion and Analysis of Financial Condition and Results of Operations
Financial Overview
Determination of the Fair Value of Common Stock, page 71

11. *We will further evaluate your accounting for stock compensation and related disclosure when your IPO price has been set. Please expand your disclosure to address the following:*

- *In the last paragraph on page 71 you discuss the cost approach. Please revise your disclosure to clarify whether you utilized that approach. If so, please explain to us separately how it is relevant in your circumstances.*
- *Disclose how you determined that a cost of capital of 26% and a discount for lack of marketability of 15% were appropriate at June 30, 2013.*
- *Please disclose the reassessed assumptions used in the April 25, 2013 estimated valuation of the Company's common stock.*
- *Once you can reasonably estimate the IPO price, qualitatively and quantitatively discuss each significant factor contributing to the difference between the latest valuation and the estimated IPO price.*
- *Continue to update your disclosure for all equity related transactions, including any options, warrants, or convertible note or preferred stock issuances, through the effective date of the registration statement.*

Response: The Company acknowledges the Staff's comment and is providing responses to each of the five bullet points in Comment #11 sequentially below:

Bullet 1: The Company has updated the disclosure on page 72 of the Registration Statement to clarify that, although the cost approach was considered in each valuation, it was not utilized in any period presented.

Bullet 2: The Company has updated the disclosure on page 74 of the Registration Statement to disclose additional information regarding its determination of the cost of capital and discounts for lack of marketability at June 30, 2013.

Bullet 3: The Company has updated the disclosure on page 74 of the Registration Statement to clarify that they determined that the reassessed fair value of its common stock as of April 25, 2013 was the same as the fair value of its common stock as of June 30, 2013. As such, the reassessed assumptions were the same for both periods.

Bullet 4: The Company acknowledges the Staff's comment and plans to qualitatively and quantitatively discuss each significant factor contributing to the difference between the latest valuation and the estimated IPO price once it can reasonably estimate the IPO price.

Bullet 5: The Company acknowledges the Staff's comment and plans to disclose, upon amendment, all equity related transactions, including any options, warrants, or convertible note or preferred stock issuances, through the effective date of the registration statement.

12. *In the penultimate paragraph on page 71 you disclose that you considered and relied upon an appraisal of the value of your common stock as of January 31, 2012 that was prepared by an independent third-party valuation specialist. In the fifth paragraph on page 73 you disclose that you utilized an appraisal of the value of your common stock as of June 30, 2013 that was also prepared by an independent third-party valuation specialist. These statements appear to convey full reliance upon these valuation reports. If so, please revise your disclosure to indicate the names of these valuation specialists, identify them as experts and have them provide their consents. Otherwise, please revise your disclosure to take responsibility for the valuations and indicate how you utilized them in assessing fair value of your common stock. Please see Question 233.02 of the Compliance and Disclosure Interpretations for the Securities Act Rules.*

Response: In response to the Staff's comment, the Company has revised the disclosure in several paragraphs on pages 71 and 73 of the Registration Statement to clarify that the Company did not place full reliance on the reports prepared by independent third-party valuation specialists. The Company considered each such valuation report as one factor in conjunction with the objective and subjective factors described on page 71, along with input from management, to determine the fair value of its common stock.

Business
MYDICAR for Heart Failure, page 86

13. *We note that you disclose instances in which an additional IND for MYDICAR would need to be filed for a specific indication. Please disclose the INDs you have submitted for MYDICAR. Additionally, please provide the date(s) filed and the identity of the filer if different from the company.*

Response: In response to the Staff's comment, the Company has revised the disclosure on pages 15 and 90 of the Registration Statement as requested.

Clinical Events in CELL-001 Phase 2a, page 92

14. *We note on page 93 that you hypothesize that low- and mid-dose groups demonstrate a delay to onset of clinical events due to the short-term increase in blood flow to the heart after MYDICAR therapy. Please expand on this disclosure to explain the reason for the short-term increase in blood flow after MYDICAR therapy compared to the placebo.*

Response: In response to the Staff's comment, the Company has revised the disclosure on page 94 of the Registration Statement as requested.

CUPID 1 (CELL-001) Long-term Follow-up, page 94

15. *We note on page 95 that you have tested for the presence of the vector DNA in patients after treatment. Please disclose if you are aware of any observations that would suggest that the high-dose treatment of MYDICAR would also have limited durability based on your biopsy testing, and information gained from the low- and mid-dose groups.*

Response: In response to the Staff's comment, the Company has revised the disclosure on page 96 of the Registration Statement as requested. The Company advises the Staff that it is not aware of any observations that would suggest that the high-dose treatment of MYDICAR would also have limited durability.

