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April 16, 2020

Ms. Sasha Parikh
Ms. Vanessa Robertson
Ms. Irene Paik
Mr. Jeffrey Gabor
Division of Corporation Finance
Office of Life Sciences
Securities and Exchange Commission
100 F Street, NE
Washington, D.C. 20549

Re: Lantern Pharma Inc.
Draft Registration Statement on Form S-1
Submitted January 24, 2020
CIK No. 0001763950

Ladies and Gentleman:

On behalf of our client, Lantern Pharma Inc. (the "Company"), we are submitting this letter in response comments received from the staff (the "Staff") of Securities and Exchange Commission's ("SEC's") by letter dated February 20, 2020, (the "Comment Letter") with respect to the Company's Draft Registration Statement on Form S-1 confidentially submitted to the Commission on January 24, 2020 (the "Draft Registration Statement").

In response to the Comment Letter, the Company is publicly filing an amended version of the Draft Registration Statement via EDGAR (the "First Amended Registration Statement") with this response letter. We are providing the Staff a courtesy copy of the First Amended Registration Statement and a marked version showing the changes from the Draft Registration Statement.

For the Staff's convenience, the numbering of the paragraphs below correspond to the numbering of the comments in the Comment Letter, the text of which we have restated in italicized type, followed by the Company's response. Page references in the responses correspond to the page numbers in the First Amended Registration Statement.

Draft Registration Statement on Form S-1 submitted January 24, 2020

Cover Page

1. *Reference is made to the "80%+ Blinded Prediction Success" claim in the center of your graphic under "RADRTM Data Architecture." The claim being made here is not clear and the footnote in reference to this claim is not legible. To the extent that this claim relates to the LP-184 biomarker study on page 96, please ensure that the footnote clearly states that this claim is based solely on your analysis of the dataset on preclinical LP-184 sensitivity and include a reference to the disclosure on page 96.*

A footnote has been added next to the claim "80%+ Blinded Prediction Success" in the graphic "RADR® DATA ARCHETECTURE" that now clarifies the claim as follows: "*RADR®'s historical success in predicting responders and non-responders to treatment, as determined through in-silico, retrospective analyses of historical patient data from 10 independent clinical trials conducted by others."

The reference claim does not relate to the LP-184 preclinical biomarker study described elsewhere in the prospectus.

2. *We note the inclusion of LP-100 under "Our Portfolio" at the bottom of your graphic. Please explain why you believe it is appropriate to present LP-100 as part of your portfolio given that Oncology Venture will be solely responsible for the development of LP-100, including development of a plan for a clinical trial program; has the right to assign all or part of the agreement to a third party; and the limitation of your financial interest to a right to milestones and royalties.*

LP-100 has been included as part of the Company's portfolio even though it has been out-licensed to Oncology Venture A/S because the Company has retained and/or exercises significant rights in and to the intellectual property underlying LP-100 besides the right to milestone payments and royalties, including, but not limited to, the following:

(i) Section 3.1 of the Drug License and Development Agreement ("DLDA") between the Company and Oncology Venture, A/S, contemplates a form of "alliance" between the two companies with each company appointing and maintaining an "Alliance Manager" responsible for day-to-day interactions related to the Program, that Section 1.78 of the DLDA defines to mean "the Development including Phase 2 Clinical Trial for Primary Indication and/or Secondary Indication(s) contemplated by this Agreement, including all rights in and to the Compound and Products, including further development and commercialization rights, granted under this Agreement." Although Oncology Venture has a controlling interest in this "alliance," the Company has an active participation in the Program covered by the DLDA.

