

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

SCHEDULE 13D

(Rule 13d-101)

INFORMATION TO BE INCLUDED IN STATEMENTS FILED PURSUANT
TO § 240.13d-1(a) AND AMENDMENTS THERETO FILED PURSUANT TO
§ 240.13d-2(a)

(Amendment No.)¹

Targacept, Inc.
(Name of Issuer)

Common Stock, par value \$0.001
(Title of Class of Securities)

87611R306
(CUSIP Number)

SPIKE LOY
BVF PARTNERS L.P.
900 North Michigan Avenue
Suite 1100
Chicago, Illinois 60611
(415) 525-8890

ADAM W. FINERMAN, ESQ.
OLSHAN FROME WOLOSKY LLP
Park Avenue Tower
65 East 55th Street
New York, New York 10022
(212) 451-2300

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

August 26, 2014
(Date of Event Which Requires Filing of This Statement)

If the filing person has previously filed a statement on Schedule 13G to report the acquisition that is the subject of this Schedule 13D, and is filing this schedule because of §§ 240.13d-1(e), 240.13d-1(f) or 240.13d-1(g), check the following box x.

Note: Schedules filed in paper format shall include a signed original and five copies of the schedule, including all exhibits. See § 240.13d-7 for other parties to whom copies are to be sent.

¹ 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 BIOTECHNOLOGY VALUE FUND, L.P.	
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) <input checked="" type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC USE ONLY	
4	SOURCE OF FUNDS WC	
5	CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM 2(d) OR 2(e) <input type="checkbox"/>	
6	CITIZENSHIP OR PLACE OF ORGANIZATION DELAWARE	
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	7	SOLE VOTING POWER - 0 -
	8	SHARED VOTING POWER 2,977,919
	9	SOLE DISPOSITIVE POWER - 0 -
	10	SHARED DISPOSITIVE POWER 2,977,919
11	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 2,977,919	
12	CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES <input type="checkbox"/>	
13	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11) 8.8%	
14	TYPE OF REPORTING PERSON PN	

1	NAME OF REPORTING PERSON BIOTECHNOLOGY VALUE FUND II, L.P.	
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) <input checked="" type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC USE ONLY	
4	SOURCE OF FUNDS WC	
5	CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM 2(d) OR 2(e) <input type="checkbox"/>	
6	CITIZENSHIP OR PLACE OF ORGANIZATION DELAWARE	
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	7	SOLE VOTING POWER - 0 -
	8	SHARED VOTING POWER 1,713,907
	9	SOLE DISPOSITIVE POWER - 0 -
	10	SHARED DISPOSITIVE POWER 1,713,907
11	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 1,713,907	
12	CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES <input type="checkbox"/>	
13	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11) 5.1%	
14	TYPE OF REPORTING PERSON PN	

1	NAME OF REPORTING PERSON BVF INVESTMENTS, L.L.C.	
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) <input checked="" type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC USE ONLY	
4	SOURCE OF FUNDS WC	
5	CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM 2(d) OR 2(e) <input type="checkbox"/>	
6	CITIZENSHIP OR PLACE OF ORGANIZATION DELAWARE	
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	7	SOLE VOTING POWER - 0 -
	8	SHARED VOTING POWER 349,482
	9	SOLE DISPOSITIVE POWER - 0 -
	10	SHARED DISPOSITIVE POWER 349,482
11	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 349,482	
12	CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES <input type="checkbox"/>	
13	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11) 1.0%	
14	TYPE OF REPORTING PERSON OO	

1	NAME OF REPORTING PERSON INVESTMENT 10, L.L.C.	
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) <input checked="" type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC USE ONLY	
4	SOURCE OF FUNDS WC	
5	CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM 2(d) OR 2(e) <input type="checkbox"/>	
6	CITIZENSHIP OR PLACE OF ORGANIZATION ILLINOIS	
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	7	SOLE VOTING POWER - 0 -
	8	SHARED VOTING POWER 1,130,361
	9	SOLE DISPOSITIVE POWER - 0 -
	10	SHARED DISPOSITIVE POWER 1,130,361
11	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 1,130,361	
12	CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES <input type="checkbox"/>	
13	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11) 3.3%	
14	TYPE OF REPORTING PERSON OO	

