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**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION**  
Washington, D.C. 20549

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**FORM S-8  
REGISTRATION STATEMENT**  
*UNDER*  
**THE SECURITIES ACT OF 1933**

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**AVEO Pharmaceuticals, Inc.**

(Exact Name of Registrant as Specified in Its Charter)

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**Delaware**

(State or Other Jurisdiction of Incorporation or Organization)

**04-3581650**

(I.R.S. Employer Identification No.)

**75 Sidney Street  
Cambridge, Massachusetts**  
(Address of Principal Executive Offices)

**02139**  
(Zip Code)

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**2002 Stock Incentive Plan  
2010 Stock Incentive Plan  
2010 Employee Stock Purchase Plan**  
(Full Title of the Plan)

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**Tuan Ha-Ngoc  
Chief Executive Officer  
AVEO Pharmaceuticals, Inc.  
75 Sidney Street  
Cambridge, Massachusetts 02139**  
(Name and Address of Agent For Service)

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**617-299-5000**  
(Telephone Number, Including Area Code, of Agent For Service)

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Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer

Accelerated filer

Non-accelerated filer  (Do not check if a smaller reporting company)

Smaller reporting company

**CALCULATION OF REGISTRATION FEE**

<b>Title of Securities to be Registered</b>	<b>Amount to be Registered(1)</b>	<b>Proposed Maximum Offering Price Per Share</b>	<b>Proposed Maximum Aggregate Offering Price</b>	<b>Amount of Registration Fee</b>
Common Stock, \$0.001 par value per share	5,728,975 shares(2)	\$0.48 - \$12.24(3)	\$34,675,675.02(3)	\$2,473

- (1) In accordance with Rule 416 under the Securities Act of 1933, as amended, this registration statement shall be deemed to cover any additional securities that may from time to time be offered or issued to prevent dilution resulting from stock splits, stock dividends or similar transactions.
- (2) Consists of (i) 3,601,724 shares subject to outstanding stock option awards under the 2002 Stock Incentive Plan, (ii) 1,877,251 shares issuable under the 2010 Stock Incentive Plan; and (iii) 250,000 shares issuable under the 2010 Employee Stock Purchase Plan. The unissued balance of the shares issuable under the 2002 Stock Incentive Plan, plus the number of shares subject to outstanding awards issued under the 2002 Stock Incentive Plan, which awards expire, terminate or are otherwise surrendered, canceled, forfeited or repurchased without having been fully exercised or resulting in any common stock being issued, up to an aggregate amount not to exceed 2,500,000 additional shares, will be issuable under the 2010 Stock Incentive Plan.
- (3) Estimated solely for the purpose of calculating the registration fee pursuant to Rule 457(h) of the Securities Act of 1933, as amended. The price per share and aggregate offering price are calculated on the basis of (a) \$4.56, the weighted average exercise price of the 3,601,724 shares subject to outstanding stock option awards under the 2002 Stock Incentive Plan, at prices ranging from \$0.48 to \$12.24, and (b) \$8.58, the average of the high and low sale prices of the registrant's common stock on the NASDAQ Global Market on March 12, 2010, in accordance with Rule 457(c) under the Securities Act of 1933, as amended for the 1,877,251 shares issuable under the 2010 Stock Incentive Plan and the 250,000 shares issuable under the 2010 Employee Stock Purchase Plan which are not subject to outstanding options.

**PART I**  
**INFORMATION REQUIRED IN THE SECTION 10(a) PROSPECTUS**

**Item 1. Plan Information.**

The information required by Item 1 is included in documents sent or given to participants in the plans covered by this registration statement pursuant to Rule 428(b)(1) of the Securities Act of 1933, as amended (the "Securities Act").

**Item 2. Registrant Information and Employee Plan Annual Information.**

The written statement required by Item 2 is included in documents sent or given to participants in the plans covered by this registration statement pursuant to Rule 428(b)(1) of the Securities Act.

