

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

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

RESPIRERX PHARMACEUTICALS INC.

(Exact name of registrant as specified in its charter)

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

33-0303583
*(I.R.S. Employer
Identification No.)*

126 Valley Road, Suite C
Glen Rock, New Jersey 07452
(Address of Principal Executive Offices)

Amended and Restated RespireRx Pharmaceuticals Inc. 2015 Stock and Stock Option Plan
(Full title of the plan)

Jeff E. Margolis
Senior Vice President, Chief Financial Officer, Treasurer, and Secretary
RespireRx Pharmaceuticals Inc.
126 Valley Road, Suite C
Glen Rock, New Jersey 07452
(Name and address of agent for service)
(201) 444-4947
(Telephone number, including area code, of agent for service)

Copies to:
Elizabeth A. Diffley
Faegre Drinker Biddle & Reath LLP
One Logan Square, Suite 2000
Philadelphia, Pennsylvania 19103

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 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	[]	Accelerated filer	[]
Non-accelerated filer	[X]	Smaller reporting company	[X]
		Emerging Growth company	[]

If an emerging growth company, indicate 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. []

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(2)
Common Stock, \$0.001 par value	7,000,000 shares	\$ 0.0225	\$ 157,500	\$ 17.18

(1) The number of shares of common stock, par value \$0.001 per share (“Common Stock”), of RespireRx Pharmaceuticals Inc. (the “Company”), stated above consists of additional shares of Common Stock reserved under the Amended and Restated RespireRx Pharmaceuticals Inc. 2015 Stock and Stock Option Plan (the “2015 Plan”) pursuant to the amendments thereto. Pursuant to Rule 416(a) under the Securities Act of 1933 (as amended, the “Securities Act”), the shares being registered hereunder include such indeterminate number of shares of the Company’s Common Stock as may be issued from time to time with respect to the shares being registered hereunder as a result of stock splits, stock dividends or similar transactions.

(2) Estimated solely for the purpose of calculating the registration fee, in accordance with Rule 457(h)(1) under the Securities Act, on the basis of the price of securities of the same class, as determined in accordance with Rule 457(c) under the Securities Act, using the average of the high and low prices reported by the OTCQB for our Common Stock on July 28, 2021, which was \$0.0225 per share.



EXPLANATORY NOTE UNDER GENERAL INSTRUCTION E

This Registration Statement on Form S-8 is being filed pursuant to General Instruction E to Form S-8 under the Securities Act of 1933, as amended, and consists only of those items required by General Instruction E. This Registration Statement is being filed for the purpose of registering an additional 7,000,000 shares of common stock, \$0.001 par value ("Common Stock"), of RespireRx Pharmaceuticals Inc. (the "Company") that may be offered pursuant to the Amended and Restated RespireRx Pharmaceuticals Inc. 2015 Stock and Stock Option Plan, as amended (the "2015 Plan").

The contents of the Company's previously filed Registration Statement on Form S-8 filed with the Securities and Exchange Commission on September 15, 2020 (Registration No. 333-248816) (the "2020 Form S-8") is hereby incorporated herein by reference to the extent not otherwise amended or superseded by the contents hereof.

PART II
INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Upon the filing of the 2020 Form S-8 on September 15, 2020, 158,985,260 shares of Common Stock were authorized to be issued under the 2015 Plan. Of the shares authorized for issuance under the 2015 Plan, the issuance of 158,957,369 shares in the aggregate were registered pursuant to the Company's Registration Statement on Form S-8 filed on November 13, 2015, the Company's Registration Statement on Form S-8 filed on May 18, 2016, and the 2020 Form S-8 (together, the "Previous Forms S-8"). On January 5, 2021, the Company effectuated a 10-to-1 reverse stock split (the "Reverse Stock Split") pursuant to the Sixth Certificate of Amendment of the Second Restated Certificate of Incorporation of RespireRx Pharmaceuticals Inc. (the "Charter Amendment"), which effectively reduced the shares authorized to be issued under the 2015 Plan from 158,985,260 to 15,898,526, and effectively reduced the number of those authorized shares covered by the Previous Forms S-8 from 158,957,369 to 15,895,736. The Charter Amendment is attached hereto as Exhibit 4.7 to this Registration Statement on Form S-8.

On July 29, 2021, the Board of Directors of the Company (the "Board") increased the number of shares authorized under the 2015 Plan by 7,000,000, bringing the total shares authorized to be issued under the 2015 Plan to 22,898,526. The amendment to the 2015 Plan by which this authorized share increase was effected (the "Plan Amendment") is attached hereto as Exhibit 4.16 to this Registration Statement on Form S-8.

This Registration Statement on Form S-8 covers 7,000,000 shares of Common Stock, the number of shares authorized to be issued under the 2015 Plan pursuant to the increase effected by the Plan Amendment.

