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

SCHEDULE 13D

**UNDER THE SECURITIES EXCHANGE ACT OF 1934
(Amendment No.)***

Repare Therapeutics Inc.
(Name of Issuer)

Common Shares
(Title of Class of Securities)

760273102
(CUSIP Number)

Luke Evin
MPM Asset Management
450 Kendall Street
Cambridge, MA 01242
Telephone: (617) 425-9200

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

June 23, 2020
(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.	Name of Reporting Persons. I.R.S. Identification No(s). of above person(s) (entities only)	
	MPM BioVentures 2014, L.P.	
2.	Check the Appropriate Box if a Member of a Group (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> (1)	
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
		2,727,927
	8.	Shared Voting Power
		0
	9.	Sole Dispositive Power
		2,727,927
	10.	Shared Dispositive Power
		0
11.	Aggregate Amount Beneficially Owned by Each Reporting Person	
	2,727,927	
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)	
	7.4%(2)	
14.	Type of Reporting Person (See Instructions)	
	PN	

- (1) This schedule is filed by MPM BioVentures 2014, L.P. (“BV 2014”), MPM BioVentures 2014 (B), L.P. (“BV 2014(B)”), MPM Asset Management Investors BV2014 LLC (“AM BV2014 LLC”), UBS Oncology Impact Fund L.P. (“UBS Oncology”), MPM BioVentures 2014 GP LLC (“BV 2014 GP”), MPM BioVentures 2014 LLC (“BV 2014 LLC”), Oncology Impact Fund (Cayman) Management LP (“Oncology Cayman”), MPM Oncology Impact Management LP (“Oncology LP”) and MPM Oncology Impact Management GP LLC (“Oncology GP”) (collectively, the “MPM Entities”) and Ansbert Gadicke, Luke Evin and Todd Foley (collectively, the “Listed Persons” and together with the MPM Entities, the “Filing Persons”). The MPM Entities and the Listed Persons expressly disclaim status as a “group” for purposes of this Schedule 13D.
- (2) This percentage is calculated based upon 36,668,085 shares of the Issuer’s common shares outstanding upon completion of the Issuer’s initial public offering, as set forth in the Issuer’s final prospectus dated June 18, 2020 with respect to such offering, filed with the Securities and Exchange Commission on June 19, 2020.

1.	Name of Reporting Persons. I.R.S. Identification No(s). of above person(s) (entities only) MPM BioVentures 2014 (B), L.P.	
2.	Check the Appropriate Box if a Member of a Group (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> (1)	
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 181,948
	8.	Shared Voting Power 0
	9.	Sole Dispositive Power 181,948
	10.	Shared Dispositive Power 0
11.	Aggregate Amount Beneficially Owned by Each Reporting Person 181,948	
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) 0.5%(2)	
14.	Type of Reporting Person (See Instructions) PN	

- (1) This Schedule is filed by the MPM Entities and the Listed Persons. The MPM Entities and the Listed Persons expressly disclaim status as a “group” for purposes of this Schedule 13D.
- (2) This percentage is calculated based upon 36,668,085 shares of the Issuer’s common shares outstanding upon completion of the Issuer’s initial public offering, as set forth in the Issuer’s final prospectus dated June 18, 2020 with respect to such offering, filed with the Securities and Exchange Commission on June 19, 2020.

1.	Name of Reporting Persons. I.R.S. Identification No(s). of above person(s) (entities only)	
	MPM Asset Management Investors BV2014 LLC	
2.	Check the Appropriate Box if a Member of a Group (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> (1)	
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
		93,897
	8.	Shared Voting Power
		0
	9.	Sole Dispositive Power
		93,897
	10.	Shared Dispositive Power
		0
11.	Aggregate Amount Beneficially Owned by Each Reporting Person	
	93,897	
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)	
	0.3%(2)	
14.	Type of Reporting Person (See Instructions)	
	OO	

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- (2) This percentage is calculated based upon 36,668,085 shares of the Issuer’s common shares outstanding upon completion of the Issuer’s initial public offering, as set forth in the Issuer’s final prospectus dated June 18, 2020 with respect to such offering, filed with the Securities and Exchange Commission on June 19, 2020.

