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

DIVISION OF
CORPORATION FINANCE

May 7, 2015

Via E-mail
Michael D. Step
Chief Executive Officer
Ritter Pharmaceuticals, Inc.
1801 Century Park East #1820
Los Angeles, CA 90067

Re: Ritter Pharmaceuticals, Inc.
Amendment No. 1 to Registration Statement on Form S-1
Filed April 24, 2015
File No. 333-202924

Dear Mr. Step:

We have reviewed your amended registration statement and your response letter dated April 24, 2015 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 amending your registration statement and providing the requested information. 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 any amendment to your registration statement and the information you provide in response to these comments, we may have additional comments.

Prospectus Summary, page 2

1. We note your revised disclosure that you intend to conduct a Phase 2b/3 trial of RP-G28. Please amend your disclosure in this section to include the following information consistent with disclosure appearing elsewhere in your prospectus:

   - Neither the FDA nor any other comparable governmental agency has considered your Phase 2b/3 study or your current development plan for RP-G28, and you do not intend to request a meeting with the FDA to discuss these matters;
   - You have not consulted with the FDA about the intent to use abdominal pain as a primary endpoint for the Phase 2b/3 pivotal clinical trial; and
   - You will need to submit an IND supplement containing amended protocols for the Phase 2b/3 adaptive trial that must be approved by the FDA.

Dilution, page 47

2. It appears that historical book value per share at December 31, 2014 throughout this item should be based on stockholders' deficit of $14,495,042. Please revise accordingly.

Management's Discussion and Analysis of Financial Condition and Results of Operations
Critical Accounting Policies and Estimates
Significant factors, assumptions and methodologies used in determining the estimated fair value of the Company's common stock, page 55

3. Refer to your response to item 5 of your April 24, 2015 letter. Please tell us the number of shares used to arrive at the $1.048 per share value in connection with the December 2014 valuation, and how the number of shares was determined.

Clinical and Regulatory
Principal Component Analysis of Microbiome Shifts, Page 79

4. The illustration provided in Figure 3 contains text that is illegible. Please revise this figure accordingly.

Government Regulation and Product Approval, page 87

5. We note your disclosure with respect to adaptive seamless phase 2b/3 designs and that the main statistical challenge in such a design is ensuring control of the type I error rate. Please revise your disclosure to define the term "type 1 error rate." In addition, please include a discussion as to how you will address this statistical challenge where you discuss the design of your Phase 2b/3 trial for RP-G28 elsewhere in the prospectus.

You may contact Rolf Sundwall at (202) 551-3105 or Jim Rosenberg at (202) 551- 3679 if you have questions regarding comments on the financial statements and related matters. Please contact Johnny Gharib at (202) 551-3170, Bryan Pitko at (202) 551-3203 or me at (202) 551-3715 with any other questions.

Sincerely,

/s/ *Bryan J. Pitko* for

Jeffrey P. Riedler
Assistant Director

cc: Via E-mail
Yvan-Claude Pierre, Esq.
Reed Smith LLP