

UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
Washington, D.C. 20549  
SCHEDULE 13G  
Under the Securities Exchange Act of 1934  
(Amendment No. \_\_\_\_\_)

XCYTE Therapies, Inc.

\_\_\_\_\_  
(Name of Issuer)

Common Stock, .001 Par Value

\_\_\_\_\_  
(Title of Class of Securities)

98389F309

\_\_\_\_\_  
(CUSIP Number)

with a copy to:

Austin W. Marxe Allen B. Levithan, Esq.  
153 East 53rd Street Lowenstein Sandler PC  
New York, New York 10022 65 Livingston Avenue  
Roseland, New Jersey  
07068

(973) 597-2406

(Name, Address and Telephone Number of Person  
Authorized to Receive Notices and Communications)

October 29, 2004

(Date of Event which Requires Filing of this Statement)

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).

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1. Names of Reporting Persons. I.R.S. Identification Nos. of above  
persons (entities only):

Austin W. Marxe and David M. Greenhouse

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

(a) [    ] Not Applicable  
(b) [    ]

3. SEC Use Only

4. Source of Funds (See Instructions): 00

5. Check if Disclosure of Legal Proceedings Is Required  
Pursuant to Items 2(d) or 2(e):  
Not Applicable

6. Citizenship or Place of Organization: United States

Number of 7. Sole Voting Power: 0

Shares Beneficially 8. Shared Voting Power: 2,437,276\*

Owned by

Each Reporting 9. Sole Dispositive Power: 0

Person With 10. Shared Dispositive Power:

2,437,276\* \_\_\_

11. Aggregate Amount Beneficially Owned by Each Reporting Person:

2,437,276\*

12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares

(See Instructions): Not Applicable

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

14.9%\*

14. Type of Reporting Person (See Instructions): IA, IN

\* This is a joint filing by Austin W. Marxe (?Marxe?) and David M. Greenhouse (?Greenhouse?). Marxe and Greenhouse share sole voting and investment power over 241,842 shares of Common Stock and 87,500 shares of Preferred Stock convertible for 372,340 shares of Common Stock owned by Special Situations Cayman Fund, L.P., and 706,073 shares of Common Stock and 262,500 shares of Preferred Stock convertible for 1,117,021 shares of Common Stock owned by Special Situations Fund III, L.P. See Items 2 and 4 of this Schedule for additional information.\*1

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Item 1. Security and Issuer:

(a) XCYTE Therapies, Inc.

(b) 1124 Columbia Street, Suite 130, Seattle, WA 98104

Item 2. (a) Name of Person Filing:

The persons filing this report are Austin W. Marxe (?Marxe?) and David M. Greenhouse (?Greenhouse?), who are the controlling principals of AWM Investment Company, Inc. (?AWM?), the general partner of and investment adviser to Special Situations Cayman Fund, L.P. (?Cayman?). AWM also serves as the general partner of MGP Advisers Limited Partnership (?MGP?), the general partner of and investment adviser to Special Situations Fund III, L.P. (?SSF3?). (SSF3 and Cayman will hereafter be referred to as, the ?Funds?). The principal business of each Fund is to invest in equity and equity-related securities and other securities of any kind or nature.

(b) Address of Principal Business Office or, if none, Residence:

The principal business address for Marxe and Greenhouse is 153 East 53rd Street, 55th floor, New York, NY 10022.

(c) Citizenship:

Austin W. Marxe and David M. Greenhouse are United States citizens.

(d) Title of Class of Securities: Common Stock.

(e) CUSIP Number: 98389F309.

Item 3. If this statement is filed pursuant to §240.13d-1(b) or 240.13d-2(b), check whether

the person filing is a: Not Applicable

(a) ( ) Broker or Dealer registered under section 15 of the Act;

(b) ( ) Bank as defined in section 3(a) (6) of the Act;

(c) ( ) Insurance Company as defined in section 3(a) (19) of the Act;

(d) ( ) Investment Company registered under section 8 of the Investment Company Act of 1940;

- (e) ( ) An Investment Adviser in accordance with §240.13d-1(b)(1)(ii)(E);
- (f) ( ) An employee benefit plan or endowment fund in accordance with §240.13d-1(b)(1)(ii)(F);

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- (g) ( ) A parent holding company or control person in accordance with §240.13d-1(b)(1)(ii)(G);
- (h) ( ) A savings association as defined in Section 3(b) of the Federal Deposit Insurance Act;
- (i) ( ) A church plan that is excluded from the definition of an investment company under section 3(c)(14) of the Investment Company Act of 1940;
- (j) ( ) Group, in accordance with §240.13d-1(b)(1)(ii)(J).

Item 4. Ownership:

(a) Amount Beneficially Owned: Messrs. Marx and Greenhouse beneficially own a total of 947,915 shares of Common Stock and 350,000 Preferred Shares convertible for 1,489,361 Common Shares. This amount includes 241,842 shares of Common Stock and 87,500 Preferred Shares convertible for 372,340 shares of Common Stock owned by Cayman and 706,073 shares of Common Stock and 262,500 Preferred Shares convertible for 1,117,021 shares of Common Stock owned by SSF3.\*1

(b) Percent of Class: Messrs. Marx and Greenhouse beneficially own 14.9% of the shares outstanding. Cayman owns 4.0% of the outstanding shares and SSF3 owns 11.4% of the outstanding shares.

(c) Number of Shares as to which the person has:

- (i) Sole power to vote or to direct the vote: 0
- (ii) Shared power to vote or to direct the vote: 2,437,276
- (iii) Sole power to dispose or to direct the disposition of: 0

(iv) Shared power to dispose or to direct the disposition of: 2,437,276

Item 5. Ownership of Five Percent or Less of a Class: If this statement is being filed to report the fact that as of the date hereof the reporting person has ceased to be the beneficial owner of more than five percent of the class of securities, check the following \_\_\_.

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

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Item 9. Notices 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 acquired and are held in the ordinary course of business and 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.

SIGNATURE

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.

Dated: November 9, 2004

/s/ Austin W. Marxe  
AUSTIN W. MARXE

/s/David M Greenhouse  
DAVID M. GREENHOUSE

Attention: Intentional misstatements or omissions of fact constitute Federal criminal violations (See 18 U.S.C. 1001).

\*1 Subsequent to the October 29, 2004 public offering to purchase 6% Convertible Exchangeable Preferred Stock, the ?Funds? elected to convert the Preferred Stock to its Common Stock equivalent. In addition the ?Funds? received Common Shares as a result of a make whole dividend payment.

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JOINT FILING AGREEMENT

Austin W. Marxe and David M. Greenhouse hereby agree that the Schedule 13G to which this agreement is attached is filed on behalf of each of them.

/s/\_Austin W. Marxe  
Austin W. Marxe

/s/\_David M. Greenhouse  
David M. Greenhouse

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