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)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)

<u>February 9, 2015</u> (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 $\S\S$ 240.13d-1(e), 240.13d-1(g), check the following box \square .

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.

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 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.

1	NAME OF REPORT	TING PERSON			
	BIOTECHNOLOGY VALUE FUND, L.P.				
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) x				
			(b) o		
3	SEC USE ONLY				
4	SOURCE OF FUND	S			
	WC				
5		SCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM			
	2(d) OR 2(e)				
	CHERENGIAN OF P	A CE OF OR OR ON ANY ATTON			
6	CITIZENSHIP OR P	LACE OF ORGANIZATION			
	DEL AMADE				
NUMBER OF	DELAWARE 7	SOLE VOTING POWER			
SHARES	/	SOLE VOTING POWER			
BENEFICIALLY		- 0 -			
OWNED BY EACH	8	SHARED VOTING POWER			
REPORTING	O	SHAKED VOTING FOWER			
PERSON WITH	2,977,919				
	9 SOLE DISPOSITIVE POWER				
	3	SOLE BIST COTTY LTC WER			
		- 0 -			
	10	SHARED DISPOSITIVE POWER			
		2,977,919			
11	AGGREGATE AMO	DUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON			
	2,977,919				
12	CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES 0				
13	PERCENT OF CLAS	SS REPRESENTED BY AMOUNT IN ROW (11)			
1.4	8.7%	NG PERGON			
14	TYPE OF REPORTI	NG PERSUN			
	PN				
	PIN				

	-					
1	NAME OF REPORTING PERSON					
	BIOTECHNOLOGY VALUE FUND II, L.P.					
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) x					
		(b) o				
3	SEC USE ONLY					
4	SOURCE OF FUND	S				
	WC					
5		SCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM				
	2(d) OR 2(e)					
6	CITIZENSHIP OR PLACE OF ORGANIZATION					
	DELAWARE					
NUMBER OF	7	SOLE VOTING POWER				
SHARES						
BENEFICIALLY		- 0 -				
OWNED BY EACH	8	SHARED VOTING POWER				
REPORTING						
PERSON WITH	1,713,907					
	9 SOLE DISPOSITIVE POWER					
		- 0 -				
	10	SHARED DISPOSITIVE POWER				
		1,713,907				
11	AGGREGATE AMC	OUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON				
	1,713,907					
12	CHECK BOX IF TH	E AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES	0			
13	PERCENT OF CLAS	SS REPRESENTED BY AMOUNT IN ROW (11)				
	5.0%					
14	TYPE OF REPORTI	NG PERSON				
	PN					

	NAME OF BERORE	WHO REDGOM				
1	NAME OF REPORTING PERSON					
	DATE VALUE CONTROL I I C					
	BVF INVESTMENTS, L.L.C.					
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) x					
			(b) o			
3	SEC USE ONLY					
4	SOURCE OF FUND	S				
	WC					
5	CHECK BOX IF DIS	SCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM				
	2(d) OR 2(e)					
	, , , , ,					
6	CITIZENSHIP OR P	LACE OF ORGANIZATION				
	DELAWARE					
NUMBER OF	7	SOLE VOTING POWER				
SHARES						
BENEFICIALLY		- 0 -				
OWNED BY EACH	8	SHARED VOTING POWER				
REPORTING		o office voting towns				
PERSON WITH	349,482					
	9 SOLE DISPOSITIVE POWER					
	J	SOLD DISTORDER TO WELL				
		- 0 -				
	10	SHARED DISPOSITIVE POWER				
	10	SIMINED DISTOSTIVE FOWER				
		349,482				
11	AGGREGATE AMO	DUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON				
11	110 SILL SITL I IIVIC	DI DELLE CHILD DI DIGITALI CHILICOTT				
	349,482					
12		E AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES	0			
12	CHECK DOX II' III	LINGREGHT INIOUNT IN NOW (11) ENGLODES CERTAIN SHARES	U			
13	DERCENT OF CLAS	SS REPRESENTED BY AMOUNT IN ROW (11)				
15	LEICENT OF CLA	20 VET VEORIATED D.I. VINIOCIAL III VOAA (11)				
	1.0%					
14	TYPE OF REPORTI	NC DEDSON				
14	TIFE OF KEPORII	INO I DIGOTA				
	00					
	00					

