

**IDERA PHARMACEUTICALS, INC.**

**Prospectus Supplement No. 1 dated December 6, 2006  
to the Prospectus Dated May 5, 2006**

The information in this prospectus supplement concerning the selling stockholders supplements the statements set forth under the caption "Selling Stockholders" in the prospectus. This prospectus supplement should be read in conjunction with the prospectus, which is required to be delivered with this prospectus supplement.

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**Investing in our common stock involves a high degree of risk. See "Risk Factors" beginning on page 2 of the prospectus.**

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

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**Selling Stockholders**

On April 25, 2006, Baker Biotech Fund II, L.P., Baker Biotech Fund II (Z), L.P., Baker Biotech Fund III, L.P., and Baker Biotech Fund III (Z), L.P. agreed to a plan of merger to form Baker Brothers Life Sciences, L.P. In connection with the merger, Baker Biotech Fund II, L.P., Baker Biotech Fund II (Z), L.P., Baker Biotech Fund III, L.P., and Baker Biotech Fund III (Z), L.P. transferred, in the aggregate, 1,396,986 shares of our common stock and warrants to purchase 1,047,740 shares of our common stock to Baker Brothers Life Sciences, L.P. The table below sets forth, to our knowledge, the beneficial ownership of the selling stockholders as of September 30, 2006. This information updates and supercedes the information contained under the heading "Selling Stockholders" in the prospectus dated May 5, 2006 and reflects a one-for-eight reverse stock split of our issued and outstanding common stock that we effected on June 29, 2006.

We do not know when or in what amounts a selling stockholder may offer shares for sale. The selling stockholders may not sell any or all of the shares offered by the prospectus, as supplemented by this prospectus supplement. Because the selling stockholders may offer all or some of the shares pursuant to this offering, and because there are currently no agreements, arrangements or understandings with respect to the sale of any of the shares, we cannot estimate the number of shares that will be held by the selling stockholders after completion of this offering. For purposes of this table, however, we have assumed that, after completion of the

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offering, none of the shares covered by the prospectus, as supplemented by this prospectus supplement, will be held by the selling stockholders.

Beneficial ownership is determined in accordance with the rules of the Securities and Exchange Commission, and includes voting or investment power with respect to shares. Shares of common stock issuable upon exercise of warrants that are exercisable within 60 days after September 30, 2006 are deemed outstanding for computing the percentage ownership of the person holding the warrants but are not deemed outstanding for computing the percentage ownership of any other person. Unless otherwise indicated below, to our knowledge, all persons named in the table have sole voting and investment power with respect to the shares of common stock beneficially owned by them, except to the extent authority is shared by spouses under applicable law. The inclusion of any shares in this table does not constitute an admission of beneficial ownership for the person named below.

Name of Selling Stockholder (1)	Shares of Common Stock Beneficially Owned Prior to Offering		Number of Shares of Common Stock Being Offered	Shares of Common Stock to be Beneficially Owned After Offering	
	Number	Percentage		Number	Percentage
Baker Bros. Investments, L.P.	123,112(2)	*	123,112	—	—
Baker Bros. Investments II, L.P.	111,258(3)	*	111,258	—	—
Baker Biotech Fund I, L.P.	1,222,919(4)	6.8%	1,222,919	—	—
Baker Brothers Life Sciences, L.P.	2,444,726(5)	13.2%	2,444,726	—	—
14159, L.P.	75,253(6)	*	75,253	—	—
Tang Capital Partners, L.P.	491,448(7)	2.8%	491,448	—	—
Finsbury Emerging Biotechnology Trust plc	248,579(8)	1.4%	248,579	—	—

\* Less than one percent.

- (1) The term “selling stockholders” includes donees, pledgees, transferees or other successors-in-interest selling shares received after the date of this prospectus supplement from a selling stockholder as a gift, pledge, partnership distribution or other non-sale related transfer.
- (2) Includes 52,762 shares of common stock issuable upon the exercise of warrants held by Baker Bros. Investments, L.P.
- (3) Includes 47,682 shares of common stock issuable upon the exercise of warrants held by Baker Bros. Investments II, L.P.
- (4) Includes 524,108 shares of common stock issuable upon the exercise of warrants held by Baker Biotech Fund I, L.P.
- (5) Includes 1,047,740 shares of common stock issuable upon the exercise of warrants held by Baker Brothers Life Sciences, L.P.
- (6) Includes 32,251 shares of common stock issuable upon the exercise of warrants held by 14159, L.P.

- (7) Includes 266,335 shares of common stock issuable upon the exercise of warrants held by Tang Capital Partners, L.P.
- (8) Includes 106,534 shares of common stock issuable upon the exercise of warrants held by Finsbury Emerging Biotechnology Trust plc.