



DIVISION OF
CORPORATION FINANCE

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

June 10, 2014

Via E-mail

Joshua H. Bilenker, M.D.
President
Loxo Oncology, Inc.
One Landmark Square, Suite 1122
Stamford, Connecticut 06901

**Re: Loxo Oncology, Inc.
Draft Registration Statement on Form S-1
Submitted May 14, 2014
CIK No. 1581720**

Dear Dr. Bilenker:

We have reviewed your 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.

General

1. We note numerous blank spaces throughout the prospectus. Please be advised that you should include the price, use of proceeds, dilution, capitalization, underwriting, and all other required information in an amendment to your Form S-1 prior to any distribution of preliminary prospectuses so that we may complete our review. Note that we may have additional comments once you have provided this disclosure. Therefore, please allow us sufficient time to review your complete disclosure prior to any distribution of preliminary prospectuses.
2. Please file all exhibits as soon as practicable. We may have further comments upon examination of these exhibits.

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3. Please provide us with copies of your artwork prior to circulating preliminary prospectuses. Please note that we may have comments regarding this material. For guidance, see Compliance and Disclosure Interpretations, Securities Act Forms, Question 101.02, available on our website at <http://www.sec.gov/divisions/corpfin/cfguidance.shtml>.
4. 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.
5. As soon as practicable, please furnish a statement as to whether the amount of compensation to be allowed or paid to the underwriters has been cleared with FINRA. Prior to the effectiveness of this registration statement, please provide us with a copy of the letter informing you that FINRA has no objections.
6. Please update the financial information included in your filing in accordance with the requirements of Rule 3-12 of Regulation S-X.

Prospectus Summary, page 1

Our Strategy, page 4

7. Please revise to briefly characterize the term “rapidly advance,” with respect to your lead product candidate LOXO-101. We note risk factor disclosures elsewhere in the prospectus, including at page 5, indicating that clinical drug development involves a “lengthy and expensive process.”

Risk Factors, page 11

Any product candidate for which we obtain marketing approval will be subject to extensive post-marketing regulatory requirements...., page 21

8. Please revise to move your definition of the acronym “cGMP” to the first time you use the term, as you have done with the conceptually similar term “GCPs” on page 28 of the Risk Factors.

Management's Discussion and Analysis of Financial Condition...., page 57

Overview, page 57

9. To the extent determinable, please revise to include an estimate of the costs you expect to incur associated with operating as a public company

Contractual Obligations and Commitments, page 65

10. We note from your discussion of the Array Collaboration Agreement on page 65 that the company must pay Array a fixed amount per month, presumably for the term of the agreement, which runs through July 3, 2016. Please explain why this obligation is not included in your table.

Array Collaboration Agreement, page 65

11. Please tell us how you determined the appropriate accounting treatment for the \$7 million in shares issued to Array in connection with the collaboration agreement. In this regard, we note from your discussion that the agreement runs through July 3, 2016. Particularly, address in your response why the entire \$7 million was recognized as an expense upon issuance.

Principal Stockholders, page 107

12. Tell us whether any of the selling stockholders are broker dealers or affiliates of broker-dealers. We may have further comments.

Financial Statements

6. Redeemable Convertible Preferred Stock and Stockholders' Deficit, page F-12

13. Based on your discussion of subsequent events on page F-21, it appears that the conversion feature on some of your redeemable preferred stock were issued subject to down round provisions or other special price adjustment features. Please clarify and tell us, with reference to authoritative literature, how you determined the appropriate accounting treatment for these conversion features at issuance. Specifically explain why you believe the conversion features were not derivatives.

Array Collaboration Agreement, page F-17

14. Please tell us how you accounted for the rights to Array's TRK inhibitor program, acquired in connection with the collaboration agreement.

10. Subsequent Events, page F-20

Series B Convertible Preferred Stock Financing

15. Please disclose the redemption terms of the Series B Redeemable Convertible Preferred Stock and clarify whether the dividends are cumulative. Also, tell us how you are accounting for the embedded conversion option, specifically, whether it is a derivative.

Part II--Exhibit Index

Exhibit 10.7, Drug Discovery and Collaboration Agreement, dated July 3, 2013, between Loxo Oncology, Inc. and Array BioPharma Inc.

16. We note that you have incorporated by reference your collaboration agreement with Array to Exhibit 10.54 of the Form 10-K filed August 12, 2013 by Array BioPharma Inc. We also note that the agreement as filed by Array is redacted and the portions redacted have been granted confidential treatment. Please revise to file the collaboration agreement as an exhibit to your own filing. If you wish to seek confidential treatment for portions of the agreement, you must submit your own confidential treatment request for those portions of the agreement pursuant to Securities Act Rule 406. For guidance on preparing a request for confidential treatment, please refer to Staff Legal Bulletin 1A, publicly available at www.sec.gov/interps/legal.shtml.

If you intend to respond to these comments with an amended draft registration statement, please submit it and any associated correspondence in accordance with the guidance we provide in the Division's October 11, 2012 announcement on the SEC website at <http://www.sec.gov/divisions/corpfin/cfannouncements/drsfilingprocedures101512.htm>.

Please keep in mind that we may publicly post filing review correspondence in accordance with our December 1, 2011 policy (<http://www.sec.gov/divisions/corpfin/cfannouncements/edgarcorrespondence.htm>). If you intend to use Rule 83 (17 CFR 200.83) to request confidential treatment of information in the correspondence you submit on EDGAR, please properly mark that information in each of your confidential submissions to us so we do not repeat or refer to that information in our comment letters to you.

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You may contact Kenya Gumbs, Staff Accountant, at (202) 551-3373, or Robert Littlepage, Accountant Branch Chief, at (202) 551-3361, if you have questions regarding comments on the financial statements and related matters. Please contact Paul Fischer, Attorney-Advisor, at (202) 551-3415, Kathleen Krebs, Special Counsel, at 202-551-3350, or me at (202) 551-3810, with any other questions.

Sincerely,

/s/ Kathleen Krebs, for

Larry Spirgel
Assistant Director

cc: Matthew S. Rossiter, Esq.
Fenwick & West LLP