1.	Name of Reporting Persons. I.R.S. Identification No(s). of above person(s) (entities only)	
	UBS Oncology Impact Fund, L.P.	
2.	Check the Appropriate Box if a Member of a Group (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> (1)	
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
		2,388,337
	8.	Shared Voting Power
		0
	9.	Sole Dispositive Power
		2,388,337
	10.	Shared Dispositive Power
		0
11.	Aggregate Amount Beneficially Owned by Each Reporting Person	
	2,388,337	
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)	
	6.5%(2)	
14.	Type of Reporting Person (See Instructions)	
	PN	

- (1) This Schedule is filed by the MPM Entities and the Listed Persons. The MPM Entities and the Listed Persons expressly disclaim status as a “group” for purposes of this Schedule 13D.
- (2) This percentage is calculated based upon 36,668,085 shares of the Issuer’s common shares outstanding upon completion of the Issuer’s initial public offering, as set forth in the Issuer’s final prospectus dated June 18, 2020 with respect to such offering, filed with the Securities and Exchange Commission on June 19, 2020.

1.	Name of Reporting Persons. I.R.S. Identification No(s). of above person(s) (entities only)	
	MPM BioVentures 2014 GP LLC	
2.	Check the Appropriate Box if a Member of a Group (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> (1)	
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
		0
	8.	Shared Voting Power
		2,909,875(2)
	9.	Sole Dispositive Power
		0
	10.	Shared Dispositive Power
		2,909,875(2)
11.	Aggregate Amount Beneficially Owned by Each Reporting Person	
	2,909,875(2)	
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)	
	7.9%(3)	
14.	Type of Reporting Person (See Instructions)	
	OO	

- (1) This Schedule is filed by the MPM Entities and the Listed Persons. The MPM Entities and the Listed Persons expressly disclaim status as a “group” for purposes of this Schedule 13D.
- (2) Includes 2,727,927 common shares held by BV 2014 and 181,948 shares held by BV 2014(B). BV 2014 GP and BV 2014 LLC are the direct and indirect general partners of BV 2014 and BV 2014(B).
- (3) This percentage is calculated based upon 36,668,085 shares of the Issuer’s common shares outstanding upon completion of the Issuer’s initial public offering, as set forth in the Issuer’s final prospectus dated June 18, 2020 with respect to such offering, filed with the Securities and Exchange Commission on June 19, 2020.

1.	Name of Reporting Persons. I.R.S. Identification No(s). of above person(s) (entities only) MPM BioVentures 2014 LLC	
2.	Check the Appropriate Box if a Member of a Group (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> (1)	
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 0
	8.	Shared Voting Power 2,909,875(2)
	9.	Sole Dispositive Power 0
	10.	Shared Dispositive Power 2,909,875(2)
11.	Aggregate Amount Beneficially Owned by Each Reporting Person 2,909,875(2)	
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) 7.9%(3)	
14.	Type of Reporting Person (See Instructions) OO	

- (1) This Schedule is filed by the MPM Entities and the Listed Persons. The MPM Entities and the Listed Persons expressly disclaim status as a “group” for purposes of this Schedule 13D.
- (2) Includes 2,727,927 common shares held by BV 2014 and 181,948 shares held by BV 2014(B). BV 2014 GP and BV 2014 LLC are the direct and indirect general partners of BV 2014 and BV 2014(B).
- (3) This percentage is calculated based upon 36,668,085 shares of the Issuer’s common shares outstanding upon completion of the Issuer’s initial public offering, as set forth in the Issuer’s final prospectus dated June 18, 2020 with respect to such offering, filed with the Securities and Exchange Commission on June 19, 2020.

1.	Name of Reporting Persons. I.R.S. Identification No(s). of above person(s) (entities only)	
	Oncology Impact Fund (Cayman) LP	
2.	Check the Appropriate Box if a Member of a Group (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> (1)	
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
		2,388,337(2)
	8.	Shared Voting Power
		0
	9.	Sole Dispositive Power
		2,388,337(2)
	10.	Shared Dispositive Power
		0
11.	Aggregate Amount Beneficially Owned by Each Reporting Person	
	2,388,337(2)	
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)	
	6.5%(3)	
14.	Type of Reporting Person (See Instructions)	
	PN	

- (1) This Schedule is filed by the MPM Entities and the Listed Persons. The MPM Entities and the Listed Persons expressly disclaim status as a “group” for purposes of this Schedule 13D.
- (2) Consists of shares held by UBS Oncology. Oncology GP is the general partner of Oncology LP, the General Partner of Oncology (Cayman), the General Partner of UBS Oncology.
- (3) This percentage is calculated based upon 36,668,085 shares of the Issuer’s common shares outstanding upon completion of the Issuer’s initial public offering, as set forth in the Issuer’s final prospectus dated June 18, 2020 with respect to such offering, filed with the Securities and Exchange Commission on June 19, 2020.

