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

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**FORM S-8  
REGISTRATION STATEMENT**  
*UNDER  
THE SECURITIES ACT OF 1933*

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**Molecular Templates, Inc.**

(Exact name of registrant as specified in its charter)

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**Delaware**  
(State or other jurisdiction of  
incorporation or organization)

**94-3409596**  
(I.R.S. Employer  
Identification Number)

**9301 Amberglen Blvd, Suite 100  
Austin, Texas 78729  
(512) 869-1555**

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

**Molecular Templates, Inc. 2018 Equity Incentive Plan**  
(Full Title of the Plan)

**Eric E. Poma, Ph.D.**  
**Chief Executive Officer and Chief Scientific Officer**  
**Molecular Templates, Inc.**  
**9301 Amberglen Blvd, Suite 100**  
**Austin, Texas 78729**  
**(512) 869-1555**

(Name, address, including zip code, and telephone number, including area code, of agent for service)

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*Copies to:*

**William C. Hicks, Esq.**  
**Matthew J. Gardella, Esq.**  
**Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.**  
**One Financial Center**  
**Boston, Massachusetts 02111**  
**(617) 542-6000**

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Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer

Non-accelerated filer

Accelerated filer

Smaller reporting company

Emerging growth company

If an emerging growth company, indicated by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

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**CALCULATION OF REGISTRATION FEE**

Title of Securities to be Registered	Amount to be Registered(1)	Proposed Maximum Offering Price Per Share(2)	Proposed Maximum Aggregate Offering Price(2)	Amount of Registration Fee
Common Stock, par value \$0.001 per share	1,823,566	\$11.54	\$21,043,951.64	\$2,731.50

- (1) The number of shares of common stock, par value \$0.001 per share (“Common Stock”), of Molecular Templates, Inc. (the “Registrant”) stated above consists of additional shares of common stock available for issuance under the Molecular Templates, Inc. 2018 Equity Incentive Plan, as amended (the “2018 Plan”) by operation of the 2018 Plan’s “evergreen” provision. The maximum number of shares which may be sold upon the exercise of such options or issuance of stock-based awards granted under the 2018 Plan are subject to adjustment in accordance with certain anti-dilution and other provisions of the 2018 Plan. Accordingly, pursuant to Rule 413(a) under the Securities Act of 1933, as amended (the “Securities Act”), this Registration Statement covers, in addition to the number of shares stated above, an indeterminate number of shares which may be subject to grant or otherwise issuable after the operation of any such anti-dilution and other provisions.
- (2) Estimated solely for the purpose of calculating the amount of the registration fee pursuant to Rule 457(h) and Rule 457(c) promulgated under the Securities Act. The offering price per share and the aggregate offering price for shares reserved for future issuance under the 2018 Plan is based on the average of the high and the low price of Registrant’s Common Stock as reported on the Nasdaq Capital Market on March 12, 2020, a date within five business days prior to filing this Registration Statement.

## EXPLANATORY NOTE

This Registration Statement registers an aggregate of 1,823,566 additional shares of Common Stock reserved for issuance under the 2018 Plan, consisting of an increase of 1,823,566 shares reserved under the 2018 Plan effective January 1, 2020 by operation of the 2018 Plan's "evergreen" provision. This Registration Statement registers additional securities of the same class as other securities for which registration statements filed on Form S-8 (File No. 333-225826) and Form S-8 (File No. 333-230617) are effective. Pursuant to Instruction E of Form S-8, the information contained in the Registration Statements on Form S-8 filed with the Securities and Exchange Commission on [June 22, 2018](#), as amended on [August 3, 2018](#) (File No. 333-225826) and Form S-8 filed with the Securities and Exchange Commission on [March 29, 2019](#) (File No. 333-230617) is incorporated by reference herein.

### INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

#### **Item 8. Exhibits.**

#### **Exhibit Index**

<b><u>Exhibit Number</u></b>	<b><u>Item</u></b>
4.1	<a href="#">Amended and Restated Certificate of Incorporation of the Company, as subsequently amended (incorporated by reference to Exhibit 3.1 to the Company's Annual Report on Form 10-K (File No. 001-32979) filed on March 6, 2014).</a>
4.2	<a href="#">Certificate of Amendment of Amended and Restated Certificate of Incorporation of the Company, dated August 1, 2017 (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K (File No. 001-32979) filed with the Securities and Exchange Commission on August 1, 2017).</a>
4.3	<a href="#">Certificate of Amendment (Name Change) of Amended and Restated Certificate of Incorporation of the Company, dated August 1, 2017 (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K (File No. 001-32979) filed with the Securities and Exchange Commission on August 7, 2017).</a>
4.4	<a href="#">Certificate of Designation of Preferences, Rights and Limitations of Series A Convertible Preferred Stock, dated November 22, 2019 (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K (File No. 001-32979), filed on November 25, 2019).</a>
4.5	<a href="#">Amended and Restated Bylaws of the Registrant, as amended effective March 29, 2019 (incorporated by reference to Exhibit 3.4 to the Company's Annual Report on Form 10-K (File No. 001-32979) filed with the Securities and Exchange Commission on March 29, 2019).</a>
5.1*	<a href="#">Opinion of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.</a>
23.1*	<a href="#">Consent of Ernst &amp; Young LLP.</a>
23.2*	<a href="#">Consent of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. (contained in Exhibit 5.1 hereto).</a>
24.1*	<a href="#">Powers of Attorney (included in the signature page of this registration statement).</a>
99.1#	<a href="#">Molecular Templates, Inc. 2018 Equity Incentive Plan (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K (File No. 001-32979) filed with the Securities and Exchange Commission on June 1, 2018).</a>
99.2#	<a href="#">Form of Stock Option Grant Notice and Option Agreement for employees under the 2018 Equity Incentive Plan (incorporated by reference to Exhibit 4.6 to the Company's Registration Statement on Form S-8 (File No. 333-225826) filed with the Securities and Exchange Commission on June 22, 2018).</a>
99.3#	<a href="#">Form of Stock Option Grant Notice and Option Agreement for non-employee directors under the 2018 Equity Incentive Plan (incorporated by reference to Exhibit 4.7 to the Company's Registration Statement on Form S-8 (File No. 333-225826) filed with the Securities and Exchange Commission on June 22, 2018).</a>

\* Filed herewith.

# Indicates a management contract or compensatory plan.

## Signatures

Pursuant to the requirements of the Securities Act of 1933, as amended, the Registrant has duly caused this Registration Statement on Form S-8 to be signed on its behalf by the undersigned, thereunto duly authorized, in Austin, Texas on March 13, 2020.

### MOLECULAR TEMPLATES, INC.

By: /s/ Eric E. Poma, Ph.D.  
Eric E. Poma, Ph.D.

*Chief Executive Officer and Chief Scientific Officer*

## Power of Attorney

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Eric E. Poma, Ph.D., and Adam Cutler, and each of them acting individually, as his or her true and lawful attorneys-in-fact and agents, each with full power of substitution, for him or her in any and all capacities, to sign any and all amendments to this Registration Statement, including post-effective amendments or any abbreviated registration statement and any amendments thereto filed pursuant to Rule 462(b) increasing the number of securities for which registration is sought, and to file the same, with all exhibits thereto and other documents in connection therewith, with the SEC, granting unto said attorneys-in-fact and agents, with full power of each to act alone, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully for all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or his, her or their substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated.