1	NAME OF REPORTING PERSON MSI BVF SPV, LLC	
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) <input checked="" type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC USE ONLY	
4	SOURCE OF FUNDS WC	
5	CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM 2(d) OR 2(e) <input type="checkbox"/>	
6	CITIZENSHIP OR PLACE OF ORGANIZATION DELAWARE	
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	7	SOLE VOTING POWER - 0 -
	8	SHARED VOTING POWER 483,459
	9	SOLE DISPOSITIVE POWER - 0 -
	10	SHARED DISPOSITIVE POWER 483,459
11	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 483,459	
12	CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES <input type="checkbox"/>	
13	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11) 1.4%	
14	TYPE OF REPORTING PERSON OO	

1	NAME OF REPORTING PERSON BVF PARTNERS L.P.	
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) <input checked="" type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC USE ONLY	
4	SOURCE OF FUNDS AF	
5	CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM 2(d) OR 2(e) <input type="checkbox"/>	
6	CITIZENSHIP OR PLACE OF ORGANIZATION DELAWARE	
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	7	SOLE VOTING POWER - 0 -
	8	SHARED VOTING POWER 6,655,128
	9	SOLE DISPOSITIVE POWER - 0 -
	10	SHARED DISPOSITIVE POWER 6,655,128
11	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 6,655,128	
12	CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES <input type="checkbox"/>	
13	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11) 19.7%	
14	TYPE OF REPORTING PERSON PN, IA	

1	NAME OF REPORTING PERSON BVF INC.	
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) <input checked="" type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC USE ONLY	
4	SOURCE OF FUNDS AF	
5	CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM 2(d) OR 2(e) <input type="checkbox"/>	
6	CITIZENSHIP OR PLACE OF ORGANIZATION DELAWARE	
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	7	SOLE VOTING POWER - 0 -
	8	SHARED VOTING POWER 6,655,128
	9	SOLE DISPOSITIVE POWER - 0 -
	10	SHARED DISPOSITIVE POWER 6,655,128
11	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 6,655,128	
12	CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES <input type="checkbox"/>	
13	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11) 19.7%	
14	TYPE OF REPORTING PERSON CO	

1	NAME OF REPORTING PERSON MARK N. LAMPERT	
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) <input checked="" type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC USE ONLY	
4	SOURCE OF FUNDS AF	
5	CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM 2(d) OR 2(e) <input type="checkbox"/>	
6	CITIZENSHIP OR PLACE OF ORGANIZATION USA	
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	7	SOLE VOTING POWER - 0 -
	8	SHARED VOTING POWER 6,655,128
	9	SOLE DISPOSITIVE POWER - 0 -
	10	SHARED DISPOSITIVE POWER 6,655,128
11	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 6,655,128	
12	CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES <input type="checkbox"/>	
13	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11) 19.7%	
14	TYPE OF REPORTING PERSON IN	

The following constitutes the Schedule 13D filed by the undersigned (the "Schedule 13D").

Item 1. Security and Issuer.

This statement relates to shares of the Common Stock, par value \$0.001 per share (the "Shares"), of Targacept, Inc., a Delaware corporation (the "Issuer"). The address of the principal executive offices of the Issuer is 100 North Main Street, Suite 1510, Winston-Salem, North Carolina 27101.

Item 2. Identity and Background.

(a) This statement is filed by Biotechnology Value Fund, L.P., a Delaware limited partnership ("BVF"), Biotechnology Value Fund II, L.P., a Delaware limited partnership ("BVF2"), BVF Investments, L.L.C., a Delaware limited liability company ("BVLLC"), Investment 10, L.L.C., an Illinois limited liability company ("ILL10"), MSI BVF SPV, LLC, a Delaware limited liability company ("MSI") BVF Partners L.P., a Delaware limited partnership ("Partners"), BVF Inc., a Delaware corporation, and Mark N. Lampert. Mr. Lampert is the sole officer and director of BVF Inc.

Each of the foregoing is referred to as a "Reporting Person" and collectively as the "Reporting Persons." Each of the Reporting Persons is party to that certain Joint Filing Agreement, as further described in Item 6. Accordingly, the Reporting Persons are hereby filing a joint Schedule 13D.

(b) The business address of BVF, BVF2, BVLLC, ILL10, Partners, BVF Inc. and Mr. Lampert is 900 North Michigan Avenue, Suite 1100, Chicago, Illinois 60611. The business address of MSI is c/o Magnitude Capital, LLC, 601 Lexington Avenue, 59th Floor, New York, NY 10022.

(c) The principal business of each of BVF, BVF2, BVLLC, ILL10 and MSI is investing in securities. The principal business of Partners is serving as the general partner of each of BVF and BVF2, the manager of BVLLC, and the investment adviser of each of ILL10 and MSI. The principal business of BVF Inc. is serving as the general partner of Partners. Mr. Lampert is the sole officer and director of BVF Inc.