1.	Name of Reporting Persons. I.R.S. Identification No(s). of above person(s) (entities only)	
	MPM Oncology Impact Management LP	
2.	Check the Appropriate Box if a Member of a Group (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> (1)	
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
		2,388,337(2)
	8.	Shared Voting Power
		0
	9.	Sole Dispositive Power
		2,388,337(2)
	10.	Shared Dispositive Power
		0
11.	Aggregate Amount Beneficially Owned by Each Reporting Person	
	2,388,337(2)	
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)	
	6.5%(3)	
14.	Type of Reporting Person (See Instructions)	
	PN	

- (1) This Schedule is filed by the MPM Entities and the Listed Persons. The MPM Entities and the Listed Persons expressly disclaim status as a “group” for purposes of this Schedule 13D.
- (2) Consists of shares held by UBS Oncology. Oncology GP is the general partner of Oncology LP, the General Partner of Oncology (Cayman), the General Partner of UBS Oncology.
- (3) This percentage is calculated based upon 36,668,085 shares of the Issuer’s common shares outstanding upon completion of the Issuer’s initial public offering, as set forth in the Issuer’s final prospectus dated June 18, 2020 with respect to such offering, filed with the Securities and Exchange Commission on June 19, 2020.

1.	Name of Reporting Persons. I.R.S. Identification No(s). of above person(s) (entities only)	
	MPM Oncology Impact Management GP LLC	
2.	Check the Appropriate Box if a Member of a Group (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> (1)	
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
		2,388,337(2)
	8.	Shared Voting Power
		0
	9.	Sole Dispositive Power
		2,388,337(2)
	10.	Shared Dispositive Power
		0
11.	Aggregate Amount Beneficially Owned by Each Reporting Person	
	2,388,337(2)	
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)	
	6.5%(3)	
14.	Type of Reporting Person (See Instructions)	
	OO	

- (1) This Schedule is filed by the MPM Entities and the Listed Persons. The MPM Entities and the Listed Persons expressly disclaim status as a “group” for purposes of this Schedule 13D.
- (2) Consists of shares held by UBS Oncology. Oncology GP is the general partner of Oncology LP, the General Partner of Oncology (Cayman), the General Partner of UBS Oncology.
- (3) This percentage is calculated based upon 36,668,085 shares of the Issuer’s common shares outstanding upon completion of the Issuer’s initial public offering, as set forth in the Issuer’s final prospectus dated June 18, 2020 with respect to such offering, filed with the Securities and Exchange Commission on June 19, 2020.

1.	Name of Reporting Persons. I.R.S. Identification No(s). of above person(s) (entities only)	
	Ansbert Gadicke	
2.	Check the Appropriate Box if a Member of a Group (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> (1)	
3.	SEC USE ONLY	
4.	Source of Funds (See Instructions)	
	OO	
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	
	United States	
Number of Shares Beneficially Owned by Each Reporting Person With:	7.	Sole Voting Power
		0
	8.	Shared Voting Power
		5,392,109(2)
	9.	Sole Dispositive Power
		0
	10.	Shared Dispositive Power
		5,392,109(2)
11.	Aggregate Amount Beneficially Owned by Each Reporting Person	
	5,392,109(2)	
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)	
	14.7%(3)	
14.	Type of Reporting Person (See Instructions)	
	IN	

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- (2) Includes 2,727,927 shares held by BV 2014, 181,948 shares held by BV 2014(B), 93,897 shares held by AM BV 2014 LLC and 2,388,337 shares held by UBS Oncology. The Reporting Person is managing director of BV 2014 LLC, a member of AM BV 2014 LLC and the managing director of Oncology GP.
- (3) This percentage is calculated based upon 36,668,085 shares of the Issuer’s common shares outstanding upon completion of the Issuer’s initial public offering, as set forth in the Issuer’s final prospectus dated June 18, 2020 with respect to such offering, filed with the Securities and Exchange Commission on June 19, 2020.