1	NAME OF REPORT	TING PERSON			
	INVESTMENT 10, L.L.C.				
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) x				
			(b) o		
3	SEC USE ONLY				
4	SOURCE OF FUND	S			
	WC				
5		SCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM			
	2(d) OR 2(e)				
6	CITIZENSHIP OR F	PLACE OF ORGANIZATION			
	ILLINOIS	[
NUMBER OF	7	SOLE VOTING POWER			
SHARES					
BENEFICIALLY		-0-			
OWNED BY EACH REPORTING	8	SHARED VOTING POWER			
PERSON WITH		1 120 201			
PERSON WITH	9	1,130,361 SOLE DISPOSITIVE POWER			
	9	SOLE DISPOSITIVE POWER			
		- 0 -			
	10	SHARED DISPOSITIVE POWER			
	10	SHAKED DISPOSITIVE POWER			
		1,130,361			
11	ACCRECATE AMO	DUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON			
11	AUGULTE AMIC	JOINT DEVELORIZED OWNED DI ENGINEE ORTING LEROON			
	1,130,361				
12		E AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES	0		
14	SILCI DOM II III	E 11001.E 0111 II	•		
13	PERCENT OF CLA	SS REPRESENTED BY AMOUNT IN ROW (11)			
_5		(42)			
	3.3%				
14	TYPE OF REPORTI	NG PERSON			
	00				

		THE PERSON	1		
1	NAME OF REPORTING PERSON				
	MCLDVE CDV LLC				
_	MSI BVF SPV, LLC				
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) x				
_		(b) o			
3	SEC USE ONLY				
4	SOURCE OF FUND	S			
	T.I.C				
_	WC	COLOGUES OF LEGAL PROCEEDINGS IS REQUIRED BURGLANT TO ITEM.			
5		SCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM			
	2(d) OR 2(e)				
6	CITIZENCIID OD D	LACE OF ORGANIZATION			
0	CITIZENSHIP OR P	LACE OF ORGANIZATION			
	DELAWARE				
NUMBER OF	7	SOLE VOTING POWER			
SHARES	,	JOEL VOING TOWER			
BENEFICIALLY		- 0 -			
OWNED BY EACH	8	SHARED VOTING POWER			
REPORTING	o difficulty formation of the control of the contro				
PERSON WITH	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 TH	E AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES	0		
40	DED CENTE OF C	CO DEDDECEMBED DV AMOUNTE IN DOLLAR			
13	PERCENT OF CLAS	SS REPRESENTED BY AMOUNT IN ROW (11)			
	1.4%				
14	TYPE OF REPORTI	NC DEDSON			
14	I I PE OF KEPOKII	ING PERSON			
	00				

1	NAME OF REPORT	ING PERSON				
	DATE DA DENIEDO L. D.					
	BVF PARTNERS L.P.					
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) x					
	(b) o					
3	SEC USE ONLY					
4	SOURCE OF FUND					
4	SOURCE OF FUND	5				
	AF					
5		SCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM				
	2(d) OR 2(e)		_			
	, , ,					
6	CITIZENSHIP OR P	LACE OF ORGANIZATION				
	DELAWARE					
NUMBER OF	7	SOLE VOTING POWER				
SHARES						
BENEFICIALLY		-0-				
OWNED BY EACH REPORTING	8	8 SHARED VOTING POWER				
PERSON WITH	6 655 130					
TERSON WITH	6,655,128 9 SOLE DISPOSITIVE POWER					
	5 SOLE DISPOSITIVE POWER					
		- 0 -				
	10	SHARED DISPOSITIVE POWER				
		6,655,128				
11	AGGREGATE AMO	DUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON				
	6,655,128					
12	CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES 0					
13	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11)					
13	PERCENT OF CLAS	22 KELKESENTED RA VIMOONT IN KOM (11)				
	19.4%					
14	TYPE OF REPORTI	NG PERSON				
17	TILL OF KEI OKII	1.0 I Bloom				
	PN, IA					
l—————————————————————————————————————						

