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

SCHEDULE 13D

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

TCR² Therapeutics Inc.
(Name of Issuer)

Common Stock
(Title of Class of Securities)

87808K106
(CUSIP Number)

Luke Evnin
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)

February 19, 2019
(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).

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| 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) (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) | | |
| 6. | Citizenship or Place of Organization Delaware | | |
| Number of Shares Beneficially Owned by Each Reporting Person With: | 7. | Sole Voting Power 3,056,272 | |
| | 8. | Shared Voting Power 0 | |
| | 9. | Sole Dispositive Power 3,056,272 | |
| | 10. | Shared Dispositive Power 0 | |
| 11. | Aggregate Amount Beneficially Owned by Each Reporting Person 3,056,272 | | |
| 12. | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) | | |
| 13. | Percent of Class Represented by Amount in Row (11) 13.2%(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"), MPM Asset Management LLC ("AM LLC"), MPM SunStates Fund, L.P. ("SunStates LP"), MPM Asset Management Investors SunStates Fund LLC ("AM SunStates"), UBS Oncology Impact Fund L.P. ("UBS Oncology"), MPM BioVentures 2014 GP LLC ("BV 2014 GP"), MPM BioVentures 2014 LLC ("BV 2014 LLC"), MPM SunStates Fund GP, LLC ("SunStates LLC"), MPM SunStates GP Managing Member LLC ("SunStates GP"), 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"). 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 23,189,901 shares of the Issuer's common stock outstanding upon completion of the Issuer's initial public offering, as set forth in the Issuer's final prospectus dated February 13, 2019, with respect to such offering, filed with the Securities and Exchange Commission on February 15, 2019.

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|---|---|---------------------------------------|--|
| 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) (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) | | |
| 6. | Citizenship or Place of Organization Delaware | | |
| Number of Shares Beneficially Owned by Each Reporting Person With: | 7. | Sole Voting Power 203,846 | |
| | 8. | Shared Voting Power 0 | |
| | 9. | Sole Dispositive Power 203,846 | |
| | 10. | Shared Dispositive Power 0 | |
| 11. | Aggregate Amount Beneficially Owned by Each Reporting Person 203,846 | | |
| 12. | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) | | |
| 13. | Percent of Class Represented by Amount in Row (11) 0.9%(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 23,189,901 shares of the Issuer's common stock outstanding upon completion of the Issuer's initial public offering, as set forth in the Issuer's final prospectus dated February 13, 2019, with respect to such offering, filed with the Securities and Exchange Commission on February 15, 2019.

| | | | |
|---|--|---------------------------------------|--|
| 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) (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) | | |
| 6. | Citizenship or Place of Organization Delaware | | |
| Number of Shares Beneficially Owned by Each Reporting Person With: | 7. | Sole Voting Power 110,859 | |
| | 8. | Shared Voting Power 0 | |
| | 9. | Sole Dispositive Power 110,859 | |
| | 10. | Shared Dispositive Power 0 | |
| 11. | Aggregate Amount Beneficially Owned by Each Reporting Person 110,859 | | |
| 12. | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) | | |
| 13. | Percent of Class Represented by Amount in Row (11) 0.5%(2) | | |
| 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) This percentage is calculated based upon 23,189,901 shares of the Issuer's common stock outstanding upon completion of the Issuer's initial public offering, as set forth in the Issuer's final prospectus dated February 13, 2019, with respect to such offering, filed with the Securities and Exchange Commission on February 15, 2019.

| | | | |
|--|---|--|--|
| 1. | Name of Reporting Persons. I.R.S. Identification No(s). of above person(s) (entities only) MPM Asset Management LLC | | |
| 2. | Check the Appropriate Box if a Member of a Group (See Instructions) (a) (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) | | |
| 6. | Citizenship or Place of Organization Delaware | | |
| Number of Shares Beneficially Owned by Each Reporting Person With: | 7. | Sole Voting Power 374,171(2) | |
| | 8. | Shared Voting Power 0 | |
| | 9. | Sole Dispositive Power 374,171(2) | |
| | 10. | Shared Dispositive Power 0 | |
| 11. | Aggregate Amount Beneficially Owned by Each Reporting Person 374,171(2) | | |
| 12. | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) | | |
| 13. | Percent of Class Represented by Amount in Row (11) 1.6%(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 178,269 shares of Common Stock issuable pursuant to warrants which are exercisable within 60 days of the date of this filing.
- (3) This percentage is calculated based upon 23,189,901 shares of the Issuer's common stock outstanding, as adjusted pursuant to Rule 13d-3(d)(1) promulgated under the Securities Act, upon completion of the Issuer's initial public offering, as set forth in the Issuer's final prospectus dated February 13, 2019, with respect to such offering, filed with the Securities and Exchange Commission on February 15, 2019.

