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**SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

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**SCHEDULE 13D/A**

**Under the Securities Exchange Act of 1934  
(Amendment No. 3)\***

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**MOLECULAR TEMPLATES, INC.**

(Name of Issuer)

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

**608550 109**  
(CUSIP Number)

**Patrick G. Enright**  
**Managing Member**  
**Longitude Capital Partners III, LLC**  
**2740 Sand Hill Road, 2nd Floor**  
**Menlo Park, CA 94025**  
**(650) 854-5700**

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

**May 26, 2020**  
(Date of Event Which Requires Filing of this Statement)

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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 .

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\* 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.

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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).

(Continued on following pages)

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1	NAMES OF REPORTING PERSONS Longitude Capital Partners III, LLC	
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (see instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>	
3	SEC USE ONLY	
4	SOURCE OF FUNDS (see instructions) OO	
5	CHECK IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM 2(d) or 2(e) <input type="checkbox"/>	
6	CITIZENSHIP OR PLACE OF ORGANIZATION Delaware	
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	7	SOLE VOTING POWER 0
	8	SHARED VOTING POWER 4,647,302 <sup>1,2</sup>
	9	SOLE DISPOSITIVE POWER 0
	10	SHARED DISPOSITIVE POWER 4,647,302 <sup>1,2</sup>
11	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 4,647,302 <sup>1,2</sup>	
12	CHECK BOX 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 9.9% <sup>3</sup>	
14	TYPE OF REPORTING PERSON (see instructions) OO	

- 1 All of such securities are held of record by Longitude Venture III (as defined in the Explanatory Note below). Longitude Capital III (as defined in the Explanatory Note below) is the general partner of Longitude Venture III and may be deemed to have voting, investment and dispositive power with respect to these securities. Patrick G. Enright, Juliet Tammenoms Bakker and David Hirsch, a member of the Issuer's board of directors, are each members of Longitude Capital III and may each be deemed to share voting, investment and dispositive power with respect to these securities. Patrick G. Enright and Juliet Tammenoms Bakker are the managing members of Longitude Capital III.
- 2 Consists of (a) 3,199,035 outstanding shares of Common Stock, and (b) 1,448,267 shares of Common Stock issuable upon exercise of Warrants.
- 3 The percentage was calculated based on 47,156,052 shares of Common Stock, as follows: (a) 45,707,785 outstanding shares of Common Stock as of May 8, 2020 as reported by the Issuer in its quarterly report on Form 10-Q for the quarter ended March 31, 2020 (the "Form 10-Q") and filed with the Commission (as defined in the Explanatory Note below) on May 12, 2020; plus (b) 1,448,267 shares of Common Stock issuable upon exercise of the Warrants held of record by Longitude Venture III.

1	NAMES OF REPORTING PERSONS Longitude Venture Partners III, L.P.	
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (see instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>	
3	SEC USE ONLY	
4	SOURCE OF FUNDS (see instructions) OO	
5	CHECK IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM 2(d) or 2(e) <input type="checkbox"/>	
6	CITIZENSHIP OR PLACE OF ORGANIZATION Delaware	
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	7	SOLE VOTING POWER 0
	8	SHARED VOTING POWER 4,647,302 <sup>1,2</sup>
	9	SOLE DISPOSITIVE POWER 0
	10	SHARED DISPOSITIVE POWER 4,647,302 <sup>1,2</sup>
11	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 4,647,302 <sup>1,2</sup>	
12	CHECK BOX 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 9.9% <sup>3</sup>	
14	TYPE OF REPORTING PERSON (see instructions) PN	

1 All of such securities are held of record by Longitude Venture III. Longitude Capital III is the general partner of Longitude Venture III and may be deemed to have voting, investment and dispositive power with respect to these securities. Patrick G. Enright, Juliet Tammenoms Bakker and David Hirsch, a member of the Issuer's board of directors, are each members of Longitude Capital III and may each be deemed to share voting, investment and dispositive power with respect to these securities. Patrick G. Enright and Juliet Tammenoms Bakker are the managing members of Longitude Capital III.

2 Consists of (a) 3,199,035 outstanding shares of Common Stock, and (b) 1,448,267 shares of Common Stock issuable upon exercise of Warrants.

3 The percentage was calculated based on 47,156,052 shares of Common Stock, as follows: (a) 45,707,785 outstanding shares of Common Stock as of May 8, 2020 as reported in the Form 10-Q filed with the Commission on May 12, 2020; *plus* (b) 1,448,267 shares of Common Stock issuable upon exercise of the Warrants held of record by Longitude Venture III.

