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

SCHEDULE 13D

Under the Securities Exchange Act of 1934
(Amendment No.)*

DECIPHERA PHARMACEUTICALS, INC.
(Name of Issuer)

Common Stock, \$0.01 par value
(Title of Class of Securities)

24344T101
(CUSIP Number)

New Leaf Ventures
7 Times Square, Suite 3502
New York, NY 10036
Attn: Craig Slutzkin
(646) 871-6400

Gunderson Dettmer Stough Villeneuve Franklin & Hachigian, LLP
One Marina Park Drive, Suite 900
Boston, MA 02210
Attn: Jay K. Hachigian, Esq.
(617) 648-9100

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

October 2, 2017
(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: ☐

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 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.	Names of Reporting Persons. New Leaf Ventures III, L.P. ("NLV III")	
2.	Check the Appropriate Box if a Member of a Group (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>	
3.	SEC Use Only	
4.	Source of Funds (See Instructions) WC	
5.	Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 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 1,957,832 shares, except that (a) New Leaf Venture Associates III, L.P. ("NLV Associates III"), the sole general partner of NLV III, may be deemed to have sole power to vote such shares, (b) New Leaf Venture Management III, L.L.C. ("NLV Management III"), the sole general partner of NLV Associates III and ultimate general partner of NLV III, may be deemed to have sole power to vote such shares, and (c) Liam Ratcliffe, a member of the Issuer's board of directors ("Ratcliffe"), Jeani Delagardelle ("Delagardelle"), Ronald M. Hunt ("Hunt") and Vijay K. Lathi ("Lathi"), the sole members of NLV Management III, may be deemed to have shared power to vote such shares.
	8.	Shared Voting Power See response to row 7.
	9.	Sole Dispositive Power 1,957,832 shares, except that (a) NLV Associates III, the sole general partner of NLV III, may be deemed to have sole power to dispose of such shares, (b) NLV Management III, the sole general partner of NLV Associates III and ultimate general partner of NLV III, may be deemed to have sole power to dispose of such shares, and (c) Ratcliffe, a member of the Issuer's board of directors, Delagardelle, Hunt and Lathi, the sole members of NLV Management III, may be deemed to have shared power to dispose of such shares.
	10.	Shared Dispositive Power See response to row 9.
11.	Aggregate Amount Beneficially Owned by Each Reporting Person 1,957,832	
12.	Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) <input type="checkbox"/>	
13.	Percent of Class Represented by Amount in Row (11) 6.1% ¹	
14.	Type of Reporting Person (See Instructions) PN	

¹ Based on 31,925,190 shares of Common Stock of the Issuer as of September 28, 2017, reported on the Issuer's Final Prospectus filed with the Securities and Exchange Commission on September 28, 2017.

1.	Names of Reporting Persons. New Leaf Biopharma Opportunities I, L.P. ("Biopharma I")	
2.	Check the Appropriate Box if a Member of a Group (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>	
3.	SEC Use Only	
4.	Source of Funds (See Instructions) WC	
5.	Check if Disclosure of Legal Proceedings is Required Pursuant to Items 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 2,146,308 shares, except that (a) New Leaf BPO Associates I, L.P. ("NLBA I"), the sole general partner of Biopharma I, may be deemed to have sole power to vote such shares, (b) NLV Management III, the sole general partner of NLBA I and ultimate general partner of Biopharma I, may be deemed to have sole power to vote such shares, and (c) Ratcliffe, a member of the Issuer's board of directors, Delagardelle, Hunt and Lathi, the sole members of NLV Management III, may be deemed to have shared power to vote such shares.
	8.	Shared Voting Power See response to row 7.
	9.	Sole Dispositive Power 2,146,308 shares, except that (a) NLBA I, the sole general partner of Biopharma I, may be deemed to have sole power to dispose of such shares, (b) NLV Management III, the sole general partner of NLBA I and ultimate general partner of Biopharma I, may be deemed to have sole power to dispose of such shares, and (c) Ratcliffe, a member of the Issuer's board of directors, Delagardelle, Hunt and Lathi, the sole members of NLV Management III, may be deemed to have shared power to dispose of such shares.
	10.	Shared Dispositive Power See response to Row 9.
11.	Aggregate Amount Beneficially Owned by Each Reporting Person 2,146,308	
12.	Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) <input type="checkbox"/>	
13.	Percent of Class Represented by Amount in Row (11) 6.7% ¹	
14.	Type of Reporting Person (See Instructions) PN	