(ii) Section 2.2 of the DLDA provides that the Company and Oncology Ventures establish a "joint development committee" or "JDC" with three (3) voting members, one (1) from the Company and two (2) from Oncology Venture together with two (2) additional "non-voting" members mutually agreed to by the parties. Through the JDC, the Company has a right to participate in the following responsibilities and authorities vested in the JDC:

a. discuss, plan, revise and implement the Clinical Development Plan, including manufacturing of Irofulven for the Phase 2 Clinical Trial;
b. discuss, plan, and inform any further Development of Products in all indications in the Field in the Territory, including manufacturing of Products in support of such activities;
c. use Commercially Reasonable Efforts to align each Party's strategy for the Development of the Products in the Territory;
d. no less frequently than on a bi-annual basis, review, amend and approve any updates to the Clinical Development Plan, including the activities, budget and timeline for Development;
e. review and approve proposed Publications in scientific journals, which will need to be approved unanimously by the JDC members, presentations at conferences, and/or press releases resulting from Development activities;
f. establish subcommittees with the unanimous consent of the voting members;
g. perform such other functions as are referred to the JDC as per the DLDA or otherwise agreed in writing;
h. discuss, plan and inform of any opportunity to create new intellectual property in relation with Irofulven in the Field of Irofulven in combination with DRP Biomarker or any other intellectual property;
i. discuss with regard to the jurisdictions within the Territory where it could be relevant to seek Regulatory Approval and commence Commercialization of the Product (for Primary Indication or Replacement Secondary Indication) pursuant to the DLDA; and
j. discuss, plan and inform of any contact or discussion taking place with potential Program Acquirer or any update thereof.

(iii) Section 3.7 of the DLDA obligates each of the parties, among other things, to "act in good faith to cooperate with one another and to reach agreement with respect to issues to be decided by the JDC;" and

(iv) Section 11.2 of the DLDA allows Oncology Venture to terminate the DLDA at will on a short 120 day notice. On such a termination, all of the intellectual property rights to LP-100 revert back to the Company.

For all these reasons, the Company believes that LP-100 should be included in its disclosure as a drug candidate in its portfolio. The Company has included an additional footnote to the graphic "OUR PORTFOLIO" for "LP-100**) that reads: "** LP-100 has been out-licensed to Oncology Venture A/S, see Business: LP-100."

3. *Reference is made to "LP-300" under "Our Portfolio" at the bottom of the graphic. Please revise to make clear that you have not initiated clinical trials for LP-300 and the status of LP-300 depicted in the pipeline table is from a clinical program conducted by another biotechnology company that failed to successfully develop LP-300. In addition, given that your business model involves patient stratification, please indicate the subset of patients with adenocarcinoma you intend to study.*

A footnote has been added to the graphic "OUR PORTFOLIO" for "LP-300***" that reads as follows: "*** Lantern plans on launching a phase 2 trial based on prior, historical clinical trials and the outcomes and data of those phase 2 and 3 trials conducted by others, see Business: LP-300." The subset of patient stratification has been address in additional disclosure on pages 4, 74 and 78 of the prospectus with disclosure stating "We are currently evaluating LP-300 for the launch of a phase II clinical trial, in combination with **paclitaxel** and **cisplatin** in female non-smokers and never-smokers with NSCLC adenocarcinoma that have a unique biomarker profile" or similar words to that effect.

Prospectus Summary
Company Overview, page 1

4. *We note your use of "rescuing" throughout the registration statement. The use of this term implies that the use of your proprietary technology on data from previous trials performed by other parties has resolved issues relating to safety and/or efficacy and will ultimately lead to the approval of your product candidates. You may disclose that administration of a product candidate was well tolerated or resulted in no serious adverse events and provide a discussion of prior trial results. However, it is not appropriate to imply that the use of your proprietary technology on data from previous trials performed by other parties has resolved issues relating to safety and/or efficacy and will ultimately lead to the approval of your product candidates. Please review the registration statement to eliminate the use of the term "rescuing." If you choose to say that the product candidates were well tolerated in previous clinical trials or that there were no serious adverse events or discuss prior clinical results, please clarify that prior results are not necessarily predictive of the outcome of future trials.*