1.	Name of Reporting Persons. I.R.S. Identification No(s). of above person(s) (entities only)	
	Luke Evnin	
2.	Check the Appropriate Box if a Member of a Group (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> (1)	
3.	SEC USE ONLY	
4.	Source of Funds (See Instructions)	
	OO	
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	
	United States	
Number of Shares Beneficially Owned by Each Reporting Person With:	7.	Sole Voting Power
		0
	8.	Shared Voting Power
		3,003,772(2)
	9.	Sole Dispositive Power
		0
	10.	Shared Dispositive Power
		3,003,772(2)
11.	Aggregate Amount Beneficially Owned by Each Reporting Person	
	3,003,772(2)	
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)	
	8.2%(3)	
14.	Type of Reporting Person (See Instructions)	
	IN	

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- (2) Includes 2,727,927 shares held by BV 2014, 181,948 shares held by BV 2014(B) and 93,897 shares held by AM BV 2014 LLC . The Reporting Person is a managing director of BV 2014 LLC and a member of AM BV 2014 LLC.
- (3) This percentage is calculated based upon 36,668,085 shares of the Issuer’s common shares outstanding upon completion of the Issuer’s initial public offering, as set forth in the Issuer’s final prospectus dated June 18, 2020 with respect to such offering, filed with the Securities and Exchange Commission on June 19, 2020.

1.	Name of Reporting Persons. I.R.S. Identification No(s). of above person(s) (entities only)	
	Todd Foley	
2.	Check the Appropriate Box if a Member of a Group (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> (1)	
3.	SEC USE ONLY	
4.	Source of Funds (See Instructions)	
	OO	
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	
	United States	
Number of Shares Beneficially Owned by Each Reporting Person With:	7.	Sole Voting Power
		0
	8.	Shared Voting Power
		3,003,772(2)
	9.	Sole Dispositive Power
		0
	10.	Shared Dispositive Power
		3,003,772(2)
11.	Aggregate Amount Beneficially Owned by Each Reporting Person	
	3,003,772(2)	
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)	
	8.2%(3)	
14.	Type of Reporting Person (See Instructions)	
	IN	

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- (2) Includes 2,727,927 shares held by BV 2014, 181,948 shares held by BV 2014(B) and 93,897 shares held by AM BV 2014 LLC . The Reporting Person is a managing director of BV 2014 LLC and a member of AM BV 2014 LLC.
- (3) This percentage is calculated based upon 36,668,085 shares of the Issuer’s common shares outstanding upon completion of the Issuer’s initial public offering, as set forth in the Issuer’s final prospectus dated June 18, 2020 with respect to such offering, filed with the Securities and Exchange Commission on June 19, 2020.

Item 1. Security and Issuer.

This Schedule 13D (this "Schedule 13D") relates to the common shares (the "Common Shares") of Repare Therapeutics Inc. (the "Issuer"). The Issuer's principal executive office is located at 7210 Frederick-Banting, Suite 100 St-Laurent, Québec, Canada.

Item 2. Identity and Background

(a) The entities and persons filing this statement are MPM BioVentures 2014, L.P. ("BV 2014"), MPM BioVentures 2014 (B), L.P. ("BV 2014(B)"), MPM Asset Management Investors BV2014 LLC ("AM BV2014 LLC"), UBS Oncology Impact Fund L.P. ("UBS Oncology"), MPM BioVentures 2014 GP LLC ("BV 2014 GP"), MPM BioVentures 2014 LLC ("BV 2014 LLC"), Oncology Impact Fund (Cayman) Management LP ("Oncology Cayman"), MPM Oncology Impact Management LP ("Oncology LP") and MPM Oncology Impact Management GP LLC ("Oncology GP") (collectively, the "MPM Entities") and Ansbert Gadicke, Luke Evnin and Todd Foley (collectively, the "Listed Persons" and together with the MPM Entities, the "Filing Persons").

(b) The address of the principal place of business for each of the MPM Entities and Ansbert Gadicke, Luke Evnin and Todd Foley is 450 Kendall Street, Cambridge, MA 02142, other than UBS Oncology and Oncology Cayman whose address is 1st Floor, 2 Hill Street, St Helier, Jersey, JE1 4FS.

(c) The principal business of each of the Filing Persons is the venture capital investment business.

(d) During the last five years, none of the Filing Persons has been convicted in any criminal proceeding (excluding traffic violations or similar misdemeanors).

(e) During the last five years, none of the Filing Persons has 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 Listed Persons is a United States citizen and each of the MPM Entities is a Delaware limited partnership or limited liability company, other than UBS Oncology and Oncology Cayman which are Cayman Islands limited partnerships.

In accordance with the provisions of General Instruction C to Schedule 13D, information concerning the managers and each other person controlling the general partners of the MPM Entities required by Item 2 of Schedule 13D is listed on Schedule 1 hereto and is incorporated by reference herein.