1.	Names of Reporting Persons. New Leaf Venture Associates III, L.P.	
2.	Check the Appropriate Box if a Member of a Group (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>	
3.	SEC Use Only	
4.	Source of Funds (See Instructions) AF	
5.	Check if Disclosure of Legal Proceedings is Required Pursuant to Items 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 1,957,832 shares, all of which are owned by NLV III. (a) NLV Associates III, the sole general partner of NLV III, may be deemed to have sole power to vote such shares, (b) NLV Management III, the sole general partner of NLV Associates III and ultimate general partner of NLV III, may be deemed to have sole power to vote such shares, and (c) Ratcliffe, a member of the Issuer's board of directors, Delagardelle, Hunt and Lathi, the sole members of NLV Management III, may be deemed to have shared power to vote such shares.
	8.	Shared Voting Power See response to row 7.
	9.	Sole Dispositive Power 1,957,832 shares, all of which are owned by NLV III. (a) NLV Associates III, the sole general partner of NLV III, may be deemed to have sole power to dispose of such shares, (b) NLV Management III, the sole general partner of NLV Associates III and ultimate general partner of NLV III, may be deemed to have sole power to dispose of such shares, and (c) Ratcliffe, a member of the Issuer's board of directors, Delagardelle, Hunt and Lathi, the sole members of NLV Management III, may be deemed to have shared power to dispose of such shares.
	10.	Shared Dispositive Power See response to Row 9.
11.	Aggregate Amount Beneficially Owned by Each Reporting Person 1,957,832	
12.	Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) <input type="checkbox"/>	
13.	Percent of Class Represented by Amount in Row (11) 6.1% ¹	
14.	Type of Reporting Person (See Instructions) PN	

1.	Names of Reporting Persons. New Leaf BPO Associates I, L.P.	
2.	Check the Appropriate Box if a Member of a Group (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>	
3.	SEC Use Only	
4.	Source of Funds (See Instructions) AF	
5.	Check if Disclosure of Legal Proceedings is Required Pursuant to Items 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 2,146,308 shares, all of which are owned by Biopharma I. (a) NLBA I, the sole general partner of Biopharma I, may be deemed to have sole power to vote such shares, (b) NLV Management III, the sole general partner of NLBA I and ultimate general partner of Biopharma I, may be deemed to have sole power to vote such shares, and (c) Ratcliffe, a member of the Issuer's board of directors, Delagardelle, Hunt and Lathi, the sole members of NLV Management III, may be deemed to have shared power to vote such shares.
	8.	Shared Voting Power See response to row 7.
	9.	Sole Dispositive Power 2,146,308 shares, all of which are owned by Biopharma I. (a) NLBA I, the sole general partner of Biopharma I, may be deemed to have sole power to dispose of such shares, (b) NLV Management III, the sole general partner of NLBA I and ultimate general partner of Biopharma I, may be deemed to have sole power to dispose of such shares, and (c) Ratcliffe, a member of the Issuer's board of directors, Delagardelle, Hunt and Lathi, the sole members of NLV Management III, may be deemed to have shared power to dispose of such shares.
	10.	Shared Dispositive Power See response to row 9.
11.	Aggregate Amount Beneficially Owned by Each Reporting Person 2,146,308	
12.	Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) <input type="checkbox"/>	
13.	Percent of Class Represented by Amount in Row (11) 6.7% ¹	
14.	Type of Reporting Person (See Instructions) PN	

