

<b>OMB APPROVAL</b>	
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Check this box if no longer subject to Section 16. Form 4 or Form 5 obligations may continue. See Instruction 1(b).

**STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP**

Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934 or Section 30(h) of the Investment Company Act of 1940

1. Name and Address of Reporting Person* <u>Longitude Capital Partners III, LLC</u>  (Last) (First) (Middle) 2740 SAND HILL ROAD SECOND FLOOR  (Street) MENLO PARK CA 94025  (City) (State) (Zip)	2. Issuer Name and Ticker or Trading Symbol <u>Molecular Templates, Inc. [ MTEM ]</u>	5. Relationship of Reporting Person(s) to Issuer (Check all applicable)  Director <input checked="" type="checkbox"/> 10% Owner  Officer (give title below) Other (specify below)
	3. Date of Earliest Transaction (Month/Day/Year) <u>09/21/2018</u>	
4. If Amendment, Date of Original Filed (Month/Day/Year)		

**Table I - Non-Derivative Securities Acquired, Disposed of, or Beneficially Owned**

1. Title of Security (Instr. 3)	2. Transaction Date (Month/Day/Year)	2A. Deemed Execution Date, if any (Month/Day/Year)	3. Transaction Code (Instr. 8)		4. Securities Acquired (A) or Disposed Of (D) (Instr. 3, 4 and 5)			5. Amount of Securities Beneficially Owned Following Reported Transaction(s) (Instr. 3 and 4)	6. Ownership Form: Direct (D) or Indirect (I) (Instr. 4)	7. Nature of Indirect Beneficial Ownership (Instr. 4)
			Code	V	Amount	(A) or (D)	Price			
Common Stock	09/21/2018		P		365,000	A	\$5.5	3,261,535	I <sup>(1)</sup>	By Longitude Venture Partners III, L.P. <sup>(1)</sup>

**Table II - Derivative Securities Acquired, Disposed of, or Beneficially Owned (e.g., puts, calls, warrants, options, convertible securities)**

1. Title of Derivative Security (Instr. 3)	2. Conversion or Exercise Price of Derivative Security	3. Transaction Date (Month/Day/Year)	3A. Deemed Execution Date, if any (Month/Day/Year)	4. Transaction Code (Instr. 8)		5. Number of Derivative Securities Acquired (A) or Disposed of (D) (Instr. 3, 4 and 5)		6. Date Exercisable and Expiration Date (Month/Day/Year)		7. Title and Amount of Securities Underlying Derivative Security (Instr. 3 and 4)	8. Price of Derivative Security (Instr. 5)	9. Number of derivative Securities Beneficially Owned Following Reported Transaction(s) (Instr. 4)	10. Ownership Form: Direct (D) or Indirect (I) (Instr. 4)	11. Nature of Indirect Beneficial Ownership (Instr. 4)
				Code	V	(A)	(D)	Date Exercisable	Expiration Date					

1. Name and Address of Reporting Person* <u>Longitude Capital Partners III, LLC</u>  (Last) (First) (Middle) 2740 SAND HILL ROAD SECOND FLOOR  (Street) MENLO PARK CA 94025  (City) (State) (Zip)		
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1. Name and Address of Reporting Person*		
<a href="#">Longitude Venture Partners III, L.P.</a>		
(Last)	(First)	(Middle)
2740 SAND HILL ROAD SECOND FLOOR		
(Street)		
MENLO PARK	CA	94025
(City) (State) (Zip)		
1. Name and Address of Reporting Person*		
<a href="#">ENRIGHT PATRICK G</a>		
(Last)	(First)	(Middle)
2740 SAND HILL ROAD SECOND FLOOR		
(Street)		
MENLO PARK	CA	94025
(City) (State) (Zip)		
1. Name and Address of Reporting Person*		
<a href="#">Tammenoms Bakker Juliet</a>		
(Last)	(First)	(Middle)
2740 SAND HILL ROAD SECOND FLOOR		
(Street)		
MENLO PARK	CA	94025
(City) (State) (Zip)		

**Explanation of Responses:**

1. These shares are held by Longitude Venture Partners III, L.P. ("Longitude Venture III"). This report is filed jointly by Longitude Capital Partners III, LLC ("Longitude Capital III"), Longitude Venture III, Patrick G. Enright ("Mr. Enright"), and Juliet Tammenoms Bakker ("Ms. Bakker"), all of whom share beneficial ownership of more than 10% of the capital stock of the Issuer. Longitude Capital III is the general partner of Longitude Venture III and may be deemed to share voting and investment power over the shares held by Longitude Venture III. Mr. Enright and Ms. Bakker are the managing members of Longitude Capital III and may be deemed to share voting and investment power over the shares held by Longitude Venture III. Each of Longitude Capital III, Mr. Enright and Ms. Bakker disclaims beneficial ownership of such shares except to the extent of its, his or her pecuniary interest therein.

**Remarks:**

/s/ Patrick G. Enright,  
individually, and as  
Managing Member of  
Longitude Capital III, and as  
Managing Member of  
Longitude Capital III, General  
Partner of Longitude Venture  
III /s/ Juliet Tammenoms  
Bakker

09/25/2018

\*\* Signature of Reporting Person      Date

Reminder: Report on a separate line for each class of securities beneficially owned directly or indirectly.

\* If the form is filed by more than one reporting person, see Instruction 4 (b)(v).

\*\* Intentional misstatements or omissions of facts constitute Federal Criminal Violations See 18 U.S.C. 1001 and 15 U.S.C. 78ff(a).

Note: File three copies of this Form, one of which must be manually signed. If space is insufficient, see Instruction 6 for procedure.

**Persons who respond to the collection of information contained in this form are not required to respond unless the form displays a currently valid OMB Number.**