The Company has revised its disclosure throughout the registration statement to eliminate any implication or inference that the Company's RADR® platform has resolved any issues of safety and/or efficacy relating to any of its drug candidates. Because the term "rescue" is an industry term widely used in the pharmaceutical industry and is a central focus of the Company's business strategy, the Company respectfully believes that it has addressed the Staff's concerns by providing further disclosure that clarifies that the use of its RADR® platform and its rescue efforts overall have not resolved issues of safety and/or efficacy for any of its drug candidates. The Company respectfully believes that the use of a different term in describing its business and strategy would not be as accurate. Consequently, the Company has continued using of the term "rescue" with further definition and context to avoid any inferences that its drug candidates will be approved together with disclosure that only the FDA or other relevant regulatory bodies can resolve issues of safety and efficacy. In this respect, the Company has provide the following definition and clarification of the term "drug rescue" in the Prospectus Summary on page 2 and in the Business: Overview section on page 73 of the prospectus:

> Scientific literature offers a definition for "drug rescue" as research involving abandoned small molecules and biologics that have not been approved by the U.S. Food and Drug Administration ("FDA"). These rescued molecular compounds are often abandoned by pharmaceutical companies in the drug discovery or preclinical testing phase, typically because they do not prove effective for the specific use for which they were developed. Some of these compounds may be useful in treating other diseases for which they have not been tested. *See,* Hemphill, Thomas A., "The NIH Promotes Drug Repurposing and Rescue," Research Technology Management, v. 5, no. 5, pp. 6-8 (2012). Our use of the term "rescue", "drug rescue", or "drug rescuing" refers to, "…a system of developing new uses for chemical and biological entities that previously were investigated in clinical studies but not further developed or submitted for regulatory approval, or had to be removed from the market for safety reasons.", which is a definition we believe is recognized in the drug discovery, drug development and pharmaceutical and biotechnology industries. *See*, Naylor, S. and Schonfeld J., "Therapeutic Drug Repurposing, Repositioning and Rescue", DDW (Drug Discovery World) Winter 2014, and Mucke, HAM, A New Journal for the Drug Repurposing Community. Drug Repurposing, Rescue & Repositioning 1, 3-4 (2014). The use of the term "drug rescue," "rescuing," or words of similar meaning in this prospectus should not be construed to mean that our RADR® platform has resolved all issues of safety and/or efficacy for any of our drug candidates. Issues of safety and efficacy for any drug candidate may only be determined by the U.S FDA or other applicable regulatory authorities in jurisdictions outside the United States.

In other areas of the prospectus, the Company has revised its disclosure surrounding the use of the term “rescue” or “rescuing” in an effort to avoid any implication that the drug itself has been rescued in a way that would lead the reader to believe that the Company’s proprietary platform has resolved all safety and/or efficacy issues necessary to be resolved in order to obtain marketing approval from the FDA or other applicable regulatory authority. See pages 2,17,73, and 85 of the prospectus for additional clarifying disclosure.

With respect to the Company’s disclosures regarding prior clinical trials conducted by others, the Company has added disclosure to the effect that “Prior clinical trial observations are not necessarily predictive of the outcome of any future clinical trials we may conduct.” See, pages 4 and 75 of the prospectus.

5. *We note your statements here and elsewhere regarding the efficacy of your product candidates, including claims of increased efficacy and claims that LP-300 demonstrated efficacy in non-smoking females and that LP-100 showed efficacy when administered in combination with certain chemotherapies on page 108. Please remove all statements suggesting that your product candidates are effective. Safety and efficacy determinations are solely within authority of the FDA or other regulatory agencies. As your product candidates have not received approval, it is premature to state or suggest that they are effective.*

The Company has revised its disclosures throughout the prospectus regarding the efficacy of the Company’s drug candidates and to remove the suggestion that their drug candidate are effective.