(d) No Reporting Person has, during the last five years, been convicted in a criminal proceeding (excluding traffic violations or similar misdemeanors).

(e) No Reporting Person has, during the last five years, been party to a civil proceeding of a judicial or administrative body of competent jurisdiction and as a result of such proceeding was or is subject to a judgment, decree or final order enjoining future violations of, or prohibiting or mandating activities subject to, federal or state securities laws or finding any violation with respect to such laws.

(f) Mr. Lampert is a citizen of the United States of America.

Item 3. Source and Amount of Funds or Other Consideration.

The Shares purchased by each of BVF, BVF2, BVLLC, ILL10 and MSI were purchased with working capital (which may, at any given time, include margin loans made by brokerage firms in the ordinary course of business) in open market purchases, except as otherwise noted on Schedule A. The aggregate purchase price of the 2,977,919 Shares beneficially owned by BVF is approximately \$12,899,438, including brokerage commissions. The aggregate purchase price of the 1,713,907 Shares beneficially owned by BVF2 is approximately \$7,421,983, including brokerage commissions. The aggregate purchase price of the 349,482 Shares beneficially owned by BVLLC is approximately \$2,388,744, including brokerage commissions. The aggregate purchase price of the 1,130,361 Shares beneficially owned by ILL10 is approximately \$4,897,765, including brokerage commissions. The aggregate purchase price of the 483,459 Shares beneficially owned by MSI is approximately \$2,180,400, including brokerage commissions.

Item 4. Purpose of Transaction

The Reporting Persons purchased the Shares based on the Reporting Persons' belief that the Shares, when purchased, were undervalued and represented an attractive investment opportunity. Depending upon overall market conditions, other investment opportunities available to the Reporting Persons, and the availability of Shares at prices that would make the purchase or sale of Shares desirable, the Reporting Persons may endeavor to increase or decrease their position in the Issuer through, among other things, the purchase or sale of Shares on the open market or in private transactions or otherwise, on such terms and at such times as the Reporting Persons may deem advisable.

The Reporting Persons have engaged, and intend to continue to engage, in discussions with the Issuer's management and board of directors (the "Board") regarding potential means to enhancing shareholder value, and regarding the Issuer generally. In connection with such discussions, on August 27, 2014 the Reporting Persons entered into a confidentiality agreement with the Issuer whereby the Reporting Persons agree to keep confidential certain information that the Issuer may elect to share with the Reporting Persons, and whereunder the Reporting Persons acknowledge existing legal prohibitions against trading in the securities of the Issuer while in possession of material, non-public information regarding the Issuer.

No Reporting Person has any present plan or proposal which would relate to or result in any of the matters set forth in subparagraphs (a) - (j) of Item 4 of Schedule 13D except as set forth herein or such as would occur upon or in connection with completion of, or following, any of the actions discussed herein. The Reporting Persons intend to review their investment in the Issuer on a continuing basis. Depending on various factors including, without limitation, the Issuer's financial position and investment strategy, the price levels of the Shares, conditions in the securities markets and general economic and industry conditions, the Reporting Persons may in the future take such actions with respect to their investment in the Issuer as they deem appropriate including, without limitation, engaging in communications with management and the Board of the Issuer, engaging in discussions with stockholders of the Issuer and others about the Issuer and the Reporting Persons' investment, making proposals to the Issuer concerning changes to the capitalization, ownership structure, board structure (including board composition) or operations of the Issuer, purchasing additional Shares, selling some or all of their Shares, engaging in short selling of or any hedging or similar transaction with respect to the Shares, or changing their intention with respect to any and all matters referred to in Item 4.

Item 5. Interest in Securities of the Issuer.

(a) The aggregate percentage of Shares reported owned by each person named herein is based upon 33,793,735 Shares outstanding as of July 31, 2014, which is the total number of Shares outstanding as reported in the Issuer's Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on August 7, 2014.

As of the close of business on September 4, 2014, (i) BVF beneficially owned 2,977,919 Shares, (ii) BVF2 beneficially owned 1,713,907 Shares, (iii) BVLLC beneficially owned 349,482 Shares, (iv) ILL10 beneficially owned 1,130,361 Shares, and (v) MSI beneficially owned 483,459 shares of Common Stock, representing percentage ownership of approximately 8.8%, 5.1%, 1.0%, 3.3% and 1.4%, respectively, of the Shares outstanding.

