

AVEO PHARMACEUTICALS INC  
Form 424B3  
November 22, 2016  
**PROSPECTUS SUPPLEMENT**

**Filed Pursuant to Rule 424(b)(3)**

**(To Prospectus dated May 7, 2015)**

**Registration No. 333-203932**

**\$9,135,000**

**Common Stock**

This prospectus supplement updates and amends certain information contained on the cover page of the prospectus dated May 7, 2015 (the 2015 Prospectus ) relating to the offer and sale of shares of our common stock pursuant to our At Market Issuance Sales Agreement with MLV & Co. LLC ( MLV ), dated February 27, 2015 and as amended on May 7, 2015 and November 21 to, among other things, include FBR Capital Markets & Co. ( FBR ) as an agent (as amended to date, the Sales Agreement ). In accordance with the terms of the Sales Agreement, we may offer and sell shares of our common stock having an aggregate offering price of up to a maximum of \$15,000,000 through MLV and FBR. This prospectus supplement should be read in conjunction with the 2015 Prospectus and is qualified by reference to the 2015 Prospectus, except to the extent that the information presented herein supersedes the information contained in the 2015 Prospectus. This prospectus supplement is not complete without, and may only be delivered or utilized in connection with, the 2015 Prospectus, including any amendments or supplements thereto.

Through November 21, 2016, we have sold shares of our common stock in accordance with the Sales Agreement for an aggregate purchase price of \$5,865,000 pursuant to our 2015 Prospectus. We are filing this prospectus supplement to amend the 2015 Prospectus because we are now subject to General Instruction I.B.6 of Form S-3, which limits the amounts that we may sell under the registration statement of which this prospectus supplement and the 2015 Prospectus are a part. After giving effect to these limitations and the current public float of our common stock, and after giving effect to the terms of the Sales Agreement, we currently may offer and sell additional shares of our common stock having an aggregate offering price of up to \$9,135,000 from time to time through MLV and FBR. If our public float increases such that we may sell additional amounts under the Sales Agreement and the registration statement of which this prospectus supplement and the 2015 Prospectus are a part, we will file another prospectus supplement prior to making additional sales.

Our common stock is listed on The NASDAQ Global Select Market under the symbol AVEO. On November 21, 2016, the last reported sale price of our common stock on The NASDAQ Global Select Market was \$0.64 per share. The aggregate market value of our common stock held by non-affiliates pursuant to General Instruction I.B.6 is \$57,243,242, which was calculated based on 63,603,602 shares of our common stock outstanding held by non-affiliates and at a price of \$0.90 per share, the closing price of our common stock on September 23, 2016. As of the date hereof, we have not offered or sold any securities pursuant to General Instruction I.B.6 of Form S-3 during the prior 12 calendar month period that ends on and includes the date hereof.

*Investing in our common stock involves a high degree of risk. Please read the information contained in and incorporated by reference under the heading **Risk Factors** beginning on page SA-10 of the 2015 Prospectus; under the heading **Risk Factors** in our most recent annual report on Form 10-K and in our most recent quarterly reports on Form 10-Q, and any amendments thereto, which are incorporated by reference into the 2015 Prospectus; and under similar headings in the other documents that are filed after the date hereof and incorporated by reference into this prospectus supplement and the 2015 Prospectus.*

*Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus supplement and the 2015 Prospectus are truthful or complete. Any representation to the contrary is a criminal offense.*

**FBR**

**MLV & Co.**

The date of this prospectus supplement is November 21, 2016.