| | | | |
|---|---|---------------------------------------|--|
| 1. | Name of Reporting Persons. I.R.S. Identification No(s). of above person(s) (entities only) MPM SunStates Fund, L.P. | | |
| 2. | Check the Appropriate Box if a Member of a Group (See Instructions) (a) (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) | | |
| 6. | Citizenship or Place of Organization Delaware | | |
| Number of Shares Beneficially Owned by Each Reporting Person With: | 7. | Sole Voting Power 421,070 | |
| | 8. | Shared Voting Power 0 | |
| | 9. | Sole Dispositive Power 421,070 | |
| | 10. | Shared Dispositive Power 0 | |
| 11. | Aggregate Amount Beneficially Owned by Each Reporting Person 421,070 | | |
| 12. | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) | | |
| 13. | Percent of Class Represented by Amount in Row (11) 1.8%(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 23,189,901 shares of the Issuer's common stock outstanding upon completion of the Issuer's initial public offering, as set forth in the Issuer's final prospectus dated February 13, 2019, with respect to such offering, filed with the Securities and Exchange Commission on February 15, 2019.

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|---|--|--------------------------------------|--|
| 1. | Name of Reporting Persons. I.R.S. Identification No(s). of above person(s) (entities only) MPM Asset Management Investors SunStates Fund LLC | | |
| 2. | Check the Appropriate Box if a Member of a Group (See Instructions) (a) (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) | | |
| 6. | Citizenship or Place of Organization Delaware | | |
| Number of Shares Beneficially Owned by Each Reporting Person With: | 7. | Sole Voting Power 62,916 | |
| | 8. | Shared Voting Power 0 | |
| | 9. | Sole Dispositive Power 62,916 | |
| | 10. | Shared Dispositive Power 0 | |
| 11. | Aggregate Amount Beneficially Owned by Each Reporting Person 62,916 | | |
| 12. | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) | | |
| 13. | Percent of Class Represented by Amount in Row (11) 0.3%(2) | | |
| 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) This percentage is calculated based upon 23,189,901 shares of the Issuer's common stock outstanding upon completion of the Issuer's initial public offering, as set forth in the Issuer's final prospectus dated February 13, 2019, with respect to such offering, filed with the Securities and Exchange Commission on February 15, 2019.

| | | | |
|---|---|---|--|
| 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) (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) | | |
| 6. | Citizenship or Place of Organization Delaware | | |
| Number of Shares Beneficially Owned by Each Reporting Person With: | 7. | Sole Voting Power 3,370,982 | |
| | 8. | Shared Voting Power 0 | |
| | 9. | Sole Dispositive Power 3,370,982 | |
| | 10. | Shared Dispositive Power 0 | |
| 11. | Aggregate Amount Beneficially Owned by Each Reporting Person 3,370,982 | | |
| 12. | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) | | |
| 13. | Percent of Class Represented by Amount in Row (11) 14.5%(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 23,189,901 shares of the Issuer's common stock outstanding upon completion of the Issuer's initial public offering, as set forth in the Issuer's final prospectus dated February 13, 2019, with respect to such offering, filed with the Securities and Exchange Commission on February 15, 2019.

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| 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) (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) | | |
| 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 3,260,118(2) | |
| | 9. | Sole Dispositive Power 0 | |
| | 10. | Shared Dispositive Power 3,260,118(2) | |
| 11. | Aggregate Amount Beneficially Owned by Each Reporting Person 3,260,118(2) | | |
| 12. | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) | | |
| 13. | Percent of Class Represented by Amount in Row (11) 14.1%(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 3,056,272 shares of Common Stock held by BV 2014 and 203,846 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 23,189,901 shares of the Issuer's common stock outstanding upon completion of the Issuer's initial public offering, as set forth in the Issuer's final prospectus dated February 13, 2019, with respect to such offering, filed with the Securities and Exchange Commission on February 15, 2019.