Partners, as the general partner of BVF and BVF2, the manager of BVLLC, and the investment adviser of each of ILL10 and MSI, may be deemed to beneficially own the 6,655,128 shares of Common Stock beneficially owned in the aggregate by BVF, BVF2, BVLLC, ILL10 and MSI, representing percentage ownership of approximately 19.7% of the Shares outstanding.

BVF Inc., as the general partner of Partners, may be deemed to beneficially own the 6,655,128 Shares beneficially owned by Partners, representing percentage ownership of approximately 19.7% of the Shares outstanding.

Mr. Lampert, as a director and officer of BVF Inc. may be deemed to beneficially own the 6,655,128 Shares beneficially owned by BVF Inc., representing percentage ownership of approximately 19.7% of the Shares outstanding.

(b) Each of BVF, BVF2, BVLLC, ILL10 and MSI shares with Partners voting and dispositive power over the Shares each such entity beneficially owns. Partners, BVF Inc. and Mr. Lampert share voting and dispositive power over the 6,655,128 Shares they may be deemed to beneficially own with BVF, BVF2, BVLLC, ILL10 and MSI.

(c) Schedule A annexed hereto lists all transactions in securities of the Issuer during the past sixty days by the Reporting Persons. All of such transactions were effected in the open market, except as otherwise noted.

(d) No person other than the Reporting Persons is known to have the right to receive, or the power to direct the receipt of dividends from, or proceeds from the sale of, the Shares.

(e) Not applicable.

Item 6. Contracts, Arrangements, Understandings or Relationships With Respect to Securities of the Issuer.

On August 26, 2014, Partners and certain of its affiliates (the "Partners Group") entered into a Trading Plan Agreement (the "Agreement") with Wedbush Securities, Inc. ("Wedbush") for the purpose of establishing a trading plan to effect purchases and sales of Shares of the Issuer in compliance with all applicable laws, including, without limitation, Section 10(b) of the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder, including, but not limited to, Rule 10b5-1.

The Agreement allows for the purchase and the sale of Shares by Wedbush on behalf of the Partners Group. Shares or sold pursuant to the Agreement may only be purchased or sold in accordance with trading requirements adopted by the Partners Group, and there can be no assurance as to how many Shares, if any, will be purchased or sold pursuant to the Agreement or at what price any such Shares will be purchased or sold. A copy of the Agreement is attached hereto as Exhibit 99.1 and is incorporated herein by reference.

On September 5, 2014, the Reporting Persons entered into a Joint Filing Agreement in which the Reporting Persons agreed to the joint filing on behalf of each of them of statements on Schedule 13D, with respect to securities of the Issuer, to the extent required by applicable law. A copy of this agreement is attached hereto as Exhibit 99.2 hereto and is incorporated herein by reference.

Partners is the general partner of each of BVF and BVF2 pursuant to limited partnership agreements which authorize Partners, among other things, to invest the funds of BVF and BVF2 in the Shares and other securities and to vote, exercise or convert and dispose of such securities. Pursuant to such limited partnership agreements, Partners is entitled to receive fees based on assets under management and allocations based on realized and unrealized gains on such assets.

Pursuant to the operating agreement of BVLLC, Partners is authorized, among other things, to invest the contributed capital of Samana Capital, L.P., the majority member of BVLLC, in the Shares and other securities of the issuer and to vote, exercise or convert and dispose of each security, and is entitled to receive fees based on assets under management and, subject to certain exceptions, allocations based on realized and unrealized gains on such assets.

Pursuant to investment management agreements with each of ILL10 and MSI, Partners and BVF Inc. have authority, among other things, to invest funds of ILL10 and MSI in the Shares and other securities and to vote, exercise or convert and dispose of such securities. Pursuant to such investment management agreements, Partners and BVF Inc. receive fees based on realized and unrealized gains thereon.

Other than as described herein, there are no contracts, arrangements, understandings or relationships among the Reporting Persons, or between the Reporting Persons and any other person, with respect to the securities of the Issuer.

Item 7. Material to be Filed as Exhibits.

- 99.1 Trading Plan Agreement between BVF Partners L.P. and Wedbush Securities, Inc., dated August 26, 2014.
- 99.2 Joint Filing Agreement by and among Biotechnology Value Fund, L.P., Biotechnology Value Fund II, L.P., BVF Investments, L.L.C., Investment 10, L.L.C., MSI BVF SPV, LLC, BVF Partners L.P., BVF Inc. and Mark N. Lampert, dated September 5, 2014.