Item 3. Source and Amount of Funds or Other Consideration

On June 18, 2020, the Registration Statement on Form S-1 filed with the Securities and Exchange Commission by the Issuer (File No. 333-238822) in connection with its initial public offering of 11,000,000 Common Shares (the "IPO") was declared effective. The closing of the IPO took place on June 23, 2020, and at such closing the MPM Entities purchased an aggregate of 500,000 Common Shares at the initial public offering price of \$20.00 per share, for an aggregate purchase price of \$10.0 million. The source of funds for such purchases was the capital contributions made to the MPM Entities by their respective partners and members. The shares were purchased as follows:

- BV 2014: 227,042 shares
- BV 2014(B): 15,143 shares
- AM BV2014 LLC: 7,815 shares
- UBS Oncology: 250,000 shares

Item 4. Purpose of Transaction

The MPM Entities purchased the Common Shares of the Issuer in the initial public offering for investment purposes.

Todd Foley is a member of the Board of Directors of the Issuer and is also a managing director of BV 2014 LLC and a member of AM BV 2014 LLC.

Subject to applicable legal requirements, one or more of the Filing Persons may purchase additional securities of the Issuer from time to time in open market or private transactions, depending on their evaluation of the Issuer's business, prospects and financial condition, the market for the Issuer's securities, other developments concerning the Issuer, the reaction of the Issuer to the Filing Persons' ownership of the Issuer's securities, other opportunities available to the Filing Persons, and general economic, money market and stock market conditions. In addition, depending upon the factors referred to above, the Filing Persons may dispose of all or a portion of their securities of the Issuer at any time. Each of the Filing Persons reserves the right to increase or decrease its holdings on such terms and at such times as each may decide.

Other than as described above in this Item 4, none of the Filing Persons have any plan or proposal relating to or that would result in: (a) the acquisition by any person of additional securities of the Issuer or the disposition of securities of the Issuer; (b) an extraordinary corporate transaction, such as a merger, reorganization or liquidation, involving the Issuer or any of its subsidiaries; (c) a sale or transfer of a material amount of assets of the Issuer or any of its subsidiaries; (d) any change in the present board of directors or management of the Issuer, including any plans or proposals to change the number or terms of directors or to fill any existing vacancies on the board; (e) any material change in the present capitalization or dividend policy of the Issuer; (f) any other material change in the Issuer's business or corporate structure; (g) any changes in the Issuer's charter, by-laws or instruments corresponding thereto or other actions which may impede the acquisition of control of the Issuer by any person; (h) causing a class of securities of the Issuer to be delisted from a national securities exchange or to cease to be authorized to be quoted in an inter-dealer quotation system of a registered national securities association; (i) a class of equity securities of the Issuer becoming eligible for termination of registration pursuant to Section 12(g)(4) of the Exchange Act; or (j) any action similar to those enumerated above.

Item 5. Interest in Securities of the Issuer

(a) – (b) The following information with respect to the ownership of the Common Shares of the Issuer by the Filing Persons is provided as of June 23, 2020:

<u>Reporting Person</u>	<u>Shares Held Directly</u>	<u>Sole Voting Power</u>	<u>Shared Voting Power</u>	<u>Sole Dispositive Power</u>	<u>Shared Dispositive Power</u>	<u>Beneficial Ownership</u>	<u>Percentage of Class (1)</u>
BV 2014	2,727,927	2,727,927	0	2,727,927	0	2,727,927	7.4%
BV 2014(B)	181,948	181,948	0	181,948	0	181,948	0.5%
AM BV 2014 LLC	93,897	93,897	0	93,897	0	93,897	0.3%
UBS Oncology	2,388,337	2,388,337	0	2,388,337	0	2,388,337	6.5%
BV 2014 GP(2)	0	0	2,909,875	0	2,909,875	2,909,875	7.9%
BV 2014 LLC(2)	0	0	2,909,875	0	2,909,875	2,909,875	7.9%
Oncology Cayman(3)	0	0	2,388,337	0	2,388,337	2,388,337	6.5%
Oncology LP(3)	0	0	2,388,337	0	2,388,337	2,388,337	6.5%
Oncology GP(3)	0	0	2,388,337	0	2,388,337	2,388,337	6.5%
Ansbert Gadicke(4)	0	0	5,392,109	0	5,392,109	5,392,109	14.7%
Luke Evnin(5)	0	0	3,003,772	0	3,003,772	3,003,772	8.2%
Todd Foley(5)	0	0	3,003,772	0	3,003,772	3,003,772	8.2%