1.	Names of Reporting Persons. New Leaf Venture Management III, L.L.C.	
2.	Check the Appropriate Box if a Member of a Group (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>	
3.	SEC Use Only	
4.	Source of Funds (See Instructions) AF	
5.	Check if Disclosure of Legal Proceedings is Required Pursuant to Items 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 4,104,140 shares, of which (i) 1,957,832 shares are directly owned by NLV III, and (ii) 2,146,308 shares are directly owned by Biopharma I, except that (a) NLBA I, the sole general partner of Biopharma I, may be deemed to have sole power to vote such shares owned by Biopharma I, (b) NLV Associates III, the sole general partner of NLV III, may be deemed to have sole power to vote of such shares owned by NLV III, (c) NLV Management III, as the sole general partner of NLBA I and ultimate general partner of Biopharma I, may be deemed to have sole power to vote all of the shares directly owned by Biopharma I, and as the sole general partner of NLV Associates III and ultimate general partner of NLV III, may be deemed to have sole power to vote all of the shares directly owned by NLV III, and (d) Ratcliffe, a member of the Issuer's board of directors, Delagardelle, Hunt and Lathi, the sole members of NLV Management III, may be deemed to have shared power to vote all of such shares.
	8.	Shared Voting Power See response to row 7.
	9.	Sole Dispositive Power 4,104,140 shares, of which (i) 1,957,832 shares are directly owned by NLV III, and (ii) 2,146,308 shares are directly owned by Biopharma I, except that (a) NLBA I, the sole general partner of Biopharma I, may be deemed to have sole power to dispose of such shares owned by Biopharma I, (b) NLV Associates III, the sole general partner of NLV III, may be deemed to have sole power to dispose of such shares owned by NLV III, (c) NLV Management III, as the sole general partner of NLBA I and ultimate general partner of Biopharma I, may be deemed to have sole power to dispose of all of the shares directly owned by Biopharma I, and as the sole general partner of NLV Associates III and ultimate general partner of NLV III, may be deemed to have sole power to dispose of all of the shares directly owned by NLV III, and (d) Ratcliffe, a member of the Issuer's board of directors, Delagardelle, Hunt and Lathi, the sole members of NLV Management III, may be deemed to have shared power to dispose of all of such shares.
	10.	Shared Dispositive Power See response to row 9.
11.	Aggregate Amount Beneficially Owned by Each Reporting Person 4,104,140	
12.	Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) <input type="checkbox"/>	
13.	Percent of Class Represented by Amount in Row (11) 12.9% ¹	
14.	Type of Reporting Person (See Instructions) OO	

1.	Names of Reporting Persons. Liam Ratcliffe		
2.	Check the Appropriate Box if a Member of a Group (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>		
3.	SEC Use Only		
4.	Source of Funds (See Instructions) AF		
5.	Check if Disclosure of Legal Proceedings is Required Pursuant to Items 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 4,104,140 shares, of which (i) 1,957,832 shares are directly owned by NLV III, and (ii) 2,146,308 shares are directly owned by Biopharma I, except that (a) NLBA I, the sole general partner of Biopharma I, may be deemed to have sole power to vote such shares owned by Biopharma I, (b) NLV Associates III, the sole general partner of NLV III, may be deemed to have sole power to vote of such shares owned by NLV III, (c) NLV Management III, as the sole general partner of NLBA I and ultimate general partner of Biopharma I, may be deemed to have sole power to vote all of the shares directly owned by Biopharma I, and as the sole general partner of NLV Associates III and ultimate general partner of NLV III, may be deemed to have sole power to vote all of the shares directly owned by NLV III, and (d) Ratcliffe, a member of the Issuer's board of directors, Delagardelle, Hunt and Lathi, the members of NLV Management III, may be deemed to have shared power to vote all of such shares.	
	9.	Sole Dispositive Power 0	
	10.	Shared Dispositive Power 4,104,140 shares, of which (i) 1,957,832 shares are directly owned by NLV III, and (ii) 2,146,308 shares are directly owned by Biopharma I, except that (a) NLBA I, the sole general partner of Biopharma I, may be deemed to have sole power to dispose of such shares owned by Biopharma I, (b) NLV Associates III, the sole general partner of NLV III, may be deemed to have sole power to dispose of such shares owned by NLV III, (c) NLV Management III, as the sole general partner of NLBA I and ultimate general partner of Biopharma I, may be deemed to have sole power to dispose of all of the shares directly owned by Biopharma I, and as the sole general partner of NLV Associates III and ultimate general partner of NLV III, may be deemed to have sole power to dispose of all of the shares directly owned by NLV III, and (d) Ratcliffe, a member of the Issuer's board of directors, Delagardelle, Hunt and Lathi, the members of NLV Management III, may be deemed to have shared power to dispose of all of such shares.	
11.	Aggregate Amount Beneficially Owned by Each Reporting Person 4,104,140		
12.	Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) <input type="checkbox"/>		
13.	Percent of Class Represented by Amount in Row (11) 12.9% ¹		
14.	Type of Reporting Person (See Instructions) IN		