SIGNATURES

After reasonable inquiry and to the best of his knowledge and belief, each of the undersigned certifies that the information set forth in this statement is true, complete and correct.

Dated: September 5, 2014

BIOTECHNOLOGY VALUE FUND, L.P.

By: BVF Partners L.P., its general partner
By: BVF Inc., its general partner

By: /s/ Mark N. Lampert
Mark N. Lampert
President

INVESTMENT 10, L.L.C.

By: BVF Partners L.P., its investment adviser
By: BVF Inc., its general partner

By: /s/ Mark N. Lampert
Mark N. Lampert
President

BIOTECHNOLOGY VALUE FUND II, L.P.

By: BVF Partners L.P., its general partner
By: BVF Inc., its general partner

By: /s/ Mark N. Lampert
Mark N. Lampert
President

MSI BVF SPV, LLC

By: BVF Partners L.P., its investment adviser
By: BVF Inc., its general partner

By: /s/ Mark N. Lampert
Mark N. Lampert
President

BVF PARTNERS L.P.

By: BVF Inc., its general partner

By: /s/ Mark N. Lampert
Mark N. Lampert
President

BVF INC.

By: /s/ Mark N. Lampert
Mark N. Lampert
President

/s/ Mark N. Lampert
MARK N. LAMPERT

BVF INVESTMENTS, L.L.C.

By: BVF Partners L.P., its manager
By: BVF Inc., its general partner

By: /s/ Mark N. Lampert
Mark N. Lampert
President

SCHEDULE ATransactions in the Securities of the Issuer During the Past Sixty Days

<u>Class of Security</u>	<u>Securities Purchased / (Sold)</u>	<u>Price (\$)</u>	<u>Date of Purchase / Sale</u>
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MSI BVF SPV, LLC

Common Stock	483,459*	4.5100	07/01/2014
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* Represents a transfer of funds to MSI BVF SPV, LLC from its predecessor fund, Magnitude Special Investments Portfolio Fund, Ltd., of which BVF Partners L.P. also served as the investment adviser of.

Rule 10b5-1 Trading Plan**(Non-discretionary Plan-Owned Shares Only)**

BVF Partners L.P. and its affiliates (together, "BVF") hereby adopts this Trading Plan ("Trading Plan") dated August 26, 2014, between BVF and Wedbush Securities, Inc. ("Broker"), acting as agent.

Recital

This Trading Plan is being entered into between BVF and Broker to establish a trading plan for BVF that complies with the requirements of Rule 10b5-1(c) (1) and, to the extent applicable, Rule 10b-18 under the Securities Exchange Act of 1934, as amended (the "Exchange Act"). BVF is establishing this Trading Plan to acquire for BVF shares of the common stock, par value \$0.001 per share (the "Stock"), of Targacept, Inc. (the "Issuer").

A. *Implementation of the Plan*

1. BVF hereby appoints Broker to purchase or sell shares of Stock pursuant to the terms and conditions set forth below. Subject to such terms and conditions, Broker hereby accepts such appointment. Broker shall purchase or sell shares pursuant to the instructions delivered to Broker by BVF (the "Instruction Letter") simultaneous with the execution of this Trading Plan.
2. Broker is authorized to begin purchasing or selling Stock pursuant to this Trading Plan on September 5, 2014 (which shall be no earlier than 10 days from the date this Trading Plan is adopted) and shall cease purchasing or selling Stock on the earliest to occur of the date on which Broker receives notice of the death of Purchaser, as soon as reasonably practical after learning that the Issuer or any other person publicly announces a tender or exchange offer with respect to the Stock, the date of public announcement of a merger, acquisition, reorganization, recapitalization or comparable transaction affecting the securities of the Issuer as a result of which the Stock is exchanged or converted into shares of another company, the date on which Broker receives notice of the commencement of any proceedings in respect of or triggered by BVF's bankruptcy or insolvency, the date that the instructions in the Instruction Letter are satisfied, and September 5, 2015 (the "Plan Trading Period").
3. (a) Broker shall purchase or sell up to the shares of Stock (the "Maximum Purchasable Amount" and "Maximum Sellable Amount" respectively and together, the "Maximum Amounts"), from time to time, in such quantities and at such prices (the "Prices") as provided in the Instruction Letter.

(b) Subject to the conditions set forth in paragraph A.3 (a) above, Broker shall buy or sell up to the Maximum Amounts on any Trading Day under ordinary principles of best execution at the then-prevailing market price.

