

STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP

| OMB APPROVAL | |
|----------------------------------------------|-----------|
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Check this box if no longer subject to Section 16. Form 4 or Form 5 obligations may continue. See Instruction 1(b).

Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934 or Section 30(h) of the Investment Company Act of 1940

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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Name and Address of Reporting Person* <u>Cole Douglas G.</u> (Last) (First) (Middle) <u>C/O AVEO PHARMACEUTICALS, INC.</u> <u>75 SIDNEY STREET</u> (Street) <u>CAMBRIDGE MA 02139</u> (City) (State) (Zip) | 2. Issuer Name and Ticker or Trading Symbol <u>AVEO PHARMACEUTICALS INC [AVEO]</u> | 5. Relationship of Reporting Person(s) to Issuer (Check all applicable) <input checked="" type="checkbox"/> Director 10% Owner Officer (give title below) Other (specify below) |
| | 3. Date of Earliest Transaction (Month/Day/Year) <u>03/17/2010</u> | |
| | 4. If Amendment, Date of Original Filed (Month/Day/Year) | |

Table I - Non-Derivative Securities Acquired, Disposed of, or Beneficially Owned

| 1. Title of Security (Instr. 3) | 2. Transaction Date (Month/Day/Year) | 2A. Deemed Execution Date, if any (Month/Day/Year) | 3. Transaction Code (Instr. 8) | | 4. Securities Acquired (A) or Disposed Of (D) (Instr. 3, 4 and 5) | | | 5. Amount of Securities Beneficially Owned Following Reported Transaction(s) (Instr. 3 and 4) | 6. Ownership Form: Direct (D) or Indirect (I) (Instr. 4) | 7. Nature of Indirect Beneficial Ownership (Instr. 4) |
|---------------------------------|--------------------------------------|----------------------------------------------------|--------------------------------|---|-------------------------------------------------------------------|------------|-------|-----------------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------|
| | | | Code | V | Amount | (A) or (D) | Price | | | |
| Common Stock | 03/17/2010 | | C | | 43,846 | A | (1) | 43,846 | I | By AGTC Advisors Fund, L.P. (3) |
| Common Stock | 03/17/2010 | | C | | 5,713 | A | (2) | 49,559 | I | By AGTC Advisors Fund, L.P. (3) |
| Common Stock | 03/17/2010 | | C | | 725,384 | A | (1) | 774,943 | I | By Applied Genomic Technology Capital Fund, L.P. (4) |
| Common Stock | 03/17/2010 | | C | | 94,531 | A | (2) | 869,474 | I | By Applied Genomic Technology Capital Fund, L.P. (4) |

Table II - Derivative Securities Acquired, Disposed of, or Beneficially Owned (e.g., puts, calls, warrants, options, convertible securities)

| 1. Title of Derivative Security (Instr. 3) | 2. Conversion or Exercise Price of Derivative Security | 3. Transaction Date (Month/Day/Year) | 3A. Deemed Execution Date, if any (Month/Day/Year) | 4. Transaction Code (Instr. 8) | | 5. Number of Derivative Securities Acquired (A) or Disposed of (D) (Instr. 3, 4 and 5) | | 6. Date Exercisable and Expiration Date (Month/Day/Year) | | 7. Title and Amount of Securities Underlying Derivative Security (Instr. 3 and 4) | | 8. Price of Derivative Security (Instr. 5) | 9. Number of derivative Securities Beneficially Owned Following Reported Transaction(s) (Instr. 4) | 10. Ownership Form: Direct (D) or Indirect (I) (Instr. 4) | 11. Nature of Indirect Beneficial Ownership (Instr. 4) |
|--------------------------------------------|--------------------------------------------------------|--------------------------------------|----------------------------------------------------|--------------------------------|---|----------------------------------------------------------------------------------------|-----|----------------------------------------------------------|-----------------|-----------------------------------------------------------------------------------|----------------------------|--------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------|--------------------------------------------------------|
| | | | | Code | V | (A) | (D) | Date Exercisable | Expiration Date | Title | Amount or Number of Shares | | | | |
| Series B Convertible Preferred Stock | (1) | 03/17/2010 | | C | | 175,385 | | (1) | (1) | Common Stock | 43,846 | \$0.00 | 0 | I | By AGTC Advisors Fund, L.P. (3) |
| Series D Convertible Preferred Stock | (2) | 03/17/2010 | | C | | 22,855 | | (2) | (2) | Common Stock | 5,713 | \$0.00 | 0 | I | By AGTC Advisors Fund, L.P. (3) |
| Series B Convertible Preferred Stock | (1) | 03/17/2010 | | C | | 2,901,538 | | (1) | (1) | Common Stock | 725,384 | \$0.00 | 0 | I | By Applied Genomic Technology Capital Fund, L.P. (4) |
| Series D Convertible Preferred Stock | (2) | 03/17/2010 | | C | | 378,126 | | (2) | (2) | Common Stock | 94,531 | \$0.00 | 0 | I | By Applied Genomic Technology Capital Fund, L.P. (4) |

Explanation of Responses:

1. The Series B Convertible Preferred Stock converted into Common Stock on a 1-for-0.25 basis and had no expiration date.

2. The Series D Convertible Preferred Stock converted into Common Stock on a 1-for-0.25 basis and had no expiration date.

3. Held by AGTC Advisors Fund, L.P.; NewcoGen Group, Inc. ("NewcoGen Inc.") is the general partner of AGTC Partners, L.P., which is the general partner of AGTC Advisors Fund, L.P. NewcoGen Inc. is a wholly-owned subsidiary of Flagship Ventures Management, Inc. ("Flagship Inc."). Noubar B. Afeyan Ph.D. and Edwin M. Kania, Jr. are the directors of Flagship Inc. and may be deemed to have beneficial ownership with respect to all shares held by AGTC Advisors Fund, L.P. Dr. Cole disclaims beneficial ownership over shares held by AGTC Advisors Fund, L.P.

4. Held by Applied Genomic Technology Capital Fund, L.P.; NewcoGen Inc. is the general partner of AGTC Partners, L.P., which is the general partner of Applied Genomic Technology Capital Fund, L.P. NewcoGen Inc. is a wholly-owned subsidiary of Flagship Inc. Noubar B. Afeyan Ph.D. and Edwin M. Kania, Jr. are the directors of Flagship Inc. and may be deemed to have beneficial ownership with respect to all shares held by Applied Genomic Technology Capital Fund, L.P. Dr. Cole disclaims beneficial ownership over shares held by Applied Genomic Technology Capital Fund, L.P.

/s/ Douglas G. Cole

03/18/2010

** Signature of Reporting Person

Date

Reminder: Report on a separate line for each class of securities beneficially owned directly or indirectly.

* If the form is filed by more than one reporting person, see Instruction 4 (b)(v).

** Intentional misstatements or omissions of facts constitute Federal Criminal Violations See 18 U.S.C. 1001 and 15 U.S.C. 78ff(a).

Note: File three copies of this Form, one of which must be manually signed. If space is insufficient, see Instruction 6 for procedure.

Persons who respond to the collection of information contained in this form are not required to respond unless the form displays a currently valid OMB Number.