1.	Names of Reporting Persons. Jeani Delagardelle	
2.	Check the Appropriate Box if a Member of a Group (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>	
3.	SEC Use Only	
4.	Source of Funds (See Instructions) AF	
5.	Check if Disclosure of Legal Proceedings is Required Pursuant to Items 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 4,104,140 shares, of which (i) 1,957,832 shares are directly owned by NLV III, and (ii) 2,146,308 shares are directly owned by Biopharma I, except that (a) NLBA I, the sole general partner of Biopharma I, may be deemed to have sole power to vote such shares owned by Biopharma I, (b) NLV Associates III, the sole general partner of NLV III, may be deemed to have sole power to vote of such shares owned by NLV III, (c) NLV Management III, as the sole general partner of NLBA I and ultimate general partner of Biopharma I, may be deemed to have sole power to vote all of the shares directly owned by Biopharma I, and as the sole general partner of NLV Associates III and ultimate general partner of NLV III, may be deemed to have sole power to vote all of the shares directly owned by NLV III, and (d) Ratcliffe, a member of the Issuer's board of directors, Delagardelle, Hunt and Lathi, the members of NLV Management III, may be deemed to have shared power to vote all of such shares.
	9.	Sole Dispositive Power 0
	10.	Shared Dispositive Power 4,104,140 shares, of which (i) 1,957,832 shares are directly owned by NLV III, and (ii) 2,146,308 shares are directly owned by Biopharma I, except that (a) NLBA I, the sole general partner of Biopharma I, may be deemed to have sole power to dispose of such shares owned by Biopharma I, (b) NLV Associates III, the sole general partner of NLV III, may be deemed to have sole power to dispose of such shares owned by NLV III, (c) NLV Management III, as the sole general partner of NLBA I and ultimate general partner of Biopharma I, may be deemed to have sole power to dispose of all of the shares directly owned by Biopharma I, and as the sole general partner of NLV Associates III and ultimate general partner of NLV III, may be deemed to have sole power to dispose of all of the shares directly owned by NLV III, and (d) Ratcliffe, a member of the Issuer's board of directors, Delagardelle, Hunt and Lathi, the members of NLV Management III, may be deemed to have shared power to dispose of all of such shares.
11.	Aggregate Amount Beneficially Owned by Each Reporting Person 4,104,140	
12.	Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) <input type="checkbox"/>	
13.	Percent of Class Represented by Amount in Row (11) 12.9% ¹	
14.	Type of Reporting Person (See Instructions) IN	

1.	Names of Reporting Persons. Ronald M. Hunt		
2.	Check the Appropriate Box if a Member of a Group (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>		
3.	SEC Use Only		
4.	Source of Funds (See Instructions) AF		
5.	Check if Disclosure of Legal Proceedings is Required Pursuant to Items 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 4,104,140 shares, of which (i) 1,957,832 shares are directly owned by NLV III, and (ii) 2,146,308 shares are directly owned by Biopharma I, except that (a) NLBA I, the sole general partner of Biopharma I, may be deemed to have sole power to vote such shares owned by Biopharma I, (b) NLV Associates III, the sole general partner of NLV III, may be deemed to have sole power to vote of such shares owned by NLV III, (c) NLV Management III, as the sole general partner of NLBA I and ultimate general partner of Biopharma I, may be deemed to have sole power to vote all of the shares directly owned by Biopharma I, and as the sole general partner of NLV Associates III and ultimate general partner of NLV III, may be deemed to have sole power to vote all of the shares directly owned by NLV III, and (d) Ratcliffe, a member of the Issuer's board of directors, Delagardelle, Hunt and Lathi, the members of NLV Management III, may be deemed to have shared power to vote all of such shares.	
	9.	Sole Dispositive Power 0	
	10.	Shared Dispositive Power 4,104,140 shares, of which (i) 1,957,832 shares are directly owned by NLV III, and (ii) 2,146,308 shares are directly owned by Biopharma I, except that (a) NLBA I, the sole general partner of Biopharma I, may be deemed to have sole power to dispose of such shares owned by Biopharma I, (b) NLV Associates III, the sole general partner of NLV III, may be deemed to have sole power to dispose of such shares owned by NLV III, (c) NLV Management III, as the sole general partner of NLBA I and ultimate general partner of Biopharma I, may be deemed to have sole power to dispose of all of the shares directly owned by Biopharma I, and as the sole general partner of NLV Associates III and ultimate general partner of NLV III, may be deemed to have sole power to dispose of all of the shares directly owned by NLV III, and (d) Ratcliffe, a member of the Issuer's board of directors, Delagardelle, Hunt and Lathi, the members of NLV Management III, may be deemed to have shared power to dispose of all of such shares.	
11.	Aggregate Amount Beneficially Owned by Each Reporting Person 4,104,140		
12.	Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) <input type="checkbox"/>		
13.	Percent of Class Represented by Amount in Row (11) 12.9% ¹		
14.	Type of Reporting Person (See Instructions) IN		