- (1) This percentage is calculated based upon 36,668,085 shares of the Issuer's common shares outstanding upon completion of the Issuer's initial public offering, as set forth in the Issuer's final prospectus dated June 18, 2020 with respect to such offering, filed with the Securities and Exchange Commission on June 19, 2020.
- (2) Includes securities held by BV 2014 and BV 2014(B). BV 2014 GP and BV 2014 LLC are the direct and indirect general partners of BV 2014 and BV 2014(B).
- (3) Includes shares held by UBS Oncology. Oncology GP is the general partner of Oncology LP, the General Partner of Oncology (Cayman), the General Partner of UBS Oncology.
- (4) Includes securities held by BV 2014, BV 2014(B), AM BV 2014 LLC and UBS Oncology. The Reporting Person is a managing director of BV 2014 LLC, a member of AM BV 2014 LLC and the managing director of Oncology GP.
- (5) Includes securities held by BV 2014, BV 2014(B) and AM BV 2014 LLC. The Reporting Person is a managing director of BV 2014 LLC and a member of AM BV 2014 LLC.

Each Filing Person disclaims membership in a "group." Each Filing Person also disclaims beneficial ownership of any shares of the Issuer, except for the shares set forth in the table above next to the respective Filing Person's name in subsection (b) of this Item 5.

(c) The information provided in Item 3 is hereby incorporated by reference. On June 23, 2020, the MPM Entities acquired an aggregate of 4,892,109 Common Shares of the Issuer upon the automatic conversion of preferred stock of the Issuer in connection with the closing of the Issuer's initial public offering. Except as otherwise set forth herein, the Filing Persons have not acquired or disposed of any securities of the Issuer in the past 60 days.

(d) Inapplicable.

(e) Inapplicable.

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

Investor Rights Agreement

The MPM Entities and other stockholders of the Issuer have entered into an Amended and Restated Registration Rights Agreement dated September 3, 2019 (the “Registration Rights Agreement”) with the Issuer. Subject to the terms of the Investor Rights Agreement, holders of shares having registration rights (“Registrable Securities”) can demand that the Issuer file a registration statement or request that their shares be covered by a registration statement that the Issuer is otherwise filing.

Demand Registration Rights

If, at any time after 180 days after effective date, the Issuer shall receive a written request from the Holders (as defined in the Registration Rights Agreement) of at least 50.1% of the Registrable Securities then outstanding (the “Initiating Holders”) that the Issuer file a Form S-1 registration statement under the Securities Act of 1933 (the “Securities Act”) with respect to Registrable Securities owned by such Holder or Holders having an aggregate offering price, net of Selling Expenses (as defined in the Registration Rights Agreement), of at least US\$50,000,000, then the Issuer shall (i) within three (3) business days after the date such request is given, give notice thereof (the “Demand Notice”) to all Holders other than the Initiating Holders; and (ii) as soon as practicable, and in any event within sixty (60) days after the mailing of such notice by the Issuer, file a Form S-1 registration statement under the Securities Act covering all Registrable Securities that the Initiating Holders requested to be registered and any additional Registrable Securities requested to be included in such registration by any other Holders.

The Issuer shall not be obligated to effect, or to take any action to effect, any demand registration after the Issuer has effected two Form S-1 demand registrations.

Form S-3 Demand Registration Rights

If at any time when it is eligible to use a Form S-3 registration statement, the Issuer receives a request from one or more Holders of the Registrable Securities then outstanding that the Issuer file a Form S-3 registration statement with respect to outstanding Registrable Securities of such Holders having an anticipated aggregate offering price of at least US\$5,000,000, then the Issuer shall (i) within three (3) business days after the date such request is given, give a Demand Notice to all Holders other than the Initiating Holders; and (ii) as soon as practicable, and in any event within forty-five (45) days after the date such request is given by the Initiating Holders, file a Form S-3 registration statement under the Securities Act covering all Registrable Securities requested to be included in such registration by any other Holders.

The Issuer shall not be obligated to effect, or to take any action to effect, any Form S-3 demand registration if the Issuer has effected two Form S-3 demand registrations within the twelve month period immediately preceding the date of such request.

Piggyback Registration Rights

If the Issuer proposes to register any of its stock in connection with the public offering of such securities by the Issuer or on behalf of selling stockholders, the Issuer shall, at such time, promptly and in any event, within three business days of such determination, give each Holder written notice of such registration. Upon the written request of each Holder, the Issuer shall, subject to the certain limitations, use its reasonable best efforts to cause to be registered all of the Registrable Securities that each such Holder has requested to be registered.

Expenses of Registration

Subject to certain limitations, the Issuer will pay all registration expenses, including the fees of one special counsel of the Holder of Registrable Securities in an amount not to exceed US\$35,000, other than underwriting discounts and commissions, related to any registration effected pursuant to the Investor Rights Agreement.