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| 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) (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) | | |
| 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 3,260,118(2) | |
| | 9. | Sole Dispositive Power 0 | |
| | 10. | Shared Dispositive Power 3,260,118(2) | |
| 11. | Aggregate Amount Beneficially Owned by Each Reporting Person 3,260,118(2) | | |
| 12. | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) | | |
| 13. | Percent of Class Represented by Amount in Row (11) 14.1%(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 3,056,272 shares of Common Stock held by BV 2014 and 203,846 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 23,189,901 shares of the Issuer's common stock outstanding upon completion of the Issuer's initial public offering, as set forth in the Issuer's final prospectus dated February 13, 2019, with respect to such offering, filed with the Securities and Exchange Commission on February 15, 2019.

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| 1. | Name of Reporting Persons. I.R.S. Identification No(s). of above person(s) (entities only) | |
| | MPM SunStates Fund GP, LLC | |
| 2. | Check the Appropriate Box if a Member of a Group (See Instructions) (a) (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) | |
| 6. | Citizenship or Place of Organization Delaware | |
| Number of Shares Beneficially Owned by Each Reporting Person With: | 7. | Sole Voting Power 421,070(2) |
| | 8. | Shared Voting Power 0 |
| | 9. | Sole Dispositive Power 421,070(2) |
| | 10. | Shared Dispositive Power 0 |
| 11. | Aggregate Amount Beneficially Owned by Each Reporting Person 421,070(2) | |
| 12. | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) | |
| 13. | Percent of Class Represented by Amount in Row (11) 1.8%(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 SunState LP. SunStates GP is the managing member of SunStates LLC, the general partner of SunStates LP.
- (3) This percentage is calculated based upon 23,189,901 shares of the Issuer's common stock outstanding upon completion of the Issuer's initial public offering, as set forth in the Issuer's final prospectus dated February 13, 2019, with respect to such offering, filed with the Securities and Exchange Commission on February 15, 2019.

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| 1. | Name of Reporting Persons. I.R.S. Identification No(s). of above person(s) (entities only) MPM SunStates GP Managing Member LLC | | |
| 2. | Check the Appropriate Box if a Member of a Group (See Instructions) (a) (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) | | |
| 6. | Citizenship or Place of Organization Delaware | | |
| Number of Shares Beneficially Owned by Each Reporting Person With: | 7. | Sole Voting Power 421,070(2) | |
| | 8. | Shared Voting Power 0 | |
| | 9. | Sole Dispositive Power 421,070(2) | |
| | 10. | Shared Dispositive Power 0 | |
| 11. | Aggregate Amount Beneficially Owned by Each Reporting Person 421,070(2) | | |
| 12. | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) | | |
| 13. | Percent of Class Represented by Amount in Row (11) 1.8%(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 SunState LP. SunStates GP is the managing member of SunStates LLC, the general partner of SunStates LP.
- (3) This percentage is calculated based upon 23,189,901 shares of the Issuer's common stock outstanding upon completion of the Issuer's initial public offering, as set forth in the Issuer's final prospectus dated February 13, 2019, with respect to such offering, filed with the Securities and Exchange Commission on February 15, 2019.

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| 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) (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) | | |
| 6. | Citizenship or Place of Organization Delaware | | |
| Number of Shares Beneficially Owned by Each Reporting Person With: | 7. | Sole Voting Power 3,370,982(2) | |
| | 8. | Shared Voting Power 0 | |
| | 9. | Sole Dispositive Power 3,370,982(2) | |
| | 10. | Shared Dispositive Power 0 | |
| 11. | Aggregate Amount Beneficially Owned by Each Reporting Person 3,370,982(2) | | |
| 12. | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) | | |
| 13. | Percent of Class Represented by Amount in Row (11) 14.5%(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 23,189,901 shares of the Issuer’s common stock outstanding upon completion of the Issuer’s initial public offering, as set forth in the Issuer’s final prospectus dated February 13, 2019, with respect to such offering, filed with the Securities and Exchange Commission on February 15, 2019.

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| 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) (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) | | |
| 6. | Citizenship or Place of Organization Delaware | | |
| Number of Shares Beneficially Owned by Each Reporting Person With: | 7. | Sole Voting Power 3,370,982(2) | |
| | 8. | Shared Voting Power 0 | |
| | 9. | Sole Dispositive Power 3,370,982(2) | |
| | 10. | Shared Dispositive Power 0 | |
| 11. | Aggregate Amount Beneficially Owned by Each Reporting Person 3,370,982(2) | | |
| 12. | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) | | |
| 13. | Percent of Class Represented by Amount in Row (11) 14.5%(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 23,189,901 shares of the Issuer’s common stock outstanding upon completion of the Issuer’s initial public offering, as set forth in the Issuer’s final prospectus dated February 13, 2019, with respect to such offering, filed with the Securities and Exchange Commission on February 15, 2019.