1	NAMES OF REPORTING PERSONS David Hirsch	
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (see instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>	
3	SEC USE ONLY	
4	SOURCE OF FUNDS (see instructions) OO	
5	CHECK IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM 2(d) or 2(e) <input type="checkbox"/>	
6	CITIZENSHIP OR PLACE OF ORGANIZATION United States of America	
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	7	SOLE VOTING POWER 56,649 <sup>1</sup>
	8	SHARED VOTING POWER 4,647,302 <sup>2,3</sup>
	9	SOLE DISPOSITIVE POWER 56,649 <sup>1</sup>
	10	SHARED DISPOSITIVE POWER 4,647,302 <sup>2,3</sup>
11	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 4,703,951 <sup>1,2,3</sup>	
12	CHECK BOX 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 10.0% <sup>4</sup>	
14	TYPE OF REPORTING PERSON (see instructions) IN	

- 1 Consists of (a) 1,649 shares held directly by David Hirsch and (b) 55,000 shares of Common Stock subject to stock options granted to David Hirsch in his capacity as a director of the Issuer that are exercisable as of the date of filing of this Amendment No. 3 or within 60 days thereafter.
- 2 All of such securities are held of record by Longitude Venture III. Longitude Capital III is the general partner of Longitude Venture III and may be deemed to have voting, investment and dispositive power with respect to these securities. Patrick G. Enright, Juliet Tammenoms Bakker and David Hirsch, a member of the Issuer's board of directors, are each members of Longitude Capital III and may each be deemed to share voting, investment and dispositive power with respect to these securities. Patrick G. Enright and Juliet Tammenoms Bakker are the managing members of Longitude Capital III.
- 3 Consists of (a) 3,199,035 outstanding shares of Common Stock and (b) 1,448,267 shares of Common Stock issuable upon exercise of Warrants.
- 4 The percentage was calculated based on 47,211,052 shares of Common Stock, as follows: (a) 45,707,785 outstanding shares of Common Stock as of May 8, 2020 as reported in the Form 10-Q filed with the Commission on May 12, 2020; *plus* (b) 1,448,267 shares of Common Stock issuable upon exercise of the Warrants held of record by Longitude Venture III *plus* (c) 55,000 shares of Common Stock subject to stock options granted to David Hirsch in his capacity as a director of the Issuer that are exercisable as of the date of filing of this Amendment No. 3 or within 60 days thereafter.

1	NAMES OF REPORTING PERSONS  Patrick G. Enright	
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (see instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>	
3	SEC USE ONLY	
4	SOURCE OF FUNDS (see instructions)  OO	
5	CHECK IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM 2(d) or 2(e)  <input type="checkbox"/>	
6	CITIZENSHIP OR PLACE OF ORGANIZATION  United States of America	
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	7	SOLE VOTING POWER  3,495 <sup>1</sup>
	8	SHARED VOTING POWER  4,647,302 <sup>2,3</sup>
	9	SOLE DISPOSITIVE POWER  3,495 <sup>1</sup>
	10	SHARED DISPOSITIVE POWER  4,647,302 <sup>2,3</sup>
11	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON  4,650,797 <sup>1,2,3</sup>	
12	CHECK BOX 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  9.9% <sup>4</sup>	
14	TYPE OF REPORTING PERSON (see instructions)  IN	

1. These shares are held by a limited partnership (the "Partnership") of which the general partner is a trust (the "Enright Trust"). Mr. Enright is the Trustee of the Enright Trust and may be deemed to share voting, investment and dispositive power over the shares held by the Partnership.
2. All of such securities are held of record by Longitude Venture III. Longitude Capital III is the general partner of Longitude Venture III and may be deemed to have voting, investment and dispositive power with respect to these securities. Patrick G. Enright, Juliet Tammenoms Bakker and David Hirsch, a member of the Issuer's board of directors, are each members of Longitude Capital III and may each be deemed to share voting, investment and dispositive power with respect to these securities. Patrick G. Enright and Juliet Tammenoms Bakker are the managing members of Longitude Capital III.
3. Consists of (a) 3,199,035 outstanding shares of Common Stock and (b) 1,448,267 shares of Common Stock issuable upon exercise of Warrants.
4. The percentage was calculated based on 47,156,052 shares of Common Stock, as follows: (a) 45,707,785 outstanding shares of Common Stock as of May 8, 2020 as reported in the Form 10-Q filed with the Commission on May 12, 2020; *plus* (b) 1,448,267 shares of Common Stock issuable upon exercise of the Warrants held of record by Longitude Venture III.