Risk Factors

If we are required by the FDA to obtain approval of a companion diagnostic..., page 24

6. *Please revise to clarify why this risk factor is applicable to your operations. To the extent that any of your product candidates may require approval of a companion diagnostic device, please expand your disclosure generally and, as applicable, for each product candidate to disclose whether approval of a companion diagnostic may be required for approval and subsequent commercialization of your therapeutic products.*

The Company believes this risk factor is relevant to the Company’s business strategy, but believes it is impossible to say which of its drug candidates may require the approval of a companion diagnostic because it is too early in each drug candidate’s development to know whether a companion diagnostic would be required to select the patients who will likely respond to a cancer therapy that involves one of its drug candidates. The Company has added additional disclosure to this risk factor to that effect. See page 28 of the prospectus.

We have obtained statistical data, market data and other industry data..., page 41

7. *You state on page 41 that investors should not place undue reliance on certain data included in the prospectus. Additionally, you state on page 56 that you have not independently verified data from third parties. This risk factor and the Market and Industry Data section appears to disclaim your responsibility for the information in the registration statement. Please revise.*

The Company has revised its disclosure in the risk factor "We have obtained statistical data, market data and other industry data and forecasts…" on page 44 of the prospectus, and the disclosure under "Market and Industry Data" on page 60 of the prospectus in a manner that avoids the appearance of disclaiming the Company's responsibility for the information disclosed in the registration statement while making clear that such information has not been verified by any third party.

Management's Discussion and Analysis of Financial Condition and Results of Operations
Components of Our Results of Operations
Research and Development Expense, page 63

8. *Please disclose the costs incurred during each period presented for each of your key research and development projects. If you do not track your research and development costs by project, please disclose that fact and explain why you do not maintain and evaluate research and development costs by project. Provide other quantitative or qualitative disclosure that provides more transparency as to the type of research and development expenses incurred (i.e. by nature or type of expense) which should reconcile to total research and development expense on the Statements of Operations.*

As an early stage private company, the Company did not allocate its human resources involved in research and development to any specific drug candidate but plans to do so in the future. The Company believes that the disclosure of the costs, other than its human resource costs, that could be allocated to each of its drug candidates would not provide meaningful disclosure without an accurate allocation of human resource costs to each project and could possibly mislead a reader in understanding the full cost of each project. Consequently, the Company requests that it comply with this comment in its future filings.

Business
Our Drug Candidate Pipeline, page 72

9. *Please shorten the arrows in your pipeline table to more precisely indicate the development status of each product candidate. As one example, we note that you are planning to conduct several additional preclinical studies prior to submitting an IND and initiating a Phase I trial for LP-184 in 2022, yet the arrow indicates that you have completed preclinical studies.*

The Company has revised the length of the arrows in its pipeline table to indicate the current position each drug candidate is in as of the date of the prospectus. See, inside cover page, pages 3 and 78 of the prospectus.

LP-300, page 79

10. *Please delete reference to your product candidate as "first-in-class" as the term implies an expectation of regulatory approval. If your use of this term was intended to convey your belief that the products are based on a novel technology or approach, you may discuss how your technology differs from technology used by competitors and that you are not aware of competing products that are further along in the development process. Statements such as these should be accompanied by cautionary language that the statements are not intended to give any indication that the product candidates have been proven effective or that they will receive regulatory approval.*

The Company has deleted the phrase "first-in-class" in the "*General Overview"* description of LP-300.

Phase II and III LP-300 Adverse Events Summary, page 87

11. *Please expand your disclosure to discuss whether any serious adverse events were determined to be treatment-related. Please quantify and describe the treatment-related serious adverse events.*

The Company has expanded its disclosure in the Phase II and III LP-300 Adverse Events Summary on pages 93 and 94 of the prospectus describing treatment-related serious adverse events.

Acquisition of Tavocept® (LP-300) Rights from BioNumerik, page 93

12. *Please expand your disclosure regarding the Assignment Agreement with BioNumerik to include the royalty term.*

The Company has expanded the disclosure relating to the royalty term of the Assignment Agreement with BioNumerik on page 99 of the prospectus.