MYDICAR-HF/pEF MYDICAR for Heart Failure with Preserved Ejection Fraction (Diastolic Heart Failure), page 100

16. *We note on page 82 that MYDICAR delivers the gene for the SERCA2a enzyme. We also note on page 88 that calcium is sequestered back in the SR by the SERCA2a enzyme leading to muscle relaxation. We note on page 89 and 100 that you state that SERCA2a deficiency is a cause of diastolic heart failure. We also note that you are developing MYDICAR to target diastolic heart failure. Please clarify how MYDICAR can be used to target diastolic heart failure.*

Response: In response to the Staff's comment, the Company has revised the disclosure on page 90 of the Registration Statement as requested.

Patent Protection for MYDICAR
Composition of MYDICAR, page 105

17. *We note that you have in-licensed two patent families from AmpliPhi and AskBio LLC regarding the composition of MYDICAR. We also note that the license agreement with AskBio is filed as Exhibit 10.17 as a non-exclusive agreement. Please amend your disclosure to state if these are exclusive or non-exclusive licenses.*

Response: In response to the Staff's comment, the Company has revised the disclosure on page 106 of the Registration Statement as requested.

Manufacture of AAV Vectors, page 105

18. *We note on page 106 that you have pending patent applications in the United States and several foreign countries relating to the Manufacture of AAV Vectors. Please clarify if these patent applications are covered in your license agreement or if you control them directly. Additionally, please list the material non-U.S. countries in which these patents are pending.*

Response: In response to the Staff's comment, the Company has revised the disclosure on pages 106 and 107 of the Registration Statement as requested

Use of SERCA2a for the Treatment of Heart Failure, page 106

19. *We note on page 106 that you have licensed certain patents related to the use of SERCA2a for the treatment of heart failure. Please disclose the licensor that owns these patents.*

Response: In response to the Staff's comment, the Company has revised the disclosure on page 107 of the Registration Statement as requested.

International Patent Protection for MYDICAR, page 106

20. *We note on page 106 that, in addition to your patent coverage in the U.S., you have or have licensed related patents and patent applications abroad. Please identify any patents that cover material non-U.S. jurisdictions and provide the jurisdiction(s), expiration date(s) and other relevant information comparable to your disclosures regarding your U.S. patent portfolio.*

Response: In response to the Staff's comment, the Company has revised the disclosure on pages 106 and 107 of the Registration Statement as requested.

Methods of Treating Stenosis, page 106

21. *We note on page 106 that you in-license patents related to using SERCA2a genes to reduce stenosis. Please disclose the licensor that owns these patents. Additionally, if this license agreement is material to your company, please disclose all of the material terms agreed to by the parties. This includes, but is not limited to:*

- *material payment terms, including royalties owed;*
- *the relevant intellectual property covered and rights conveyed as to such property;*
- *the duration of the agreement; and*
- *the material termination provisions.*

Please file this agreement as an exhibit pursuant to Item 601(b)(10) of Regulation S-K. Alternatively, please provide us with an analysis supporting your determination that the agreement is not material to the company.

Response: In response to the Staff's comment, the Company has revised the disclosure on page 108 of the Registration Statement to identify The General Hospital Corporation as the licensor that owns the patents related to using SERCA2a genes to reduce stenosis. The Company respectfully advises the Staff that its license agreement with The General Hospital Corporation is not material to the Company's business. The Company's conclusion that the agreement is not material is based on the fact that the intellectual property in-licensed from The General Hospital Corporation under the agreement is not related to the current indications targeted by the Company's lead product candidate or small molecule program and is not required for the planned clinical trials described in the Registration Statement. The Company does not currently plan to pursue additional indications that would rely on the intellectual property in-licensed from The General Hospital Corporation in the near term. If the Company does in the future pursue development of a product candidate for the treatment of stenosis such that the license agreement would become material, the Company will file the agreement at such time.

Methods of Treating Pulmonary Arterial Hypertension, page 107

22. *We note on page 107 that you are the co-owner of a patent application for patents to treat pulmonary arterial hypertension. Please disclose the other co-owner. Additionally, please disclose if you have entered into an agreement with the co-owner. If this agreement is material to your company, please disclose all of the material terms agreed to by the parties. This includes, but is not limited to:*

- *material payment terms, including royalties owed;*
- *the relevant intellectual property covered and rights conveyed as to such property;*
- *the duration of the agreement; and*
- *the material termination provisions.*

Please file this agreement as an exhibit pursuant to Item 601(b)(10) of Regulation S-K. Alternatively, please provide us with an analysis supporting your determination that the agreement is not material to the company.