Indemnification

The Investor Rights Agreement contains customary cross-indemnification provisions, pursuant to which the Issuer is obligated to indemnify the selling stockholders in the event of material misstatements or omissions in the registration statement attributable to the Issuer, and the selling stockholders are obligated to indemnify the Issuer for material misstatements or omissions attributable to them.

Termination

No Holder shall be entitled to exercise any registration rights on the date which is the earlier of (i) the closing of a Liquidation Event, as such term is defined in the Issuer’s Articles of Incorporation; (ii) such time after the consummation of the IPO as Rule 144 or another similar exemption under the Securities Act is available for the sale of all such Holder’s shares without limitation during a three-month period without registration; or (iii) the date which is three years after the date of completion of the IPO.

Lock-up Agreements

The MPM Entities and Mr. Foley, along with all of the Issuer’s officers, directors, and holders of substantially all of the Issuer’s Common Shares, have entered into letter agreements (the “Lock-up Agreements”), whereby they have agreed, subject to certain exceptions, not to offer, sell, contract to sell, pledge or otherwise dispose of or hedge any of its Common Shares or securities convertible into or exchangeable for Common Shares for a 180-day period beginning on June 23, 2020 and ending on December 20, 2020 except with the prior written consent of Morgan Stanley & Co. LLC, Goldman Sachs & Co. LLC and Cowen and Company, LLC on behalf of the underwriters.

The foregoing description of the terms of the Investor Rights Agreement and the Lock-up Agreement is intended as a summary only and is qualified in its entirety by reference to the Investor Rights Agreement and Form of Lock-up Agreement, which are filed as exhibits to this Schedule 13D and incorporated by reference herein.

Other than as described in this Schedule 13D, to the best of the Filing Persons' knowledge, there are no other contracts, arrangements, understandings or relationships (legal or otherwise) among the persons named in Item 2 and between such persons and any person with respect to any securities of the Issuer.

Item 7. Material to Be Filed as Exhibits

- A. Amended and Restated Investors' Rights Agreement by and among the Issuer and each of the investors listed on Exhibit A thereto, dated as of September 3, 2019 (incorporated by reference to Exhibit 4.2 to the Issuer's Registration Statement on Form S-1 (SEC File No. 333-238822), filed with the SEC on May 29, 2020).
- B. Form of Lock-up Agreement (incorporated by reference to Exhibit A to Exhibit 1.1 to the Issuer's Registration Statement on Form S-1/A (SEC File No. 333-238822), filed with the SEC on June 15, 2020).
- C. Agreement regarding filing of joint Schedule 13D.

Signatures

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: July 6, 2020

MPM BIOVENTURES 2014, L.P.

By: MPM BioVentures 2014 GP LLC,
its General Partner

By: MPM BioVentures 2014 LLC,
Its Managing Member

By: /s/ Luke Evnin

Name: Luke Evnin

Title: Managing Director

MPM BIOVENTURES 2014 (B), L.P.

By: MPM BioVentures 2014 GP LLC,
its General Partner

By: MPM BioVentures 2014 LLC,
Its Managing Member

By: /s/ Luke Evnin

Name: Luke Evnin

Title: Managing Director

MPM ASSET MANAGEMENT INVESTORS BV 2014 LLC

By: /s/ Howard Rubin

Name: Howard Rubin

Title: Director

MPM BIOVENTURES 2014 GP, LLC

By: MPM BioVentures 2014 LLC,
Its Managing Member

By: /s/ Luke Evnin
Name: Luke Evnin
Title: Managing Director

MPM BIOVENTURES 2014 LLC

By: /s/ Luke Evnin
Name: Luke Evnin
Title: Managing Director

UBS ONCOLOGY IMPACT FUND , L.P.

By: Oncology Impact Fund (Cayman) Management L.P.,
its General Partner
By: MPM Oncology Impact Management LP,
Its General Partner
By: MPM Oncology Impact Management GP LLC
Its General Partner

By: /s/ Ansbert Gadicke
Name: Ansbert Gadicke
Title: Managing Director

ONCOLOGY IMPACT FUND (CAYMAN) MANAGEMENT L.P.