(c) If, consistent with ordinary principles of best execution or for any other reason, Broker cannot buy or sell the Maximum Amounts prior to the last Trading Day of the Plan Trading Period, Broker's authority to buy or sell such shares for the account of BVF under this Trading Plan shall terminate. A "Trading Day" is any day during the Plan Trading Period that the Nasdaq Global Market (the "Principal Market") is open for business and the Stock trades regular way on the Principal Market.

(d) The Maximum Amounts and the Prices, if applicable, shall be adjusted automatically on a proportionate basis to take into account any Stock split, reverse Stock split or Stock dividend with respect to the Stock or any change in capitalization with respect to the Issuer that occurs during the Plan Trading Period.

4. Broker shall not buy or sell Stock hereunder at any time when:

- (i) Broker, in its sole discretion, has determined that a market disruption, banking moratorium, outbreak or escalation of hostilities or other crisis or calamity has occurred; or
- (ii) Broker, in its sole discretion, has determined that it is prohibited from doing so by a legal, contractual or regulatory restriction applicable to it or its affiliates or to BVF or BVF's affiliates (other than any such restriction relating to BVF's possession or alleged possession of material nonpublic information about the Issuer or the Stock); or
- (iii) Broker has received notice from BVF to terminate the plan in accordance with paragraph C.1 below.

5. (a) BVF will deposit funds ("Funds"), into an account at Broker in the name of and for the benefit of BVF (the "Plan Account"), sufficient to cover purchases to be made under the Trading Plan on or before settlement date.

(b) Broker shall withdraw Funds from the Plan Account in order to settle purchases of Stock under this Trading Plan. If at any time during the Plan Trading Period the Funds in the Plan Account on the settlement date are less than the Maximum Purchasable Amount, Broker shall have no further obligation to effect purchases of shares of Stock under this Trading Plan; provided, however, that Broker may, in its sole discretion continue to purchase shares in accordance with this Trading Plan, and BVF shall be responsible to pay for any such purchases.

(c) To the extent that any Funds remain in the Plan Account after the end of the Plan Trading Period or upon termination of this Trading Plan, Broker agrees to return such Funds promptly to the BVF.

6. Broker may purchase or sell Stock on any national securities exchange, in the over-the-counter market, on an automated trading system or otherwise.

B. *BVF's Representations, Warranties and Covenants.* BVF hereby represents warrants and covenants that:

1. BVF is not aware of any material nonpublic information concerning the Issuer or its securities. BVF is entering into this Trading Plan in good faith and not as part of a plan or scheme to evade compliance with the federal securities laws.

2. While this Trading Plan is in effect, BVF agrees not to enter into or alter any corresponding or hedging transaction or position with respect to the securities covered by this Trading Plan and agrees, except as expressly permitted herein, not to alter or deviate from the terms of this Trading Plan.
3. The execution and delivery of this Trading Plan by BVF and the transactions contemplated by this Trading Plan will not contravene any provision of applicable law or any agreement or other instrument binding on BVF or any judgment, order or decree of any governmental body, agency or court having jurisdiction over BVF.
4. BVF agrees that until this Trading Plan has been terminated as permitted herein BVF shall not (i) enter into a binding contract with respect to the purchase or sale of the Stock with another broker, dealer, financial institution or other party (each, a "Financial Institution"), (ii) instruct another Financial Institution to purchase or sell the Stock, or (iii) adopt a plan for trading with respect to Stock other than this Trading Plan.
5. BVF agrees that it shall not, directly or indirectly, communicate any material nonpublic information relating to the Stock or the Issuer to any employee of Broker or its affiliates who is involved, directly or indirectly, in executing this Trading Plan at any time while this Trading Plan is in effect.
6. BVF agrees that BVF shall at all times during the Plan Trading Period (as defined), in connection with the performance of this Trading Plan, comply with all applicable laws, including, without limitation, Section 16 of the Exchange Act and the rules and regulations promulgated thereunder, and make all filings, if any, required under Sections 13(d), 13(g) and 16 of the Exchange Act in a timely manner, to the extent any such filings are applicable to BVF.
7. BVF acknowledges and agrees that BVF does not have, and shall not attempt to exercise, any influence over how, when or whether to effect purchases or sales of the Stock pursuant to this Trading Plan.
8. Broker may purchase or sell the Stock on any national securities exchange, in the over the counter market, on an automated trading system or otherwise. Broker or one of its affiliates may make a market in the Stock and may act as principal in executing purchases or sales under the Trading Plan. To the extent that Broker administers other trading plans relating to Issuer's securities, Broker may aggregate orders for BVF with orders under other persons' trading plans for execution in a block and allocate each execution on a pro rata basis to each person and BVF. In the event of partial execution of block orders, Broker shall allocate all the Stock actually purchased or sold on a particular day pursuant to all Rule 10b5-1 trading plans concerning Issuer's securities that Broker manages pro rata based on the ratio of (x) the number of shares to be purchased or sold pursuant to the order instructions of each trading plan to (y) the total number of shares to be purchased or sold under all trading plans having the same type of order instructions.