Response: In response to the Staff's comment, the Company has revised the disclosure on page 108 of the Registration Statement to identify Mount Sinai School of Medicine of New York University as the co-owner of the patent application for patents to treat pulmonary arterial hypertension. The Company respectfully advises the Staff that its license agreement with Mount Sinai School of Medicine of New York University, is not material to the Company's business. The Company's conclusion that the agreement is not material is based on the fact that the co-owned intellectual property covered by the license agreement is not related to the current indications targeted by the Company's lead product candidate or small molecule program and is not required for the planned clinical trials described in the Registration Statement. The Company does not currently plan to pursue additional indications that would rely on the intellectual property co-owned with Mount Sinai School of Medicine of New York University in the near term. If the Company does in the future pursue development of a product candidate for the treatment of pulmonary arterial hypertension such that the license agreement would become material, the Company will file the agreement at such time.

Methods of Treating Heart Arrhythmia, page 107

23. *We note on page 107 that you in-license a patent family assigned to the U.S. National Institutes of Health. If this agreement is material to your company, please disclose all of the material terms agreed to by the parties. This includes, but is not limited to:*

- *material payment terms, including royalties owed;*
- *the relevant intellectual property covered and rights conveyed as to such property;*
- *the duration of the agreement; and*
- *the material termination provisions.*

Please file this agreement as an exhibit pursuant to Item 601(b)(10) of Regulation S-K. Alternatively, please provide us with an analysis supporting your determination that the agreement is not material to the company.

Response: The Company respectfully advises the Staff that its license agreement with the U.S. National Institutes of Health is not material to the Company's business. The Company's conclusion that the agreement is not material is based on the fact that the intellectual property in-licensed from the U.S. National Institutes of Health under the agreement, which relates to the treatment of heart arrhythmia, is not related to the current indications targeted by the Company's lead product candidate or small molecule program and is not required for the planned clinical trials described in the Registration Statement. The Company does not currently plan to pursue additional indications that would rely on the intellectual property in-licensed from the U.S. National Institutes of Health in the near term. If the Company does in the future pursue development of a product candidate for the treatment of heart arrhythmia such that the license agreement would become material, the Company will file the agreement at such time.

License Agreement with The Regents of the University of California, page 108

24. *We note that the license agreement with the UC will terminate upon the expiration of the applicable UC patent rights. Please disclose the expiration dates of the applicable UC patent rights under the agreement.*

Response: In response to the Staff's comment, the Company has revised the disclosure on page 110 of the Registration Statement as requested.

Sublicense Agreement and Amended and Restated License Agreement with AmpliPhi, page 109

25. *We note that you are obligated to pay to AmpliPhi a low single-digit percentage royalty based on net sales of any companion diagnostic covered by a licensed patent sold by you and that you are obligated to pay to AmpliPhi all royalty payments that become due to UPenn, including a low single-digit tiered percentage royalty on net sales of any companion diagnostic sold by you. Please clarify that these two royalty payments are separate obligations.*

Response: In response to the Staff's comment, the Company has revised the disclosure on page 111 of the Registration Statement as requested.

Non-Exclusive License Agreement with Virovek, page 111

26. *We note that the license agreement with Virovek will terminate upon the expiration of your royalty payment obligations or 10 years from the date of first commercial sale in some instances. Please amend your disclosure to state the time that your licensed patents expire.*

Response: In response to the Staff's comment, the Company has revised the disclosure on page 112 of the Registration Statement as requested.

Principal Stockholders, page 156

27. *Please revise the table on page 157 to include the shares held by Enterprise Partners entities as also held by Dr. Senyei; the shares held by Lundbeckfond Invest A/S as also held by Dr. Kördel; the shares held by GBS Bioventures IV as also held by Dr. Funder; the shares held by MPM Capital entities as also held by Mr. Foley; the shares held by H&Q Funds as also held by Dr. Omstead, the shares held by Cooperatief LSP IV UA as also held by Dr. Azzam, the shares held by Novartis Bioventures Ltd. as also held by Dr. Silverman, and the shares held by Pfizer Inc. as also held by Dr. Dalton. Please also include these shares in the total aggregate shares of all executive officers and directors as a group.*

Response: In response to the Staff's comment, the Company has revised the disclosure on pages 159-163 of the Registration Statement as requested. The Company supplementally advises the staff that it has not revised the table on pages 159-160 of the Registration Statement with respect to the shares held by Pfizer Inc. or Novartis Bioventures Ltd. as neither Dr. Dalton nor Dr. Silverman exercise voting or investment control with respect to the shares held by Pfizer Inc. and Novartis Bioventures Ltd., respectively.