	NAME OF DEPORT	WALC BEDCOM				
1	NAME OF REPORTING PERSON					
	BVF INC.					
2						
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) x (b) o					
3	SEC USE ONLY		(0) 0			
3	SEC USE ONLI					
4	SOURCE OF FUND	2				
4	SOURCE OF FUND	5				
	AF					
5		SCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM	П			
	2(d) OR 2(e)		_			
	(-)					
6	CITIZENSHIP OR P	LACE OF ORGANIZATION	-			
	DELAWARE					
NUMBER OF	7	SOLE VOTING POWER				
SHARES						
BENEFICIALLY		- 0 -				
OWNED BY EACH	8	8 SHARED VOTING POWER				
REPORTING		0.055.400				
PERSON WITH	6,655,128					
	9 SOLE DISPOSITIVE POWER					
		0				
	10	- 0 - SHARED DISPOSITIVE POWER				
	10	SHARED DISPOSITIVE POWER				
		6,655,128				
11	AGGREGATE AMO	DUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON				
	6,655,128					
12	CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES 0					
		• •				
13	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11)					
	19.4%					
14	TYPE OF REPORTI	NG PERSON				
	66					
	CO					

	NAME OF BERORE	WAY C DED COAY			
1	NAME OF REPORTING PERSON				
	MADWAY A AMBERT				
	MARK N. LAMPERT				
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) x				
			(b) o		
3	SEC USE ONLY				
4	SOURCE OF FUND	S			
	AF				
5	CHECK BOX IF DIS	SCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM			
	2(d) OR 2(e)				
6	CITIZENSHIP OR P	LACE OF ORGANIZATION			
	USA				
NUMBER OF	7	SOLE VOTING POWER			
SHARES					
BENEFICIALLY		- 0 -			
OWNED BY EACH	8	SHARED VOTING POWER			
REPORTING					
PERSON WITH	6,655,128				
	9 SOLE DISPOSITIVE POWER				
		- 0 -			
	10	SHARED DISPOSITIVE POWER			
		6,655,128			
11	AGGREGATE AMO	OUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON			
	6,655,128				
12		E AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES	0		
		() = = = = ===========================			
13	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11)				
		· /			
	19.4%				
14	TYPE OF REPORTI	NG PERSON			
	IN				
[

The following constitutes Amendment No. 1 to the Schedule 13D filed by the undersigned ("Amendment No. 1"). This Amendment No. 1 amends the Schedule 13D as specifically set forth herein.

Item 5. <u>Interest in Securities of the Issuer.</u>

Item 5(a) is hereby amended and restated to read as follows:

(a) The aggregate percentage of Shares reported owned by each person named herein is based upon 34,311,435 Shares outstanding as of October 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 November 6, 2014.

As of the close of business on February 9, 2015, (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 8.7%, 5.0%, 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 19.4% 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 19.4% 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 19.4% of the Shares outstanding.

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

Item 6 is hereby amended to add the following:

On February 9, 2015, Partners and certain of its affiliates voluntarily ended the Trading Plan Agreement with Wedbush Securities, Inc.

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.

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: February 10, 2015

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

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

BVF PARTNERS L.P.

By: BVF Inc., its general partner

By: /s/ Mark N. Lampert

Mark N. Lampert

President

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

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

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 INC.

By: /s/ Mark N. Lampert

Mark N. Lampert

President

/s/ Mark N. Lampert

MARK N. LAMPERT