C. Termination

1. This Trading Plan may not be terminated prior to the end of the Plan Trading Period, except that it may be terminated at any time by written notice from BVF received by Broker's compliance office at the address, fax number or email address set forth in paragraph F.4 below for any reason as long as such termination is made in good faith and not as part of a plan or scheme to evade the insider trading rules and BVF represents that to Broker in such notice, with reasons for a permitted termination including, but not limited to, where legal or regulatory restrictions applicable to BVF or BVF's affiliates (other than any such restrictions relating to BVF's possession or alleged possession of material nonpublic information about the Issuer or the Stock) would prevent Broker from buying or selling Stock for BVF's account during the Plan Trading Period.

D. Indemnification; Limitation of Liability

1. (a) BVF agrees to indemnify and hold harmless Broker and its directors, officers, employees and affiliates from and against all claims, losses, damages and liabilities (including, without limitation, any legal or other expenses reasonably incurred in connection with defending or investigating any such action or claim) arising out of or attributable to Broker's actions taken or not taken in compliance with this Trading Plan or arising out of or attributable to any breach by BVF of this Trading Plan (including BVF's representations and warranties hereunder) or any violation by BVF of applicable laws or regulations.

(b) Notwithstanding any other provision hereof, Broker shall not be liable to BVF for:
 - (i) special, indirect, punitive, exemplary or consequential damages, or incidental losses or damages of any kind, even if advised of the possibility of such losses or damages or if such losses or damages could have been reasonably foreseen; or
 - (ii) any failure to perform or to cease performance or any delay in performance that results from a cause or circumstance that is beyond its reasonable control, including but not limited to failure of electronic or mechanical equipment, strikes, failure of common carrier or utility systems, severe weather, market disruptions or other causes commonly known as "acts of God".
(c) Notwithstanding any other provision hereof, Broker shall not be liable to BVF for (i) the exercise of discretionary authority or discretionary control under this Trading Plan, if any, or (ii) any failure to effect a purchase or sale required by paragraph A, except for failures to effect purchases or sales as a result of the gross negligence or willful misconduct of Broker.
 2. BVF has consulted with BVF's own advisors as to the legal, tax, business, financial and related aspects of, and has not relied upon Broker or any person affiliated with Broker in connection with, BVF's adoption and implementation of this Trading Plan.
 3. BVF acknowledges and agrees that in performing BVF's obligations hereunder neither Broker nor any of its affiliates nor any of their respective officers, employees or other representatives is exercising any discretionary authority or discretionary control respecting management of BVF's assets, or exercising any authority or control respecting management or disposition of BVF's assets, or otherwise acting as a fiduciary (within the meaning of Section 3(21) of the Employee Retirement Income Security Act of 1974, as amended, or Section 2510.3-21 of the Regulations promulgated by the United States Department of Labor) with respect to BVF or BVF's assets. Without limiting the foregoing, BVF further acknowledges and agrees that neither Broker nor any of its affiliates nor any of their respective officers, employees or other representatives has provided any "investment advice" within the meaning of such provisions, and that no views expressed by any such person will serve as a primary basis for investment decisions with respect to BVF's assets.
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E. Agreement to Arbitrate

Both Parties agree that all controversies which may arise between BVF and Broker or any of our officers, employees or agents concerning any transaction or the construction, performance or breach of this or any other agreement between BVF and Broker, shall be determined by arbitration in accordance with the rules, then in effect, of The Financial Industry Regulatory Authority (“FINRA”), The New York Stock Exchange (“NYSE”) or any other exchange or forum of which Broker is a member, as BVF may elect. If BVF does not make such election by certified mail sent to Brokers main office within ten (10) days after the receipt of notification from Broker requesting such an election, then BVF authorizes Broker to make such election on behalf of BVF.