28. *For each of the entities affiliated with Venrock Partners, which are also beneficial owners of shares, please disclose the natural person or persons who exercise the voting and/or dispositive powers with respect to such shares.*

Response: In response to the Staff's comment, the Company has revised the disclosure on page 162 of the Registration Statement as requested.

Shares Eligible for Future Sale
Lock-Up Agreements, page 165

29. *Once available, please file copies of the lock-up agreements.*

Response: The Company has included the form of lock-up agreement as an exhibit to the form of underwriting agreement filed with the Registration Statement.

30. *Please state the number of shares that are subject to a lock-up.*

Response: In response to the Staff's comment, the Company has revised the disclosure on page 169 of the Registration Statement as requested.

Notes to the Financial Statements
Note 5. Commitments and Contingencies, page F-19

31. *Please disclose the term length of the patent license agreement with the Regents of the University of Minnesota and any other significant obligations and terms of the agreement. Disclose if the agreement encompasses a manufacturing agreement.*

Response: In response to the Staff's comment, the Company has revised the disclosure on page F-21 of the Registration Statement as requested.

32. *Please revise your disclosures to provide an estimate of your known payment obligations for each license and sublicense agreement disclosed. For example, regarding the AmpliPhi Sublicense agreement disclosures state the Company is obligated to pay an annual sublicense maintenance fee of $310,000 and in the University of Minnesota the annual license fee is $120,000. Also, include this information in your "Contractual Obligations and Commitments" disclosure in MD&A and quantify there your potential milestone obligations.*

Response: In response to the Staff's comment, the Company has revised the disclosure on pages 81, F-21 and F-22 of the Registration Statement as requested.

33. *Please revise your disclosures to state how the annual maintenance and annual license payments for the disclosed license and sublicense agreements were accounted for in your financial statements.*

Response: In response to the Staff's comment, the Company has revised the disclosure on pages F-14, F-20, F-21 and F-22 of the Registration Statement as requested.

34. *For each of your agreements, please revise your disclosures to state what milestones, if any, have been achieved by the Company and milestone payments made or accrued for each of the periods presented and cumulatively year to date.*

Response: In response to the Staff's comment, the Company has revised the disclosure on pages F-21 and F-22 of the Registration Statement as requested.

Note 6. Preferred Stock and Stockholders' Equity (Deficit), page F-22

35. *Please revise your disclosure to clarify why your Junior preferred stock is classified in the mezzanine on your balance sheet. Although you indicate in your policy disclosure on page F-14 that you classify stock that is redeemable outside your control in the mezzanine, your redemption rights disclosure on page F-23 only appears to apply to your Series A-1 preferred stock.*

Response: The Company acknowledges the Staff's comment and has updated its disclosure on pages F-14, F-22 and F-23 to clarify that both the redeemable convertible preferred stock and convertible preferred stock are potentially redeemable or subject to liquidation outside of the Company's control and reported in the mezzanine.

Note 7. Income Taxes, page F-26

36. *Please tell us your consideration of the guidance in ASU 2013-11 regarding the potential impact on your accounting for unrecognized tax benefits and your net operating loss and research and development credit carryforwards deferred tax assets. To the extent appropriate, please revise your disclosure of recently issued accounting pronouncements to include this pronouncement.*

Response: The Company acknowledges the Staff's comment and has updated its recent accounting pronouncement disclosure on pages 82 and F-16. The Company supplementally advises the Staff that it does not have any unrecognized tax benefits recorded on its June 30, 2013 balance sheet and does not expect a material impact on its financial position, results of operations or related disclosures as a result of adoption of ASU 2013-11.

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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 direct any further comments or questions regarding the Registration Statement or this response letter to me at (858) 550-6044.

Sincerely,

Cooley LLP

/s/ Jason L. Kent, Esq.

Jason L. Kent, Esq.

cc: Krisztina M. Zsebo, Ph.D., Celladon Corporation
Fredrik Wiklund, Celladon Corporation
Kristin VanderPas, Esq., Cooley LLP
Cheston J. Larson, Esq., Latham & Watkins LLP
Michael Sullivan, Esq., Latham & Watkins LLP