AF Chemicals, page 108

13. *Please expand your discussion regarding your license agreement with AF Chemicals, LLC and your drug license and development agreement with Oncology Venture A/S on page 109 to disclose the termination provisions. Please also revise your discussion of the license agreement with AF Chemicals, LLC to provide the aggregate milestone payments for LP-184 and royalty term.*

The Company has expanded the disclosure relating to the license agreement with AF Chemicals, LLC and Oncology Venture A/S to disclose the applicable royalty term, aggregate milestone payments for LP-184, and the termination provisions for each agreement at pages 115 through 117 of the prospectus.

Patent Portfolio, page 113

14. *As to your material patents and patent applications, please revise to disclose the corresponding expiration dates (or expected expiration dates).*

The Company has expanded its disclosure to include the expiration dates for its patent families and pending patent applications. See page 120 of the prospectus.

15. *On page 115, you state that you are aware of prior art that may invalidate certain claims of one of your U.S. patents covering LP-100, LP-184, LP-300 or its applications. Please revise to disclose the specific product candidate(s) for which the patent may be subject to invalidation. Please also revise your risk factor disclosure, as applicable.*

The Company has deleted the statement that is it is aware of prior art that may invalidate certain claims in its patents. After further review and examination, the Company has determined that this statement is not accurate.

Certain Relationships and Related Party Transactions
Acquisition of Tavocept® (LP-300) Rights from BioNumerik, page 147

16. *Please provide the approximate dollar value of the amount of Mr. Margrave's interest in the Assignment Agreement. Please see Item 404(a)(4) of Regulation S-K.*

The Company is unable to estimate the approximate "dollar value" of Mr. Margrave's interest in the Assignment Agreement. Instead, the Company has expanded its disclosure of the nature and extent of Mr. Margrave's interest on page 149 of the prospectus.

Exhibits

17. *We note that your forum selection provision in your By-Laws filed as Exhibit 3.1(iv) to the registration statement identifies the Court of Chancery of the State of Delaware (or, if the Court of Chancery does not have jurisdiction, the federal district court for the District of Delaware) as the exclusive forum for certain litigation, including any "derivative action." Please disclose whether this provision applies to actions arising under the Securities Act or Exchange Act. If so, please also state that there is uncertainty as to whether a court would enforce such provision. If the provision applies to Securities Act claims, please also state that investors cannot waive compliance with the federal securities laws and the rules and regulations thereunder. In that regard, we note that Section 22 of the Securities Act creates concurrent jurisdiction for federal and state courts over all suits brought to enforce any duty or liability created by the Securities Act or the rules and regulations thereunder. In addition, please provide related risk factor disclosure describing the exclusive forum provision and its impact on shareholders, including that shareholders may be subject to increased costs to bring a claim, and that the provision could discourage claims or limit investors' ability to bring a claim in a judicial forum that they find favorable.*

The Company has expanded its disclosure under "*Exclusive Forum By-Laws Provision"* on page 155 of the prospectus and added a risk factor on page 57 of the prospectus that addresses the issues raised by the Staff in Comment 17.

18. *Please re-file Exhibit 10.7 in the proper searchable format. See Rules 301 and 304 of Regulation S-T.*

Exhibit 10.7 has been refiled in the proper searchable format.

General

19. *Please supplementally provide us with copies of all written communications, as defined in Rule 405 under the Securities Act, that you, or anyone authorized to do so on your behalf, present to potential investors in reliance on Section 5(d) of the Securities Act, whether or not they retain copies of the communications.*

Neither the Company nor anyone else authorized by the have provided any written communications to potential investors in reliance on Section 5(d) of the Securities Act..

Please contact me at (213) 358-6174 or my partner Daniel B. Eng at (415) 262-8508 with any questions or further comments regarding the Company's responses to the Staff's comments.

Very truly yours,

LEWIS BRISBOIS BISGAARD & SMITH llp

/s/ Scott E. Bartel
Scott E. Bartel
Partner