1.	Names of Reporting Persons. Vijay K. Lathi		
2.	Check the Appropriate Box if a Member of a Group (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>		
3.	SEC Use Only		
4.	Source of Funds (See Instructions) AF		
5.	Check if Disclosure of Legal Proceedings is Required Pursuant to Items 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 4,104,140 shares, of which (i) 1,957,832 shares are directly owned by NLV III, and (ii) 2,146,308 shares are directly owned by Biopharma I, except that (a) NLBA I, the sole general partner of Biopharma I, may be deemed to have sole power to vote such shares owned by Biopharma I, (b) NLV Associates III, the sole general partner of NLV III, may be deemed to have sole power to vote of such shares owned by NLV III, (c) NLV Management III, as the sole general partner of NLBA I and ultimate general partner of Biopharma I, may be deemed to have sole power to vote all of the shares directly owned by Biopharma I, and as the sole general partner of NLV Associates III and ultimate general partner of NLV III, may be deemed to have sole power to vote all of the shares directly owned by NLV III, and (d) Ratcliffe, a member of the Issuer's board of directors, Delagardelle, Hunt and Lathi, the members of NLV Management III, may be deemed to have shared power to vote all of such shares.	
	9.	Sole Dispositive Power 0	
	10.	Shared Dispositive Power 4,104,140 shares, of which (i) 1,957,832 shares are directly owned by NLV III, and (ii) 2,146,308 shares are directly owned by Biopharma I, except that (a) NLBA I, the sole general partner of Biopharma I, may be deemed to have sole power to dispose of such shares owned by Biopharma I, (b) NLV Associates III, the sole general partner of NLV III, may be deemed to have sole power to dispose of such shares owned by NLV III, (c) NLV Management III, as the sole general partner of NLBA I and ultimate general partner of Biopharma I, may be deemed to have sole power to dispose of all of the shares directly owned by Biopharma I, and as the sole general partner of NLV Associates III and ultimate general partner of NLV III, may be deemed to have sole power to dispose of all of the shares directly owned by NLV III, and (d) Ratcliffe, a member of the Issuer's board of directors, Delagardelle, Hunt and Lathi, the members of NLV Management III, may be deemed to have shared power to dispose of all of such shares.	
11.	Aggregate Amount Beneficially Owned by Each Reporting Person 4,104,140		
12.	Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) <input type="checkbox"/>		
13.	Percent of Class Represented by Amount in Row (11) 12.9% ¹		
14.	Type of Reporting Person (See Instructions) IN		

SCHEDULE 13D**Item 1. Security and Issuer.**

This statement relates to the Common Stock, par value \$0.01 per share (the “Common Stock”), of Deciphera Pharmaceuticals, Inc. (the “Issuer”), of the Issuer. The address of the principal executive offices of the Issuer is 500 Totten Pond Road, Waltham, MA 02451.

Item 2. Identity and Background.

(a) This Schedule 13D is being filed on behalf of each of the following persons pursuant to Rule 13d-1(k) of Regulation D-G under the Securities Exchange Act of 1934, as amended (the “Exchange Act”): New Leaf Ventures III, L.P. (“NLV III”), New Leaf Venture Associates III, L.P. (“NLV Associates III”), New Leaf Biopharma Opportunities I, L.P. (“Biopharma I”), New Leaf BPO Associates I, L.P. (“NLBA I”), New Leaf Venture Management III, L.L.C. (“NLV Management III”), Liam Ratcliffe, a member of the Issuer’s board of directors (“Ratcliffe”), Jeani Delagardelle (“Delagardelle”), Ronald M. Hunt (“Hunt”) and Vijay K. Lathi (“Lathi”) are the sole members of NLV Management III, (the foregoing entities and individuals are collectively referred to as the “Reporting Persons”).