By: MPM Oncology Impact Management LP,
Its General Partner
By: MPM Oncology Impact Management GP LLC
Its General Partner

By: /s/ Ansbert Gadicke
Name: Ansbert Gadicke
Title: Managing Director

MPM ONCOLOGY IMPACT MANAGEMENT LP

By: MPM Oncology Impact Management GP LLC
Its General Partner

By: /s/ Ansbert Gadicke
Name: Ansbert Gadicke
Title: Managing Director

MPM ONCOLOGY IMPACT MANAGEMENT GP LLC

By: /s/ Ansbert Gadicke
Name: Ansbert Gadicke
Title: Managing Director

By: /s/ Todd Foley
Name: Todd Foley

By: /s/ Luke Evin
Name: Luke Evin

By: /s/ Ansbert Gadicke
Name: Ansbert Gadicke

Schedule I

General Partners/Members

Ansbert Gadicke
c/o MPM Asset Management
450 Kendall Street
Cambridge, MA 02142
Principal Occupation: Managing director of MPM BioVentures 2014 LLC and managing director of MPM Oncology Impact Management LP.
Citizenship: USA

Luke Evin
c/o MPM Asset Management
450 Kendall Street
Cambridge, MA 02142
Principal Occupation: Managing director of MPM BioVentures 2014 LLC.
Citizenship: USA

Todd Foley
c/o MPM Asset Management
450 Kendall Street
Cambridge, MA 02142
Principal Occupation: Managing director of MPM BioVentures 2014 LLC.
Citizenship: USA

Exhibit Index

- A. Amended and Restated Investors' Rights Agreement by and among the Issuer and each of the investors listed on Exhibit A thereto, dated as of September 3, 2019 (incorporated by reference to Exhibit 4.2 to the Issuer's Registration Statement on Form S-1 (SEC File No. 333-238822), filed with the SEC on May 29, 2020).
- B. Form of Lock-up Agreement (incorporated by reference to Exhibit A to Exhibit 1.1 to the Issuer's Registration Statement on Form S-1/A (SEC File No. 333-238822), filed with the SEC on June 15, 2020).
- C. Agreement regarding filing of joint Schedule 13D.

Exhibit C

Joint Filing Statement

I, the undersigned, hereby express my agreement that the attached Schedule 13D (and any amendments thereto) relating to the beneficial ownership by the undersigned of the equity securities of Repare Therapeutics Inc. is filed on behalf of each of the undersigned.

Date: July 6, 2020

MPM BioVENTURES 2014, L.P.

By: MPM BioVentures 2014 GP LLC,
its General Partner

By: MPM BioVentures 2014 LLC,
Its Managing Member

By: /s/ Luke Evnin

Name: Luke Evnin

Title: Managing Director

MPM BioVENTURES 2014 (B), L.P.

By: MPM BioVentures 2014 GP LLC,
its General Partner

By: MPM BioVentures 2014 LLC,
Its Managing Member

By: /s/ Luke Evnin

Name: Luke Evnin

Title: Managing Director

MPM ASSET MANAGEMENT INVESTORS BV 2014 LLC

By: /s/ Howard Rubin

Name: Howard Rubin

Title: Director

MPM BIOVENTURES 2014 GP, LLC

By: MPM BioVentures 2014 LLC,
Its Managing Member

By: /s/ Luke Evnin
Name: Luke Evnin
Title: Managing Director

MPM BIOVENTURES 2014 LLC

By: /s/ Luke Evnin
Name: Luke Evnin
Title: Managing Director

UBS ONCOLOGY IMPACT FUND , L.P.

By: Oncology Impact Fund (Cayman) Management L.P.,
its General Partner

By: MPM Oncology Impact Management LP,
Its General Partner

By: MPM Oncology Impact Management GP LLC
Its General Partner

By: /s/ Ansbert Gadicke
Name: Ansbert Gadicke
Title: Managing Director

ONCOLOGY IMPACT FUND (CAYMAN) MANAGEMENT L.P.

By: MPM Oncology Impact Management LP,
Its General Partner

By: MPM Oncology Impact Management GP LLC
Its General Partner

By: /s/ Ansbert Gadicke
Name: Ansbert Gadicke
Title: Managing Director

MPM ONCOLOGY IMPACT MANAGEMENT LP

By: MPM Oncology Impact Management GP LLC
Its General Partner

By: /s/ Ansbert Gadicke
Name: Ansbert Gadicke
Title: Managing Director

MPM ONCOLOGY IMPACT MANAGEMENT GP LLC

By: /s/ Ansbert Gadicke
Name: Ansbert Gadicke
Title: Managing Director

By: /s/ Todd Foley
Name: Todd Foley

By: /s/ Luke Evin
Name: Luke Evin

By: /s/ Ansbert Gadicke
Name: Ansbert Gadicke