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| 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) (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) | | |
| 6. | Citizenship or Place of Organization Delaware | | |
| Number of Shares Beneficially Owned by Each Reporting Person With: | 7. | Sole Voting Power 3,370,982(2) | |
| | 8. | Shared Voting Power 0 | |
| | 9. | Sole Dispositive Power 3,370,982(2) | |
| | 10. | Shared Dispositive Power 0 | |
| 11. | Aggregate Amount Beneficially Owned by Each Reporting Person 3,370,982(2) | | |
| 12. | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) | | |
| 13. | Percent of Class Represented by Amount in Row (11) 14.5%(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 23,189,901 shares of the Issuer’s common stock outstanding upon completion of the Issuer’s initial public offering, as set forth in the Issuer’s final prospectus dated February 13, 2019, with respect to such offering, filed with the Securities and Exchange Commission on February 15, 2019.

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|---|---|--|
| 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) (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) | |
| 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 7,600,116(2) |
| | 9. | Sole Dispositive Power 0 |
| | 10. | Shared Dispositive Power 7,600,116(2) |
| 11. | Aggregate Amount Beneficially Owned by Each Reporting Person 7,600,116(2) | |
| 12. | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) | |
| 13. | Percent of Class Represented by Amount in Row (11) 32.5%(3) | |
| 14. | Type of Reporting Person (See Instructions) IN | |

- (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 3,056,272 shares held by BV 2014, 203,846 shares held by BV 2014(B), 110,859 shares held by AM BV 2014 LLC, 195,902 shares held by AM LLC, 421,070 by SunStates LP, 62,916 by AM SunStates and 3,370,982 shares held by UBS Oncology. Also includes 178,269 shares of Common Stock issuable pursuant to warrants which are exercisable within 60 days of the date of this filing. The Reporting Person is a managing director of BV 2014 LLC, a member of AM LLC, a member of SunStates GP and the managing director of Oncology GP.
- (3) This percentage is calculated based upon 23,189,901 shares of the Issuer's common stock outstanding upon completion of the Issuer's initial public offering, as set forth in the Issuer's final prospectus dated February 13, 2019, with respect to such offering, filed with the Securities and Exchange Commission on February 15, 2019.

| | | | |
|---|---|--|--|
| 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) (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) | | |
| 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 3,745,148(2) | |
| | 9. | Sole Dispositive Power 0 | |
| | 10. | Shared Dispositive Power 3,745,148(2) | |
| 11. | Aggregate Amount Beneficially Owned by Each Reporting Person 3,745,148(2) | | |
| 12. | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) | | |
| 13. | Percent of Class Represented by Amount in Row (11) 16.0%(3) | | |
| 14. | Type of Reporting Person (See Instructions) IN | | |

- (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 3,056,272 shares held by BV 2014, 203,846 shares held by BV 2014(B), 110,859 shares held by AM BV 2014 LLC and 195,902 shares held by AM LLC. Also includes 178,269 shares of Common Stock issuable pursuant to warrants which are exercisable within 60 days of the date of this filing. The Reporting Person is a managing director of BV 2014 LLC and a member of AM LLC.
- (3) This percentage is calculated based upon 23,189,901 shares of the Issuer's common stock outstanding upon completion of the Issuer's initial public offering, as set forth in the Issuer's final prospectus dated February 13, 2019, with respect to such offering, filed with the Securities and Exchange Commission on February 15, 2019.

| | | | |
|---|---|--|--|
| 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) (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) | | |
| 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 3,370,977(2) | |
| | 9. | Sole Dispositive Power 0 | |
| | 10. | Shared Dispositive Power 3,370,977(2) | |
| 11. | Aggregate Amount Beneficially Owned by Each Reporting Person 3,370,977(2) | | |
| 12. | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) | | |
| 13. | Percent of Class Represented by Amount in Row (11) 14.5%(3) | | |
| 14. | Type of Reporting Person (See Instructions) IN | | |

- (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 3,056,272 shares held by BV 2014, 203,846 shares held by BV 2014(B) and 110,859 shares held by AM BV 2014 LLC. The Reporting Person is a managing director of BV 2014 LLC.
- (3) This percentage is calculated based upon 23,189,901 shares of the Issuer's common stock outstanding upon completion of the Issuer's initial public offering, as set forth in the Issuer's final prospectus dated February 13, 2019, with respect to such offering, filed with the Securities and Exchange Commission on February 15, 2019.