(b) The principal business address of each NLV III, NLV Associates III, Biopharma I, NLBA I, NLV Management III, Ratcliffe and Hunt is c/o New Leaf Ventures, 7 Times Square, Suite 3502, New York, NY 10036. The address of the principal business office of Lathi and Delagardelle is New Leaf Venture Partners, 1200 Park Place, Suite 300, San Mateo, CA 94043.

(c) The principal business of each of NLV III and Biopharma I is that of a private investment partnership and to make, hold and dispose of equity and equity-related investments, principally in healthcare, medical device and life sciences companies. The sole general partner of NLV III is NLV Associates III and the sole general partner of Biopharma I is NLBA I. The sole general partner of each of NLV Associates III and NLBA I is NLV Management III. The ultimate general partner of each of NLV III and Biopharma I is NLV Management III. The principal business of NLV Associates III is that of a limited partnership acting as the general partner of NLV III, the principal business of NLBA I is that of a limited partnership acting as the general partner of Biopharma I, and the principal business of NLV Management III is that of a limited liability company acting as the general partner of each of NLV Associates III and NLBA I and the ultimate general partner of each of NLV III and Biopharma I. Ratcliffe, a member of the Issuer’s board of directors, Delagardelle, Hunt and Lathi, are the sole members of NLV Management III. Each of NLV III, Biopharma I, NLV Associates III and NLBA I is organized as a Delaware limited partnership. NLV Management III is organized as a Delaware limited liability company.

(d) None of the Reporting Persons, individually or collectively, has, during the last five years, been convicted in a criminal proceeding (excluding traffic violations or similar misdemeanors).

(e) None of the Reporting Persons has, during the last five years, been a 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) Each of the individuals named in this Item 2 is a citizen of the United States.

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

On September 27, 2017, the Registration Statement on Form S-1 filed with the Securities and Exchange Commission by the Issuer (File No. 333- 220299) in connection with its initial public offering of 7,500,000 shares of the Issuer's Common Stock was declared effective.

In a number of transactions between September 2015 and May 2017, (i) NLV-3 Deciphera, Inc., a wholly-owned subsidiary of NLV III, whose sole purpose was to hold equity interests in Deciphera Pharmaceuticals, LLC (Deciphera LLC), acquired shares of Series B-1 Preferred Stock of Deciphera LLC convertible into 839,110 shares of Common Stock of the Issuer (after giving effect to the 5.65 forward stock split) for a purchase price of \$50.50 per share and, an aggregate purchase price of \$7,500,007.50; and shares of Series B-2 Preferred Stock of Deciphera LLC convertible into 1,118,722 shares of Common Stock of the Issuer (after giving effect to the 5.65 forward stock split) for a purchase price of \$63.13 per share and, an aggregate purchase price of \$12,499,992.52, and (ii) NLV-G Deciphera, Inc., a wholly-owned subsidiary of Biopharma I, whose sole purpose was to hold equity interests in Deciphera LLC, acquired shares of Series B-1 Preferred Stock of Deciphera LLC convertible into 279,703 shares of Common Stock of the Issuer (after giving effect to the 5.65 forward stock split) for a purchase price of \$50.50 per share and, an aggregate purchase price of \$2,500,002.50; shares Series B-2 Preferred Stock convertible into 1,118,722 shares of Common Stock of the Issuer (after giving effect to the 5.65 forward stock split) for a purchase price of \$63.13 per share and, an aggregate purchase price of \$12,499,992.52; and shares Series C Preferred Stock convertible into 372,883 shares of Common Stock of the Issuer (after giving effect to the 5.65 forward stock split) for a purchase price of \$75.76 per share and, an aggregate purchase price of \$4,999,932.72 (collectively, the "Pre-IPO shares"). Pursuant to that certain Reorganization Agreement and Plan of Merger by and among the Issuer, Deciphera LLC and the other parties named therein, dated September 26, 2017 and in the form attached as Exhibit 2.1 to the Issuer's registration statement on Form S-1, File No. 333-220299 (the "Merger Agreement"), the Issuer issued shares of its Common Stock to each of NLV III and Biopharma I in exchange for the shares of Deciphera LLC at upon the closing of the offering.

