

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

SCHEDULE 13G

UNDER THE SECURITIES EXCHANGE ACT OF 1934
(AMENDMENT NO. 2)*

ADHEREX TECHNOLOGIES INC.

(Name of Issuer)

Common Shares

(Title of Class of Securities)

00686 R

(CUSIP Number)

Check the appropriate box to designate the rule pursuant to which this Schedule is filed:

Rule 13d-1(b)

Rule 13d-1(c)

Rule 13d-1(d)

* The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter disclosures provided in a prior cover page.

The information required on the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

1. Name of Reporting Person

I.R.S. Identification No. of Above Person (entities only)

William P. Peters

2. Check the Appropriate Box if a Member of a Group (See Instructions)

(a)

(b)

Not Applicable

3. SEC Use Only

4. Citizenship or Place of Organization

United States

5. Sole Voting Power

Number of Shares Beneficially Owned By Each Reporting Person With

2,641,957

6. Shared Voting Power

0

7. Sole Dispositive Power

2,641,957

8. Shared Dispositive Power

0

9. Aggregate Amount Beneficially Owned by Each Reporting Person

2,641,957

10. Check if the Aggregate Amount in Row (9) Excludes Certain Shares (See Instructions)

Not Applicable

11. Percent of Class Represented by Amount in Row (9)

4.99%

12. Type of Reporting Person (See Instructions)

IN

- Item 1 (a) Name of Issuer**
Adherex Technologies Inc.
- Item 1 (b) Address of Issuer's Principal Executive Offices**
4620 Creekstone Drive, Suite 200, Durham, North Carolina 27703
- Item 2 (a) Name of Person Filing**
William P. Peters
- Item 2 (b) Address of Principal Business Office, or, if None, Residence**
4620 Creekstone Drive, Suite 200, Durham, North Carolina 27703
- Item 2 (c) Citizenship**
United States
- Item 2 (d) Title of Class of Securities**
Common Stock
- Item 2 (e) CUSIP Number**
00686 R
- Item 3. Filing Pursuant to Rules 13d-1(b) or 13d-2(b)**
Not Applicable

Item 4. Ownership

(a) On December 31, 2006, Dr. Peters beneficially owned an aggregate of 2,641,957 shares of the Issuer's common stock, which includes (i) 115,982 shares of the Issuer's common stock owned directly, (ii) options to purchase 2,479,818 shares of the Issuer's common stock that were exercisable within 60 days of December 31, 2006, and (iii) warrants to purchase 46,157 shares of the Issuer's common stock that were exercisable within 60 days of December 31, 2006. Not reported in this Schedule are options to purchase 120,000 shares of the Issuer's common stock that are owned by Dr. Peters, but none of which are exercisable within 60 days of December 31, 2006. Note: All share amounts in this Schedule have been adjusted to give effect to the one-for-five reverse stock split effected on July 29, 2005.

(b) Percent of Class:

4.99%

(c) See Rows (5)-(8) on page 2.

Item 5. Ownership of Five Percent or Less of a Class

Not Applicable

Item 6. Ownership of More than Five Percent on Behalf of Another Person

Not Applicable

Item 7. Identification and Classification of the Subsidiary Which Acquired the Security Being Reported on By the Parent Holding Company

Not Applicable

Item 8. Identification and Classification of Members of the Group

Not Applicable

Item 9. Notice of Dissolution of Group

Not Applicable

Item 10. Certification

By signing below I certify that, to the best of my knowledge and belief, the securities referred to above were not acquired and are not held for the purpose of or with the effect of changing or influencing the control of the issuer of the securities and were not acquired and are not held in connection with or as a participant in any transaction having that purpose or effect.

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

February 7, 2007

Date

/s/ William P. Peters

William P. Peters