Signature	Title	Date
<u>/s/ Eric E. Poma, Ph.D.</u> Eric E. Poma, Ph.D.	Chief Executive Officer and Chief Scientific Officer and Director (Principal Executive Officer)	March 13, 2020
<u>/s/ Adam Cutler</u> Adam Cutler	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	March 13, 2020
<u>/s/ Harold E. Selick, Ph.D.</u> Harold E. Selick, Ph.D.	Director	March 13, 2020
<u>/s/ Jonathan Lanfear</u> Jonathan Lanfear	Director	March 13, 2020
<u>/s/ David Hirsch, M.D., Ph.D.</u> David Hirsch, M.D., Ph.D.	Director	March 13, 2020
<u>/s/ David R. Hoffmann</u> David R. Hoffmann	Director	March 13, 2020

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/s/ Kevin M. Lalande  
Kevin M. Lalande

Director

March 13, 2020

/s/ Scott Morenstein  
Scott Morenstein

Director

March 13, 2020

/s/ Corazon "Corsee" Sanders, Ph.D.  
Corazon "Corsee" Sanders, Ph.D.

Director

March 13, 2020



One Financial Center  
Boston, MA 02111  
617-542-6000  
www.mintz.com

March 13, 2020

Molecular Templates, Inc.  
9301 Amberglen Blvd, Suite 100  
Austin, Texas 78729

Ladies and Gentlemen:

We have acted as legal counsel to Molecular Templates, Inc., a Delaware corporation (the “Company”), in connection with the preparation and filing with the Securities and Exchange Commission (the “Commission”) of a Registration Statement on Form S-8 (the “Registration Statement”), pursuant to which the Company is registering the issuance under the Securities Act of 1933, as amended (“Securities Act”), of an aggregate of 1,823,566 shares (the “Shares”) of the Company’s common stock, \$0.001 par value per share (“Common Stock”), in accordance with the terms of the Molecular Templates, Inc. 2018 Equity Incentive Plan (the “Plan”). This opinion is being rendered in connection with the filing of the Registration Statement with the Commission. All capitalized terms used herein and not otherwise defined shall have the respective meanings given to them in the Registration Statement.

In connection with this opinion, we have examined the Company’s Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws, each as currently in effect; such other records of the corporate proceedings of the Company and certificates of the Company’s officers as we have deemed relevant; and the Registration Statement and the exhibits thereto.

In our examination, we have assumed the genuineness of all signatures, the legal capacity of natural persons, the authenticity of all documents submitted to us as originals, the conformity to original documents of all documents submitted to us as copies, the authenticity of the originals of such copies, and the truth and correctness of any representations and warranties contained therein. In addition, we have assumed that the Company will receive any required consideration in accordance with the terms of the Plan.

Our opinion expressed herein is limited to the General Corporation Law of the State of Delaware and we express no opinion with respect to the laws of any other jurisdiction. No opinion is expressed herein with respect to the qualification of the Shares under the securities or blue sky laws of any state or any foreign jurisdiction.

Please note that we are opining only as to the matters expressly set forth herein, and no opinion should be inferred as to any other matters. This opinion is based upon currently existing statutes, rules, regulations and judicial decisions, and we disclaim any obligation to advise you of any change in any of these sources of law or subsequent legal or factual developments which might affect any matters or opinions set forth herein.

Based upon the foregoing, we are of the opinion that the Shares, when issued and delivered in accordance with the terms of the Plan, will be validly issued, fully paid and non-assessable.

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BOSTON LONDON LOS ANGELES NEW YORK SAN DIEGO SAN FRANCISCO WASHINGTON  
MINTZ, LEVIN, COHN, FERRIS, GLOVSKY AND POPEO, P.C.

March 13, 2020

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We understand that you wish to file this opinion with the Commission as an exhibit to the Registration Statement in accordance with the requirements of Item 601(b)(5) of Regulation S-K promulgated under the Securities Act, and we hereby consent thereto. In giving this consent, we do not admit that we are within the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission promulgated thereunder.

Very truly yours,

/s/ Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.

Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.

**Consent of Independent Registered Public Accounting Firm**

We consent to the incorporation by reference in the Registration Statement (Form S-8) pertaining to the 2018 Equity Incentive Plan of Molecular Templates, Inc. of our reports dated March 13, 2020, with respect to the consolidated financial statements of Molecular Templates, Inc. and the effectiveness of internal control over financial reporting of Molecular Templates, Inc. included in its Annual Report (Form 10-K) for the year ended December 31, 2019, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

Austin, Texas  
March 13, 2020