1	NAMES OF REPORTING PERSONS Juliet Tammenoms Bakker	
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (see instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>	
3	SEC USE ONLY	
4	SOURCE OF FUNDS (see instructions) OO	
5	CHECK IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM 2(d) or 2(e) <input type="checkbox"/>	
6	CITIZENSHIP OR PLACE OF ORGANIZATION United States of America	
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	7	SOLE VOTING POWER 3,496 <sup>1</sup>
	8	SHARED VOTING POWER 4,647,302 <sup>2,3</sup>
	9	SOLE DISPOSITIVE POWER 3,496 <sup>1</sup>
	10	SHARED DISPOSITIVE POWER 4,647,302 <sup>2,3</sup>
11	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 4,650,798 <sup>1,2,3</sup>	
12	CHECK BOX 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 9.9% <sup>4</sup>	
14	TYPE OF REPORTING PERSON (see instructions) IN	

1. Consists of (a) 1,049 shares held by a trust (the "Tammenoms Bakker Trust") and (b) 2,447 shares held directly by Juliet Tammenoms Bakker, Juliet Tammenoms Bakker is the Investment Trustee of the Tammenoms Bakker Trust and may be deemed to share voting and dispositive power with regard to the shares held by it. .
2. All of such securities are held of record by Longitude Venture III. Longitude Capital III is the general partner of Longitude Venture III and may be deemed to have voting, investment and dispositive power with respect to these securities. Patrick G. Enright, Juliet Tammenoms Bakker and David Hirsch, a member of the Issuer's board of directors, are each members of Longitude Capital III and may each be deemed to share voting, investment and dispositive power with respect to these securities. Patrick G. Enright and Juliet Tammenoms Bakker are the managing members of Longitude Capital III.
3. Consists of (a) 3,199,035 outstanding shares of Common Stock and (b) 1,448,267 shares of Common Stock issuable upon exercise of Warrants.
4. The percentage was calculated based on 47,156,052 shares of Common Stock, as follows: (a) 45,707,785 outstanding shares of Common Stock as of May 8, 2020 as reported in the Form 10-Q filed with the Commission on May 12, 2020; *plus* (b) 1,448,267 shares of Common Stock issuable upon exercise of the Warrants held of record by Longitude Venture III.

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**Explanatory Note:**

This Amendment No. 3 to Schedule 13D ("Amendment No. 3") amends and supplements the Schedule 13D initially filed with the Securities and Exchange Commission (the "Commission") on September 18, 2017 (the "Original 13D") as amended by Amendment No. 1 filed with the Commission on September 26, 2018 ("Amendment No. 1") and Amendment No. 2 filed with the Commission on December 5, 2019 ("Amendment No. 2" together with the Original 13D, the "Statement"). This Amendment No. 3 is filed on behalf of entities Longitude Venture Partners III, L.P. ("Longitude Venture III"), and Longitude Venture III's sole general partner Longitude Capital Partners III, LLC ("Longitude Capital III", and each of Longitude Capital III and Longitude Venture III, a "Reporting Entity"), and individuals David Hirsch, Patrick G. Enright and Juliet Tammenoms Bakker (each a "Reporting Individual," and each Reporting Entity or Reporting Individual, a "Reporting Person"), relating to beneficial ownership of the common stock, par value \$0.001 per share (the "Common Stock"), of Molecular Templates, Inc., a Delaware corporation (the "Issuer"). The Reporting Persons are filing this Amendment No. 3 to report changes in their beneficial ownership since the filing of Amendment No. 2. Except as set forth below, this Amendment No. 3 does not supplement, restate or amend any of the other information disclosed in the Statement as previously filed. Capitalized terms not defined in this Amendment No. 3 have the meanings ascribed to them in the Statement as previously filed.

**Item 5. Interest in Securities of the Issuer.**

(a) and (b) See Items 7-11 of the cover pages of this Statement and Item 2 of the Original 13D.

(c) On May 26, 2020, Longitude Venture III effected a pro rata distribution without additional consideration of 1,000,000 shares of Common Stock to (i) Longitude Capital III, its general partner and (ii) its limited partners (the "Distribution"). Longitude Capital III, then effected a pro rata distribution without additional consideration of the shares that it received in connection with the Distribution to its members.

(d) Under certain circumstances set forth in the limited partnership agreement of Longitude Venture III, the general partner and limited partners of Longitude Venture III may be deemed to have the right to receive dividends from, or the proceeds from, the sale of shares of the Issuer owned by such entity of which they are a partner.

(e) Not applicable.

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**SIGNATURE**

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

Dated: June 5, 2020

**LONGITUDE VENTURE PARTNERS III, L.P.**  
**By: LONGITUDE CAPITAL PARTNERS III, LLC**  
**Its: General Partner**

By: /s/ Patrick G. Enright  
Patrick G. Enright, Managing Member

**LONGITUDE CAPITAL PARTNERS III, LLC**

By: /s/ Patrick G. Enright  
Patrick G. Enright, Managing Member

/s/ David Hirsch  
David Hirsch

/s/ Patrick G. Enright  
Patrick G. Enright

/s/ Juliet Tammenoms Bakker  
Juliet Tammenoms Bakker