On October 2, 2017, Biopharma I acquired 375,000 shares of Common Stock for an aggregate purchase price of \$6,375,000 ("the IPO shares").

The Reporting Persons obtained the amounts required for all purchases of Pre-IPO shares and IPO shares from their working capital.

Item 4. Purpose of Transaction.

The Reporting Persons consummated the transactions described herein in order to acquire an interest in the Issuer for investment purposes. The Reporting Persons expect to evaluate the Issuer's financial condition and prospects and their respective interests in, and intentions with respect to, the Issuer and their respective investments in the securities of the Issuer, on an on-going basis, which review may be based on various factors, including the Issuer's business and financial condition, results of operations and prospects, general economic and industry conditions, the securities markets in general and those for the Issuer's securities in particular, as well as other developments and other investment opportunities. Accordingly, each Reporting Person reserves the right to change its intentions, as it deems appropriate. In particular, each Reporting Person may at any time and from time to time, in the open market, in privately negotiated transactions or otherwise, increase or decrease its holdings in the Issuer that the Reporting Persons now own or may hereafter acquire.

Ratcliffe is a member of the Issuer's board of directors.

Except as set forth in this Item 4, the Reporting Persons have no present plans or proposals that relate to or would result in any of the actions described in subparagraphs (a) through (j) of Item 4 of Schedule 13D. The Reporting Persons do, however, reserve the right in the future to adopt such plans or proposals subject to compliance with applicable regulatory requirements.

Item 5. Interest in Securities of the Issuer.

The information reported below is based on a total of 31,925,190 shares of Common Stock outstanding as reported on the Issuer's Final Prospectus filed with the SEC on September 28, 2017.

(a,b) Regarding aggregate beneficial ownership, see Row 9 of the cover page of each Reporting Person. Regarding percentage beneficial ownership, see Row 11 of the cover page of each Reporting Person. Regarding sole power to vote shares, see Row 5 of the cover page of each Reporting Person. Regarding shared power to vote shares, see Row 6 of the cover page of each Reporting Person. Regarding sole power to dispose of shares, see Row 7 of the cover page of each Reporting Person. Regarding shared power to dispose of shares, see Row 8 of the cover page of each Reporting Person.

Each of the Reporting Persons, except for NLV III with respect to the shares directly owned by it and Biopharma I with respect to the shares directly owned by it, except to the extent of their respective pecuniary interests therein, if any.

(c) Except as set forth in Item 3 above, the Reporting Persons have not effected any transaction in the Common Stock of the Company during the past 60 days.

(d) Under certain circumstances set forth in the limited partnership agreement of each of NLV III, Biopharma I, NLV Associates III, NLBA I and the limited liability company agreement of NLV Management III, the partners and the members of each of such entities, as applicable, may be deemed to have the right to receive dividends from, or the proceeds from, the sale of shares of the issuer owned by each such entity of which they are a partner or member.

(e) Not applicable.

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

Each of NLV III and Biopharma I and certain other investors are party to a Registration Rights Agreement (the "RRA") entered into with the Issuer which entitles such investors to certain registration rights.

The Reporting Persons are subject to a restricted period during the period ending 180 days after the date of the Prospectus, during which the Reporting Persons have agreed, subject to limited exceptions, not to offer, pledge, sell, contract to sell, sell any options or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend, or otherwise transfer or dispose of, directly or indirectly, any shares of Common Stock beneficially owned by the Issuer or Reporting Persons or any securities so owned convertible into or exercisable or exchangeable for Common Stock or enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of the Common Stock, or publicly disclose the intention to make any such offer, pledge sale, contract, purchase, grant, loan, transfer, or disposition, or enter into any such swap or other arrangement.

In connection with the IPO, each of NLV III and Biopharma I have agreed to enter into lock-up agreements (each a “Lock-Up Agreement”), pursuant to which such entities agreed, subject to certain exceptions, not to sell, transfer or otherwise convey any of the Issuer’s securities held by them for a certain period following the date of the IPO.

