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

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**POST-EFFECTIVE AMENDMENT NO. 1 TO  
FORM S-3  
REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933**

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**IDERA PHARMACEUTICALS, INC.**

(Exact name of registrant as specified in its charter)

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**Delaware**  
(State or other jurisdiction of  
incorporation or organization)

**91-1513032**  
(I.R.S. Employer Identification No.)

**345 Vassar Street  
Cambridge, Massachusetts 02139  
(617) 679-5500**

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

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**Sudhir Agrawal, D. Phil.  
Chief Executive Officer  
Idera Pharmaceuticals, Inc.  
345 Vassar Street  
Cambridge, Massachusetts 02139  
(617) 679-5500**

(Name, address, including zip code, and telephone number, including area code, of agent for service)

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Copies to:  
Stuart M. Falber, Esq.  
Wilmer Cutler Pickering Hale and Dorr LLP  
60 State Street  
Boston, Massachusetts 02109  
Telephone: (617) 526-6000  
Telecopy: (617) 526-5000

*Approximate date of commencement of proposed sale to public:* As soon as practicable after this Registration Statement becomes effective.

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.  \_\_\_\_.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.  \_\_\_\_.

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box.

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

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On August 9, 2006, the Securities and Exchange Commission declared effective the Registration Statement on Form S-3 (Registration No. 333-136115) (the "Registration Statement") filed by Idera Pharmaceuticals, Inc. ("Idera") with respect to the resale of an aggregate of 683,593 shares of common stock, par value \$.001 per share, of Idera (the "Shares"). This Post-Effective Amendment No. 1 to the Registration Statement is being filed in order to terminate the Registration Statement, as all of the Shares have been sold.

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