Item 1. Security and Issuer.

This Schedule 13D (this “Schedule 13D”) relates to the common stock, par value \$0.0001 per share (the “Common Stock”), of TCR² Therapeutics Inc. (the “Issuer”). The Issuer’s principal executive office is located at 100 Binney Street, Cambridge, MA 02142.

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”), MPM Asset Management LLC (“AM LLC”), MPM SunStates Fund, L.P. (“SunStates LP”), MPM Asset Management Investors SunStates Fund LLC (“AM SunStates”), UBS Oncology Impact Fund L.P. (“UBS Oncology”), MPM BioVentures 2014 GP LLC (“BV 2014 GP”), MPM BioVentures 2014 LLC (“BV 2014 LLC”), MPM SunStates Fund GP, LLC (“SunStates LLC”), MPM SunStates GP Managing Member LLC (“SunStates GP”), 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.

(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.

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 February 13, 2019, the Registration Statement on Form S-1 filed with the Securities and Exchange Commission by the Issuer (File No. 333-229066) in connection with its initial public offering of 5,000,000 shares of Common Stock was declared effective. The closing of the offering took place on February 19, 2019, and at such closing the MPM Entities purchased an aggregate of 1,373,333 shares of Common Stock at the initial public offering price of \$15.00 per share, for an aggregate purchase prices of \$20,599,995. 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: 604,428 shares
- BV 2014(B): 40,314 shares
- AM BV2014 LLC: 21,924 shares
- SunStates LP: 34,800
- AM SunStates: 5,200
- UBS Oncology: 666,667 shares

Item 4. Purpose of Transaction

The MPM Entities purchased the shares of Common Stock of the Issuer in the initial public offering and upon net exercise of warrants for investment purposes.

Ansbert Gadicke is a member of the Board of Directors of the Issuer and is also a managing director of BV 2014 LLC, a member of AM LLC and the managing director of Oncology GP.

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 Stock of the Issuer by the Filing Persons is provided as of February 19, 2019:

| Reporting Person | Shares Held Directly | Sole Voting Power | Shared Voting Power | Sole Dispositive Power | Shared Dispositive Power | Beneficial Ownership | Percentage of Class (1)(2) |
|-------------------------|-------------------------------------|------------------------------|------------------------------------|---------------------------------------|---|---------------------------------|---|
| BV 2014 | 3,056,272 | | 3,056,272 | | 3,056,272 | 3,056,272 | 13.2% |
| BV 2014(B) | 203,846 | | 203,846 | | 203,846 | 203,846 | 0.9% |
| AM BV 2014 LLC | 110,859 | | 110,859 | | 110,859 | 110,859 | 0.5% |
| AM LLC(3) | 374,171 | | 374,171 | | 374,171 | 374,171 | 1.6% |
| SunStates LP | 421,070 | | 421,070 | | 421,070 | 421,070 | 1.8% |
| AM SunStates | 62,916 | | 62,916 | | 62,916 | 62,916 | 0.3% |
| UBS Oncology | 3,370,982 | | 3,370,982 | 0 | 3,370,982 | 3,370,982 | 14.5% |
| BV 2014 GP(4) | 0 | 0 | 3,260,118 | 0 | 3,260,118 | 3,260,118 | 14.1% |
| BV 2014 LLC(4) | 0 | 0 | 3,260,118 | 0 | 3,260,118 | 3,260,118 | 14.1% |

| | | | | | | | |
|--------------------|---|---|-----------|---|-----------|-----------|-------|
| SunStates LLC(5) | 0 | 0 | 421,070 | 0 | 421,070 | 421,070 | 1.8% |
| SunStates GP(5) | 0 | 0 | 421,070 | 0 | 421,070 | 421,070 | 1.8% |
| Oncology Cayman(6) | 0 | 0 | 3,370,982 | 0 | 3,370,982 | 3,370,982 | 18.1% |
| Oncology LP(6) | 0 | 0 | 3,370,982 | 0 | 3,370,982 | 3,370,982 | 18.1% |
| Oncology GP(6) | 0 | 0 | 3,370,982 | 0 | 3,370,982 | 3,370,982 | 18.1% |
| Ansbert Gadicke(7) | 0 | 0 | 7,600,116 | 0 | 7,600,116 | 7,600,116 | 32.5% |
| Luke Evnin(8) | 0 | 0 | 3,745,148 | 0 | 3,745,148 | 3,745,148 | 16.0% |
| Todd Foley(9) | 0 | 0 | 3,370,977 | 0 | 3,370,977 | 3,370,977 | 14.5% |