The Issuer has entered into an indemnification agreement with each of its directors and executive officers, including Ratcliffe. The indemnification agreement, among other things, require the Issuer or will require the Issuer to indemnify Ratcliffe (and in certain cases each of NLV III and Biopharma I) to the fullest extent permitted by Delaware law, including indemnification of expenses such as attorneys’ fees, judgments, fines and settlement amounts incurred by Ratcliffe in any action or proceeding, including any action or proceeding by or in right of the Issuer, arising out of his services as a director. The form of Indemnification Agreement for the Issuer’s directors and officers is attached as Exhibit 10.4 to the Issuer’s Registration Statement on Form S-1 (File No. 333-220299), and is incorporated herein by reference.

Item 7. Material to be Filed as Exhibits.

Exhibit A – Joint Filing Agreement

Exhibit B – RRA, filed on September 28, 2017 as Exhibit 4.3 to the Issuer’s Registration Statement on Form S-1 (File No. 333-220299), and incorporated herein by reference.

Exhibit C – Form of Lock-up Agreement, filed on September 28, 2017 as Exhibit D to the Underwriting Agreement, filed on September 28, 2017 as Exhibit 1.1 to the Issuer’s Registration Statement on Form S-1 (File No. 333-220299), and incorporated herein by reference.

Exhibit D – Form of Indemnification Agreement for board members and senior management, filed on September 28, 2017 as Exhibit 10.4 to the Issuer’s Registration Statement on Form S-1 (File No. 333-220299), and incorporated herein by reference.

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.

Date: October 11, 2017

NEW LEAF VENTURES III, L.P.

By: New Leaf Venture Associates III, L.P.
By: New Leaf Venture Management III, L.L.C.

By: *
Managing Member

NEW LEAF BIOPHARMA OPPORTUNITIES I, L.P.

By: New Leaf BPO Associates I, L.P.
By: New Leaf Venture Management III, L.L.C.

By: *
Managing Member

NEW LEAF VENTURE ASSOCIATES III, L.P.

By: New Leaf Venture Management III, L.L.C.

By: *
Managing Member

NEW LEAF BPO ASSOCIATES I, L.P.

By: New Leaf Venture Management III, L.L.C.

By: *
Managing Member

NEW LEAF VENTURE MANAGEMENT III, L.L.C.

By: *
Managing Member

LIAM RATCLIFFE

By: *
Liam Ratcliffe

JEANI DELAGARDELLE

By: *
Jeani Delagardelle

RONALD M. HUNT

By: *
Ronald M. Hunt

VIJAY K. LATHI

By: *
Vijay K. Lathi

*By: /s/ Craig Slutzkin
Name: Craig Slutzkin
Attorney-in-Fact

[This Schedule 13D was executed pursuant to a Power of Attorney. Note that copies of the applicable Powers of Attorney are already on file with the appropriate agencies.]

Exhibit A

AGREEMENT REGARDING THE JOINT FILING OF
SCHEDULE 13D

The undersigned, being duly authorized thereunto, hereby execute this agreement as an exhibit to this Schedule 13D to evidence the agreement of the below-named parties, in accordance with the rules promulgated pursuant to the Securities Exchange Act of 1934, to file this Schedule jointly on behalf of each such party.

Date: October 11, 2017

NEW LEAF VENTURES III, L.P.

By: New Leaf Venture Associates III, L.P.

By: New Leaf Venture Management III, L.L.C.

By: *

Managing Member

NEW LEAF BIOPHARMA OPPORTUNITIES I, L.P.

By: New Leaf BPO Associates I, L.P.

By: New Leaf Venture Management III, L.L.C.

By: *

Managing Member

NEW LEAF VENTURE ASSOCIATES III, L.P.

By: New Leaf Venture Management III, L.L.C.

By: *

Managing Member

NEW LEAF BPO ASSOCIATES I, L.P.

By: New Leaf Venture Management III, L.L.C.

By: *

Managing Member

NEW LEAF VENTURE MANAGEMENT III, L.L.C.

By: *

Managing Member

LIAM RATCLIFFE

By: *
Liam Ratcliffe

JEANI DELAGARDELLE

By: *
Jeani Delagardelle

RONALD M. HUNT

By: *
Ronald M. Hunt

VIJAY K. LATHI

By: *
Vijay K. Lathi

*By: /s/ Craig Slutzkin
Name: Craig Slutzkin
Attorney-in-Fact

[This Schedule 13D was executed pursuant to a Power of Attorney. Note that copies of the applicable Powers of Attorney are already on file with the appropriate agencies.]