The Company has not submitted, and does not intend to submit, the 2015 Plan for stockholder approval. 32,799 shares (as adjusted for the Reverse Stock Split) have been issued under the 2015 Plan, with an additional 7,109,168 shares potentially to be issued in connection with outstanding granted options. Currently, 15,756,559 shares unrelated to outstanding options remain available for issuance under the 2015 Plan. This Registration Statement on Form S-8 covers 7,000,000 of the 22,865,727 shares that remain issuable under the 2015 Plan, either as unissued shares or as unissued shares potentially to be issued in connection with outstanding options. The 7,000,000 shares covered by this Registration Statement on Form S-8 are in addition to the 15,865,727 shares (as adjusted for the Reverse Stock Split) that remain issuable under the 2015 Plan that were registered on the Previous Forms S-8.

Item 5. Interests of Named Experts and Counsel.

The validity of the issuance of Common Stock registered hereby is passed on for the Company by its outside counsel, Faegre Drinker Biddle & Reath LLP. In January 2017, the Company issued options to purchase 1,000 shares of its Common Stock under the 2015 Plan to Faegre Drinker Biddle & Reath LLP, as partial payment for services previously provided and invoiced. The options expire on January 17, 2022 and have an exercise price of \$39.00 per share.

Item 8. Exhibits.

A list of the exhibits required to be filed as a part of this Registration Statement on Form S-8 is set forth in the Exhibit Index, which follows, and is incorporated herein by reference.

EXHIBIT INDEX

Exhibit Number	Description
4.1	<u>Second Restated Certificate of Incorporation dated May 19, 2010, incorporated by reference to the same numbered Exhibit to the Company's Current Report on Form 8-K filed May 24, 2010 (File no. 001-16467).</u>
4.2	<u>Certificate of Amendment of the (Second Restated) Certificate of Incorporation of Cortex Pharmaceuticals, Inc., incorporated by reference to Exhibit 3.2 to the Company's Current Report on Form 8-K filed on April 18, 2014 (File no. 001-16467).</u>
4.3	<u>Second Certificate of Amendment of the (Second Restated) Certificate of Incorporation of Cortex Pharmaceuticals, Inc., incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K filed December 17, 2015 (File no. 001-16467).</u>
4.4	<u>Third Certificate of Amendment of the Second Restated Certificate of Incorporation of RespireRx Pharmaceuticals Inc., incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K filed September 1, 2016 (File no. 001-16467).</u>
4.5	<u>Fourth Certificate of Amendment of Second Restated Certificate of Incorporation of RespireRx Pharmaceuticals Inc. (incorporated by reference to Exhibit 3.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on May 6, 2020).</u>
4.6	<u>Fifth Certificate of Amendment of Second Restated Certificate of Incorporation of RespireRx Pharmaceuticals Inc. (incorporated by reference to Exhibit 3.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on November 25, 2020).</u>
4.7	<u>Sixth Certificate of Amendment of Second Restated Certificate of Incorporation of RespireRx Pharmaceuticals Inc. (incorporated by reference to Exhibit 3.1 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on January 5, 2021).</u>
4.8	<u>By-Laws of the Company, as adopted March 4, 1987, and amended on October 8, 1996, incorporated by reference to Exhibit 3.2 to the Company's Annual Report on Form 10-KSB filed October 15, 1996 (File no. 001-17951).</u>
4.9	<u>Certificate of Amendment of By-Laws of the Company, incorporated by reference to Exhibit 3.5 to the Company's Report on Form 8-K filed November 15, 2007. (File no. 001-16467)</u>
4.10	<u>Amended and Restated RespireRx Pharmaceuticals Inc. 2015 Stock and Stock Option Plan (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K (file no. 001-16467) filed on April 6, 2016).</u>
4.11	<u>First Amendment of the Amended and Restated RespireRx Pharmaceuticals, Inc. 2015 Stock and Stock Option Plan (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K (file no. 001-16467) filed on January 23, 2017).</u>
4.12	<u>Second Amendment of the Amended and Restated RespireRx Pharmaceuticals Inc. 2015 Stock and Stock Option Plan (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K (file no. 001-16467) filed on December 14, 2017).</u>
4.13	<u>Third Amendment of the Amended and Restated RespireRx Pharmaceuticals Inc. 2015 Stock and Stock Option Plan (incorporated by reference to Exhibit 99.4 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on January 4, 2019).</u>
4.14	<u>Fourth Amendment of Amended and Restated RespireRx Pharmaceuticals Inc. 2015 Stock and Stock Option Plan (incorporated by reference to Exhibit 99.7 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on May 6, 2020).</u>
4.15	<u>Fifth Amendment of Amended and Restated RespireRx Pharmaceuticals Inc. 2015 Stock and Stock Option Plan (incorporated by reference to Exhibit 99.14 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on August 3, 2020).</u>
4.16	<u>Sixth Amendment of Amended and Restated RespireRx Pharmaceuticals Inc. 2015 Stock and Stock Option Plan (incorporated by reference to Exhibit 99.8 of the Company's Current Report on Form 8-K (file no. 001-16467) filed on July 30, 2021).</u>
5.1*	<u>Opinion of Faegre Drinker Biddle & Reath LLP.</u>
23.1*	<u>Consent of Faegre Drinker Biddle & Reath LLP (included in Exhibit 5.1).</u>
23.2*	<u>Consent of Haskell & White LLP, independent registered public accounting firm.</u>
24.1*	<u>Power of Attorney (included on the signature page to this registration statement on Form S-8).</u>

* Filed herewith

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Bridgehampton, State of New York, on the 30th day of July, 2021.