- (1) This percentage is calculated based upon 23,189,901 shares of the Issuer's common stock outstanding upon completion of the Issuer's initial public offering, as set forth in the Issuer's final prospectus dated February 13, 2019, with respect to such offering, filed with the Securities and Exchange Commission on February 15, 2019.
- (2) This percentage is calculated based upon 23,189,901 shares of the Issuer's common stock outstanding, as adjusted pursuant to Rule 13d-3(d)(1) promulgated under the Securities Act, upon completion of the Issuer's initial public offering, as set forth in the Issuer's final prospectus dated February 13, 2019, with respect to such offering, filed with the Securities and Exchange Commission on February 15, 2019.
- (3) Includes 178,269 shares of Common Stock issuable pursuant to warrants which are exercisable within 60 days of the date of this filing.
- (4) 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).
- (5) Includes securities held by SunStates LP. SunStates GP is the managing member of SunStates LLC, the general partner of SunStates LP.
- (6) Includes securities 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.
- (7) Includes securities held by BV 2014, BV 2014(B), AM BV 2014 LLC, AM LLC, SunStates LP, AM SunStates and UBS Oncology.
The Reporting Person is a managing director of BV 2014 LLC, a member of AM LLC, a member of SunStates GP and the managing director of Oncology GP.
- (8) Includes securities held by BV 2014, BV 2014(B), AM BV 2014 LLC and AM LLC. The Reporting Person is a managing director of BV 2014 LLC and a member of AM LLC.
- (9) Includes securities held by BV 2014 and BV 2014(B) and AM BV 2014 LLC. The Reporting Person is a managing director of 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 February 19, 2019, the MPM Entities acquired an aggregate of 6,048,5145 shares of Common Stock 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 Investors' Rights Agreement dated February 28, 2018 (the "Investor 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

Beginning 180 days after February 13, 2019, the holders of registration rights are entitled to demand registration rights. Under the terms of the Investor Rights Agreement, the Issuer will be required, upon the written request of holders of at least a majority of the securities eligible for registration then outstanding, including at least a majority of the common stock issued upon conversion of the Issuer's Series A preferred stock and at least a majority of the common stock issued upon conversion of the Issuer's Series B preferred stock, to file a registration statement with respect to at least 40% of the securities eligible for registration then outstanding (or a lesser percent if the anticipated aggregate offering price, net of related fees and expenses, would exceed \$5 million), the Issuer will be required to file a registration statement covering all securities eligible for registration that such stockholders request to be included in such registration. The issuer is required to effect only two registrations pursuant to this provision of the Investor Rights Agreement in any twelve-month period.

Short-Form Registration Rights

Pursuant to the Investor Rights Agreement, if the Issuer is eligible to file a registration statement on Form S-3, upon the written request of stockholders holding at least 10% of the securities eligible for registration then outstanding with respect to outstanding securities of such stockholders having an anticipated aggregate offering, net of related fees and expenses, of at least \$1.0 million, the Issuer will be required to file a Form S-3 registration restatement covering all securities eligible for registration that such stockholders request to be included in such registration. The issuer is required to effect only two registrations in any twelve-month period pursuant to this provision of the Investor Rights Agreement. The right to have such shares registered on Form S-3 is further subject to other specified conditions and limitations.

Piggyback Registration Rights

Pursuant to the Investor Rights Agreement, if the Issuer registers any of its securities either for its own account or for the account of other security holders, the holders of Registrable Securities are entitled to include their shares in the registration. Subject to certain exceptions contained in the Investor Rights Agreement, the Issuer and the underwriters in an underwritten offering may limit the number of shares included in the underwritten offering to the number of shares which the Issuer and the underwriters determine in their sole discretion will not jeopardize the success of the offering.