F. General

1. BVF and Broker acknowledge and agree that this Trading Plan is a “securities contract,” as such term is defined in Section 741(7) of Title 11 of the United States Code (the “Bankruptcy Code”), entitled to all of the protections given such contracts under the Bankruptcy Code.
2. This Trading Plan and the Instruction Letter constitute the entire agreement between the parties with respect to this Trading Plan and supersedes any prior agreements or understandings with regard to the Trading Plan.
3. (a) This Trading Plan may be amended by BVF only upon the written consent of Broker and receipt by Broker of the following document, each dated as of the date of such amendment:
 - (i) a certificate signed by BVF certifying that the representations and warranties of BVF contained in this Trading Plan are true at and as of the date of such certificate as if made at and as of such date.
- (b) Once such of the aforementioned documents is received by Broker, this Trading Plan, as modified, shall be effective immediately.

4. All notices to Broker under this Trading Plan shall be given to Broker' office in the manner specified by this Trading Plan by confirmed email to rob.katz@wedbush.com or by certified mail to the address below:

Wedbush Securities Inc
1000 Wilshire Blvd
Los Angeles CA 90017
Attn.: Rob Katz

5. BVF's rights and obligations under this Trading Plan may not be assigned or delegated without the written permission of Broker.
6. This Trading Plan may be signed in any number of counterparts, each of which shall be an original, with the same effect as if the signatures thereto and hereto were upon the same instrument.
7. If any provision of this Trading Plan is or becomes inconsistent with any applicable present or future law, rule or regulation, that provision will be deemed modified or, if necessary, rescinded in order to comply with the relevant law, rule or regulation. All other provisions of this Trading Plan will continue and remain in full force and effect.
8. This Trading Plan shall be governed by and construed in accordance with the internal laws of the State of California and may be modified or amended only by a writing signed by the parties hereto.
9. The BVF understands that, due to the manual process involved in executing and reporting trades on the floor of the New York Stock Exchange ("NYSE"), a trade that is otherwise compliant with the price restrictions of Rule 10b-18 may appear to have been effected outside of the price restriction. Such a condition typically occurs as a result of the delays inherent in the NYSE specialist process of reporting a trade to the consolidated tape. In those instances where there is a delay between the execution and reporting of a trade by the specialist on the NYSE floor, a trade reported to the consolidated tape by another market may cause the NYSE trade report to appear as an "uptick", i.e., a trade executed at a price higher than the highest independent bid or last sale price. These conditions are more likely to occur in actively traded stocks.

NOTICE: THIS AGREEMENT CONTAINS A PRE-DISPUTE ARBITRATION CLAUSE IN PARAGRAPH E.

IN WITNESS WHEREOF, the undersigned have signed this Trading Plan as of the date first written above.

BVF PARTNERS L.P.

By: BVF Inc., its general partner

By: /s/ Mark N. Lampert
Mark N. Lampert
President

Wedbush Securities Inc.

By: /s/ Ian Winer
Name: Ian Winer
Title: Head of Equity Trading

JOINT FILING AGREEMENT

In accordance with Rule 13d-1(k)(1)(iii) under the Securities Exchange Act of 1934, as amended, the persons named below agree to the joint filing on behalf of each of them of a Statement on Schedule 13D dated September 5, 2014 (including amendments thereto) with respect to the shares of Common Stock, par value \$0.001 per share, of Targacept, Inc. This Joint Filing Agreement shall be filed as an Exhibit to such Statement.

Dated: September 5, 2014

BIOTECHNOLOGY VALUE FUND, L.P.

By: BVF Partners L.P., its general partner
By: BVF Inc., its general partner

By: /s/ Mark N. Lampert
Mark N. Lampert
President

INVESTMENT 10, L.L.C.

By: BVF Partners L.P., its investment adviser
By: BVF Inc., its general partner

By: /s/ Mark N. Lampert
Mark N. Lampert
President

BIOTECHNOLOGY VALUE FUND II, L.P.

By: BVF Partners L.P., its general partner
By: BVF Inc., its general partner

By: /s/ Mark N. Lampert
Mark N. Lampert
President

MSI BVF SPV, LLC

By: BVF Partners L.P., its investment adviser
By: BVF Inc., its general partner

By: /s/ Mark N. Lampert
Mark N. Lampert
President

BVF PARTNERS L.P.

By: BVF Inc., its general partner

By: /s/ Mark N. Lampert
Mark N. Lampert
President

BVF INC.

By: /s/ Mark N. Lampert
Mark N. Lampert
President

/s/ Mark N. Lampert
MARK N. LAMPERT

BVF INVESTMENTS, L.L.C.

By: BVF Partners L.P., its manager
By: BVF Inc., its general partner

By: /s/ Mark N. Lampert
Mark N. Lampert
President