**PART II**  
**INFORMATION REQUIRED IN THE REGISTRATION STATEMENT**

**Item 3. Incorporation of Documents by Reference.**

The registrant is subject to the informational and reporting requirements of Sections 13(a), 14, and 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and in accordance therewith files reports, proxy statements and other information with the Securities and Exchange Commission (the "Commission"). The following documents, which are on file with the Commission, are incorporated in this registration statement by reference:

(a) The registrant's latest annual report filed pursuant to Section 13(a) or 15(d) of the Exchange Act or the latest prospectus filed pursuant to Rule 424(b) under the Securities Act that contains audited financial statements for the registrant's latest fiscal year for which such statements have been filed.

(b) All other reports filed pursuant to Section 13(a) or 15(d) of the Exchange Act since the end of the fiscal year covered by the document referred to in (a) above.

(c) The description of the securities contained in the registrant's registration statement on Form 8-A filed under the Exchange Act, including any amendment or report filed for the purpose of updating such description.

All documents subsequently filed by the registrant pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act, prior to the filing of a post-effective amendment which indicates that all securities offered hereby have been sold or which deregisters all securities then remaining unsold, shall be deemed to be incorporated by reference in this registration statement and to be part hereof from the date of the filing of such documents. Any statement contained in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for the purposes of this registration statement to the extent that a statement contained herein or in any other subsequently filed document which also is or is deemed to be incorporated by reference herein modifies or supersedes such statement. Any statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this registration statement.

**Item 4. Description of Securities.**

Not applicable.

**Item 5. Interests of Named Experts and Counsel.**

Wilmer Cutler Pickering Hale and Dorr LLP has opined as to the legality of the securities being offered by this registration statement.

**Item 6. Indemnification of Directors and Officers.**

Section 102 of the Delaware General Corporation Law permits a corporation to eliminate the personal liability of its directors to the corporation or its stockholders for monetary damages for a breach of fiduciary duty as a director, except where the director breached his or her duty of loyalty, failed to act in good faith, engaged in intentional misconduct or knowingly violated a law, authorized the payment of a dividend or approved a stock repurchase in violation of Delaware corporate law or obtained an improper personal benefit. The registrant's certificate of incorporation provides that no director shall be personally liable to the registrant or its stockholders for monetary damages for any breach of fiduciary duty as a director, notwithstanding any provision of law imposing such liability, except to the extent that the Delaware General Corporation Law prohibits the elimination or limitation of liability of directors for breaches of fiduciary duty.

Section 145 of the Delaware General Corporation Law provides that a corporation has the power to indemnify a director, officer, employee or agent of the corporation and certain other persons serving at the request of the corporation for another corporation, partnership, joint venture, trust or other enterprise in related capacities against expenses (including attorneys' fees), judgments, fines and amounts paid in settlements actually and reasonably incurred by the person in connection with an action, suit or proceeding to which he or she is or is threatened to be made a party by reason of such position, if such person acted in good faith and in a manner he or she reasonably believed to be in or not opposed to the best interests of the corporation, and, in any criminal action or proceeding, had no reasonable cause to believe his or her conduct was unlawful, except that, in the case of actions brought by or in the right of the corporation, no indemnification shall be made with respect to any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the Court of Chancery or other adjudicating court determines that, despite the adjudication of liability but in view of all of the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the Court of Chancery or such other court shall deem proper.

The registrant's certificate of incorporation provides that it will indemnify each person who was or is a party or threatened to be made a party to any threatened, pending or completed action, suit or proceeding whether civil, criminal, administrative or investigative (other than an action by or in the right of the registrant) by reason of the fact that he or she is or was, or has agreed to become, the registrant's director or officer, or is or was serving, or has agreed to serve, at its request as a director, officer or trustee of, or in a similar capacity with, another corporation, partnership, joint venture, trust or other enterprise (all such persons being referred to as an "Indemnitee"), or by reason of any action alleged to have been taken or omitted in such capacity, against all expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by the Indemnitee or on his or her behalf in connection with such action, suit or proceeding and any appeal therefrom, if such Indemnitee acted in good faith and in a manner he or she reasonably believed to be in, or not opposed to, the registrant's best interests, and, with respect to any criminal action or proceeding, he or she had no reasonable cause to believe his or her conduct was unlawful.