Indemnification

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

Expiration of Registration Rights

The registration rights granted under the Investor Rights Agreement will terminate the earliest to occur of: (i) on the fifth anniversary of the completion of the Issuer's initial public offering, (ii) at such time when the holders' shares may be sold pursuant to Rule 144 without restriction within a three-month period or (iii) a merger, sale or liquidation of the Issuer.

Lock-up Agreements

The MPM Entities and Mr. Gadick, along with all of the Issuer's officers, directors, and holders of substantially all of the Issuer's common stock, 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 stock or securities convertible into or exchangeable for shares of common stock for a 180-day period beginning on February 13, 2019 and ending on August 12, 2019 except with the prior written consent of Jeffries LLC, SVB Leerink LLC and BMO Capital Markets Corp. 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 Schedule A thereto, dated as of February 28, 2018 (incorporated by reference to Exhibit 4.1 to the Issuer's Registration Statement on Form S-1 (SEC File No. 333-229066), filed with the SEC on December 28, 2018).
- B. Form of Lock-up Agreement (incorporated by reference to Exhibit C to Exhibit 1.1 to the Issuer's Registration Statement on Form S-1/A (SEC File No. 333-229066), filed with the SEC on February 1, 2019).
- 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: March 4, 2019

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 ASSET MANAGEMENT LLC

By: /s/ Luke Evnin

Name: Luke Evnin

Title: Member

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

MPM SUNSTATES FUND, L.P.

By: MPM SunStates GP LLC,
its General Partner

By: MPM SunStates GP Managing Member LLC,
Its Managing Member

By: /s/ Ansbert Gadicke

Name: Ansbert Gadicke

Title: Member

MPM SUNSTATES GP LLC

By: MPM SunStates GP Managing Member LLC,
Its Managing Member

By: /s/ Ansbert Gadicke

Name: Ansbert Gadicke

Title: Member

MPM SUNSTATES GP MANAGING MEMBER LLC

By: /s/ Ansbert Gadicke

Name: Ansbert Gadicke

Title: Member

**MPM ASSET MANAGEMENT INVESTORS SUNSTATES FUND
LLC**

By: /s/ Howard Rubin

Name: Howard Rubin

Title: 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 FUND 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 FUND MANAGEMENT GP LLC

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

By: /s/ Todd Foley
Name: Todd Foley

By: /s/ Luke Evnin
Name: Luke Evnin

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, managing director of MPM Oncology Impact Management LP. and a member of MPM SunStates GP Managing Member LLC.

Citizenship: USA

Luke Evnin

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 February 28, 2018 (incorporated by reference to Schedule 4.1 to the Issuer's Registration Statement on Form S-1 (SEC File No. 333-229066), filed with the SEC on December 28, 2018).
- B. Form of Lock-up Agreement (incorporated by reference to Exhibit C to Exhibit 1.1 to the Issuer's Registration Statement on Form S-1/A (SEC File No. 333-229066), filed with the SEC on February 1, 2019).
- C. Agreement regarding filing of joint Schedule 13D.

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 TCR² Therapeutics Inc. is filed on behalf of each of the undersigned.

Date: March 4, 2019

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 ASSET MANAGEMENT LLC

By: /s/ Luke Evnin

Name: Luke Evnin

Title: Member

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

MPM SUNSTATES FUND, L.P.

By: MPM SunStates GP LLC,
its General Partner

By: MPM SunStates GP Managing Member LLC,
Its Managing Member

By: /s/ Ansbert Gadicke

Name: Ansbert Gadicke

Title: Member

MPM SUNSTATES GP LLC

By: MPM SunStates GP Managing Member LLC,
Its Managing Member

By: /s/ Ansbert Gadicke

Name: Ansbert Gadicke

Title: Member

MPM SUNSTATES GP MANAGING MEMBER LLC

By: /s/ Ansbert Gadicke

Name: Ansbert Gadicke

Title: Member

MPM ASSET MANAGEMENT INVESTORS SUNSTATES FUND LLC

By: /s/ Howard Rubin

Name: Howard Rubin

Title: 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 FUND 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 FUND MANAGEMENT GP LLC

By: /s/ Ansbert Gadicke

Name: Ansbert Gadicke

Title: Managing Director

By: /s/ Todd Foley

Name: Todd Foley

By: /s/ Luke Evnin

Name: Luke Evnin

By: /s/ Ansbert Gadicke

Name: Ansbert Gadicke