

INITIAL STATEMENT OF BENEFICIAL OWNERSHIP OF SECURITIES

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

(Print or Type Responses)

1. Name and Address of Reporting Person* Kim Jason S. (Last) (First) (Middle) C/O MOLECULAR TEMPLATES, INC., 9301 AMBERGLEN BLVD., SUITE 100 (Street) AUSTIN, TX 78729 (City) (State) (Zip)	2. Date of Event Requiring Statement (Month/Day/Year) 08/01/2017	3. Issuer Name and Ticker or Trading Symbol Molecular Templates, Inc. [MTEM]	
		4. Relationship of Reporting Person(s) to Issuer (Check all applicable) <input type="checkbox"/> Director <input type="checkbox"/> 10% Owner <input checked="" type="checkbox"/> Officer (give title below) <input type="checkbox"/> Other (specify below) See Remarks	5. If Amendment, Date Original Filed(Month/Day/Year)
		6. Individual or Joint/Group Filing(Check Applicable Line) <input checked="" type="checkbox"/> Form filed by One Reporting Person <input type="checkbox"/> Form filed by More than One Reporting Person	

Table I - Non-Derivative Securities Beneficially Owned

1. Title of Security (Instr. 4)	2. Amount of Securities Beneficially Owned (Instr. 4)	3. Ownership Form: Direct (D) or Indirect (I) (Instr. 5)	4. Nature of Indirect Beneficial Ownership (Instr. 5)
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Reminder: Report on a separate line for each class of securities beneficially owned directly or indirectly.

SEC 1473 (7-02)

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Table II - Derivative Securities Beneficially Owned (e.g., puts, calls, warrants, options, convertible securities)

1. Title of Derivative Security (Instr. 4)	2. Date Exercisable and Expiration Date (Month/Day/Year)		3. Title and Amount of Securities Underlying Derivative Security (Instr. 4)		4. Conversion or Exercise Price of Derivative Security	5. Ownership Form of Derivative Security: Direct (D) or Indirect (I) (Instr. 5)	6. Nature of Indirect Beneficial Ownership (Instr. 5)
	Date Exercisable	Expiration Date	Title	Amount or Number of Shares			
Stock Option (right to buy) (1)	(2)	03/09/2020	Common Stock	54,136	\$ 0.42	D	
Stock Option (right to buy) (1)	(3)	07/12/2021	Common Stock	32,038	\$ 0.71	D	
Stock Option (right to buy) (1)	(4)	07/10/2022	Common Stock	12,089	\$ 0.71	D	
Stock Option (right to buy) (1)	(5)	11/19/2024	Common Stock	78,069	\$ 1.27	D	

Reporting Owners

Reporting Owner Name / Address	Relationships			
	Director	10% Owner	Officer	Other
Kim Jason S. C/O MOLECULAR TEMPLATES, INC. 9301 AMBERGLEN BLVD., SUITE 100 AUSTIN, TX 78729			See Remarks	

Signatures

/s/ Jason S. Kim	08/11/2017
**Signature of Reporting Person	Date

Explanation of Responses:

* If the form is filed by more than one reporting person, see Instruction 5(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).

Shares of common stock of the corporation then known as Molecular Templates, Inc. ("Old Molecular") were converted into shares of the Issuer pursuant to that certain

- (1) Agreement and Plan of Merger and Reorganization, dated as of March 16, 2017, by and among the Issuer, Trojan Merger Sub, Inc. and Old Molecular (the "Merger Agreement"). Pursuant to the terms of the Merger Agreement, each share of common stock was exchanged for 7.7844 shares of the Issuer's common stock, which then underwent a reverse split of 11-to-1.

On March 9, 2010, Reporting Person was granted an option to purchase 76,500 shares of common stock of Old Molecular under the 2009 Stock Plan (the "Plan") at an exercise price of \$0.30 per share. Pursuant to the Merger Agreement, this option was converted into an option to purchase 54,136 shares of the Issuer's common stock at a per share exercise price of \$0.42. One fourth of the total number of shares subject to the option shall vest on the one year anniversary of the Vesting Commencement Date, which is March 20, 2009 and, thereafter, one forty-eighth (1/48th) of the total number of Shares subject to the Option shall vest on the corresponding day of each month after such first anniversary, provided that at the relevant vesting dates the Reporting Person continues service to the Issuer and has not been terminated as defined in and as determined under the Plan. The option expires ten years after the date of the grant.

- (2) On July 12, 2011, Reporting Person was granted an option to purchase 45,273 shares of common stock of Old Molecular under the 2009 Stock Plan (the "Plan") at an exercise price of \$0.50 per share. Pursuant to the Merger Agreement, this option was converted into an option to purchase 32,038 shares of the Issuer's common stock at a per share exercise price of \$0.71. The shares subject to the option shall vest in 60 equal monthly installments beginning on the Vesting Commencement Date, which is July 12, 2011, provided that at the relevant vesting dates the Reporting Person continues service to the Issuer and has not been terminated as defined in and as determined under the Plan. The option expires ten years after the date of the grant.

- (3) On July 10, 2012, Reporting Person was granted an option to purchase 17,084 shares of common stock of Old Molecular under the 2009 Stock Plan (the "Plan") at an exercise price of \$0.50 per share. Pursuant to the Merger Agreement, this option was converted into an option to purchase 12,089 shares of the Issuer's common stock at a per share exercise price of \$0.71. The shares subject to the option shall vest in 60 equal monthly installments beginning on the Vesting Commencement Date, which is December 5, 2011, provided that at the relevant vesting dates the Reporting Person continues service to the Issuer and has not been terminated as defined in and as determined under the Plan. The option expires ten years after the date of the grant.

- (4) On November 19, 2014, Reporting Person was granted an option to purchase 110,319 shares of common stock of Old Molecular under the 2009 Stock Plan (the "Plan") at an exercise price of \$0.90 per share. Pursuant to the Merger Agreement, this option was converted into an option to purchase 78,069 shares of the Issuer's common stock at a per share exercise price of \$1.27. One fourth of the total number of shares subject to the option shall vest on the one year anniversary of the Vesting Commencement Date, which is September 19, 2013 and, thereafter, the remaining shares shall vest in 36 equal monthly installments, provided that at the relevant vesting dates the Reporting Person continues service to the Issuer and has not been terminated as defined in and as determined under the Plan. The option expires ten years after the date of the grant.

Remarks:

President, Chief Operating Officer and Principal Financial Officer

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

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