The registrant's certificate of incorporation also provides that it will indemnify any Indemnitee who was or is a party to an action or suit by or in the right of it to procure a judgment in its favor by reason of the fact that the Indemnitee is or was, or has agreed to become, the registrant's director or officer, or is or was serving, or has agreed to serve, at its request as a director, officer or trustee

of, or in a similar capacity with, another corporation, partnership, joint venture, trust or other enterprise, or by reason of any action alleged to have been taken or omitted in such capacity, against all expenses (including attorneys' fees) and, to the extent permitted by law, amounts paid in settlement actually and reasonably incurred in connection with such action, suit or proceeding, and any appeal therefrom, if the Indemnitee acted in good faith and in a manner he or she reasonably believed to be in, or not opposed to, the registrant's best interests, except that no indemnification shall be made with respect to any claim, issue or matter as to which such person shall have been adjudged to be liable to the registrant, unless and only to the extent that a court determines that, despite such adjudication but in view of all of the circumstances, he or she is entitled to indemnification for such expenses. Notwithstanding the foregoing, to the extent that any Indemnitee has been successful, on the merits or otherwise, he or she will be indemnified by the registrant against all expenses (including attorneys' fees) actually and reasonably incurred by him or her or on his or her behalf in connection therewith. If the registrant does not assume the defense, expenses must be advanced to an Indemnitee under certain circumstances.

The registrant maintains a general liability insurance policy which covers certain liabilities of its directors and officers arising out of claims based on acts or omissions in their capacities as directors or officers.

Certain of the registrant's non-employee directors may, through their relationships with their employers, be insured and/or indemnified against certain liabilities in their capacity as members of the registrant's board of directors.

**Item 7. Exemption from Registration Claimed.**

Not applicable.

**Item 8. Exhibits.**

The Exhibit Index immediately preceding the exhibits is incorporated herein by reference.

**Item 9. Undertakings.**

1. Item 512(a) of Regulation S-K. The undersigned registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement; and

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

provided, however, that paragraphs (i) and (ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the registrant pursuant to Section 13 or Section 15(d) of the Exchange Act that are incorporated by reference in the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

2. Item 512(b) of Regulation S-K. The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Exchange Act that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

3. Item 512(h) of Regulation S-K. Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.



/S/ ANTHONY B. EVNIN  
**Anthony B. Evnin**

Director

March 17, 2010

/S/ NICHOLAS GALAKATOS  
**Nicholas Galakatos**

Director

March 17, 2010

/S/ RUSSELL HIRSCH  
**Russell Hirsch**

Director

March 17, 2010

/S/ RAJU KUCHERLAPATI  
**Raju Kucherlapati**

Director

March 17, 2010

/S/ KENNETH E. WEG  
**Kenneth E. Weg**

Director

March 17, 2010

/S/ ROBERT C. YOUNG  
**Robert C. Young**

Director

March 17, 2010

## INDEX TO EXHIBITS

<u>Number</u>	<u>Description</u>
4.1(1)	Restated Certificate of Incorporation of the Registrant
4.2(1)	Second Amended and Restated Bylaws of the Registrant
5.1	Opinion of Wilmer Cutler Pickering Hale and Dorr LLP, counsel to the Registrant
23.1	Consent of Wilmer Cutler Pickering Hale and Dorr LLP (included in Exhibit 5.1)
23.2	Consent of Ernst & Young LLP
24.1	Power of attorney (included on the signature pages of this registration statement)
99.1(1)	2010 Stock Incentive Plan
99.2(1)	2002 Stock Incentive Plan
99.3(1)	2010 Employee Stock Purchase Plan

(1) Previously filed with the Securities and Exchange Commission as an Exhibit to the Registrant's Registration Statement on Form S-1, as amended (File No. 333-163778) and incorporated herein by reference.

