

Mail Stop 4720

February 4, 2010

Tuan Ha-Ngoc
Chief Executive Officer
AVEO Pharmaceuticals, Inc.
75 Sidney Street
Cambridge, Massachusetts 02139

**Re: AVEO Pharmaceuticals, Inc.
Amendment No. 1 to
Registration Statement on Form S-1, filed January 21, 2010
File No. 333-163778**

Dear Mr. Ha-Ngoc:

We have reviewed your filing and have the following comments. Where indicated, we think you should revise your document in response to these comments. If you disagree, we will consider your explanation as to why our comment is inapplicable or a revision is unnecessary. Please be as detailed as necessary in your explanation. In some of our comments, we may ask you to provide us with supplemental information so we may better understand your disclosure. After reviewing this information, we may or may not raise additional comments.

Please understand that the purpose of our review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filing. We look forward to working with you in these respects. We welcome any questions you may have about our comments or on any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

Critical Accounting Policies and Significant Judgments and Estimates, page 53
Stock-Based Compensation, page 55

1. Refer to your response to the first bullet point in comment 28. As a reminder, once an IPO price has been determined, please discuss each significant factor contributing to the differences between the fair value as of the date of your most recent equity issuance, the estimated IPO price, and if a contemporaneous valuation by an unrelated valuation specialist was obtained subsequent to the grants but prior to the IPO, the fair value as determined by that valuation and the assumptions and methodology used.
2. Please refer to your response to the third bullet point in comment 28. Quantify in the filing the assumptions used in determining the 24% discount rate. Disclose in the filing a detailed analysis of the reason for the premium for company-specific

risk used. It is not clear in your response what is meant by “qualitative assessments of risk, including AVEO’s progress in clinical trials and the adequacy of its capital reserves.”

3. We note your response to the fourth bullet point in comment 28. We will evaluate your response and the accounting for any beneficial conversion feature relating to the convertible preferred stock issued in 2009 along with the amount of deferred revenue being recorded relating to the premium once an IPO price has been determined.

Business, page 70
Our Novel Approach to Modeling Human Cancer, page 89

4. Please explain what you mean by the terms “inducible oncogene approach.”

Executive and Director Compensation, page 122
Compensation Discussion and Analysis, page 122
Annual Cash Incentive Program, page 125

5. You disclose that the cash incentive payment for your Chief Executive Officer is subject to discretionary adjustments that your compensation committee deems appropriate. To the extent your compensation committee exercises this discretionary authority to adjust the 2009 cash incentive payment to your Chief Executive Officer, please disclose how such payment was adjusted and the reasons for such adjustment.
6. We note your response to our prior comment 50 and the related disclosure on page 126. With respect to 2009 cash incentive payments, please disclose the “other significant achievements which created shareholder value” considered by your compensation committee.
7. With respect to individual goals, your disclosure states that the compensation committee “establishes targets under each of these goals for each of the named executive officers.” Please disclose what those targets are.
8. We note your response to our prior comment 51. To the extent awards have not been determined by the time this registration statement goes effective, please acknowledge that you will file a Current Report on Form 8-K disclosing the payment, grant, award, decision or other occurrence as required by Item 5.02(f).

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As appropriate, please amend your filing in response to these comments. You may wish to provide us with marked copies of the amendment to expedite our review. Please furnish a cover letter with your amendment that keys your responses to our

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comments and provides any requested supplemental information. Detailed cover letters greatly facilitate our review. Please understand that we may have additional comments after reviewing your amendment and responses to our comments.

You may contact Staci Shannon at (202) 551-3374 or Mary Mast at (202) 551-3613 if you have questions regarding comments on the financial statements and related matters. Please contact Sebastian Gomez Abero at (202) 551-3578 or Dan Greenspan at (202) 551-3623 with any other questions.

Sincerely,

Jeffrey P. Riedler
Assistant Director

cc: Steven D. Singer, Esq.
Cynthia T. Mazareas, Esq.
Wilmer Cutler Pickering Hale and Dorr LLP
60 State Street
Boston, Massachusetts 02109