March 17, 2010

AVEO Pharmaceuticals, Inc.  
75 Sidney Street  
Cambridge, Massachusetts 02139

Re: 2010 Stock Incentive Plan  
2002 Stock Incentive Plan  
2010 Employee Stock Purchase Plan

Ladies and Gentlemen:

We have assisted in the preparation of a Registration Statement on Form S-8 (the "Registration Statement") to be filed with the Securities and Exchange Commission (the "Commission") under the Securities Act of 1933, as amended (the "Securities Act"), relating to an aggregate of 5,728,975 shares of common stock, \$0.001 par value per share (the "Shares"), of AVEO Pharmaceuticals, Inc., a Delaware corporation (the "Company"), issuable under the Company's 2002 Stock Incentive Plan, 2010 Stock Incentive Plan and 2010 Employee Stock Purchase Plan (collectively, the "Plans").

We have examined the Certificate of Incorporation and By-Laws of the Company, each as amended and restated to date, and originals, or copies certified to our satisfaction, of all pertinent records of the meetings of the directors and stockholders of the Company, the Registration Statement and such other documents relating to the Company as we have deemed material for the purposes of this opinion.

In our examination of the foregoing documents, we have assumed the genuineness of all signatures, the authenticity of all documents submitted to us as originals, the conformity to original documents of all documents submitted to us as certified, photostatic or other copies, the authenticity of the originals of any such documents and the legal competence of all signatories to such documents.

We assume that the appropriate action will be taken, prior to the offer and sale of the Shares in accordance with the Plans, to register and qualify the Shares for sale under all applicable state securities or "blue sky" laws.

We express no opinion herein as to the laws of any state or jurisdiction other than the state laws of the Commonwealth of Massachusetts, the General Corporation Law of the State of Delaware and the federal laws of the United States of America.

It is understood that this opinion is to be used only in connection with the offer and sale of the Shares while the Registration Statement is in effect.

Wilmer Cutler Pickering Hale and Dorr LLP, 399 Park Avenue, New York, New York 10022

Beijing Berlin Boston Brussels Frankfurt London Los Angeles New York Oxford Palo Alto Waltham Washington

March 17, 2010

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Please note that we are opining only as to the matters expressly set forth herein, and no opinion should be inferred as to any other matters.

Based on the foregoing, we are of the opinion that the Shares have been duly authorized for issuance and, when the Shares are issued and paid for in accordance with the terms and conditions of the Plans, the Shares will be validly issued, fully paid and nonassessable.

We hereby consent to the filing of this opinion with the Commission in connection with the Registration Statement in accordance with the requirements of Item 601(b)(5) of Regulation S-K under the Securities Act. In giving such consent, we do not hereby admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission.

Very truly yours,

WILMER CUTLER PICKERING HALE AND DORR LLP

By: /s/ Steven D. Singer

Steven D. Singer, a Partner

**Consent of Independent Registered Public Accounting Firm**

We consent to the incorporation by reference in the Registration Statement (Form S-8) pertaining to the 2002 Stock Incentive Plan, 2010 Stock Incentive Plan and 2010 Employee Stock Purchase Plan of AVEO Pharmaceuticals, Inc. of our report dated February 8, 2010 (except Notes 11 and 16, as to which the date is February 18, 2010), with respect to the consolidated financial statements of AVEO Pharmaceuticals, Inc. for the year ended December 31, 2009 included in its Registration Statement (Form S-1, No. 333- 163778) and related prospectus, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

Boston, Massachusetts  
March 15, 2010