RESPIRERX PHARMACEUTICALS INC.

By: /s/ Jeff Eliot Margolis

Jeff Eliot Margolis

Senior Vice President, Chief Financial Officer, Treasurer and Secretary

POWER OF ATTORNEY

We, the undersigned directors and officers of RespireRx Pharmaceuticals Inc., do hereby make, constitute and appoint Timothy Jones, President and Chief Executive Officer and Director and Jeff E. Margolis, Senior Vice President, Chief Financial Officer, Treasurer and Secretary and Director and each of them acting individually, our true and lawful attorneys-in-fact and agents, with power to act without any other and with full power of substitution, to do any and all acts and things in our name and behalf in our capacities as directors and officers, to sign any and all amendments (including post-effective amendments) to this registration statement, or any related registration statement that is to be effective upon filing under the Securities Act of 1933, as amended, and to file the same, with exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite or necessary to be done in and about the premises, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that each of said attorneys-in-fact and agents, or his or her substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, as amended, this registration statement has been signed by the following persons in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Timothy Jones</u> Timothy Jones	<i>President and Chief Executive Officer and Director</i>	July 30, 2021
<u>/s/ Arnold S. Lippa, Ph.D.</u> Arnold S. Lippa Ph.D.	<i>Chief Scientific Officer and Director and Executive Chairman of the Board</i>	July 30, 2021
<u>/s/ Jeff E. Margolis</u> Jeff E. Margolis	<i>Senior Vice President, Chief Financial Officer, Secretary and Treasurer and Director</i>	July 30, 2021
<u>/s/ Kathryn MacFarlane</u> Kathryn MacFarlane	<i>Director</i>	July 30, 2021

July 30, 2021

RespireRx Pharmaceuticals Inc.
126 Valley Road, Suite C
Glen Rock, New Jersey 07452

**Re: Registration Statement on Form S-8
Amended and Restated RespireRx Pharmaceuticals Inc. 2015 Stock and Stock Option Plan**

Ladies and Gentlemen:

We have acted as counsel to RespireRx Pharmaceuticals 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") by the Company under the Securities Act of 1933, as amended (the "Act"). The Registration Statement relates to 7,000,000 shares (the "Shares") of the Company's common stock, par value \$0.001 per share (the "Common Stock") issuable pursuant to the Amended and Restated RespireRx Pharmaceuticals Inc. 2015 Stock and Stock Option Plan, as amended (the "2015 Plan").

For purposes of this opinion letter, we have examined the Second Restated Certificate of Incorporation and By-Laws of the Company, each as currently in effect, the Registration Statement, the 2015 Plan, and the resolutions of the board of directors of the Company (the "Board") relating to the 2015 Plan and the issuance of the Shares. We have also examined a certificate of the Secretary of the Company dated the date hereof (the "Certificate") and originals, or copies certified or otherwise authenticated to our satisfaction, of such corporate records and other records, agreements, instruments, certificates of public officials and documents as we have deemed necessary as a basis for the opinions hereinafter expressed and have reviewed such matters of law as we have deemed relevant hereto. As to all issues of fact material to this opinion letter, we have relied on certificates, statements or representations of public officials, of officers and representatives of the Company (including the Certificate) and of others, without any independent verification thereof.

In our examination, we have assumed: (i) the legal capacity of all natural persons; (ii) the genuineness of all signatures; (iii) the authenticity of all documents submitted to us as originals; (iv) the conformity to original documents of all documents submitted to us as copies; (v) the authenticity of the originals of such latter documents; (vi) the truth, accuracy and completeness of the information, representations and warranties contained in the agreements, documents, instruments, certificates and records we have reviewed; and (vii) the absence of any undisclosed modifications to the agreements and instruments reviewed by us.

Based upon such examination and review, and subject to the foregoing and the other qualifications, assumptions and limitations set forth herein, it is our opinion that the Shares have been duly authorized for issuance, and when (a) the Shares have been issued and delivered in accordance with the 2015 Plan and the terms of the applicable awards granted thereunder, and (b) where applicable, the consideration therefor specified in the 2015 Plan and in the applicable awards granted thereunder has been received by the Company, the Shares will be legally and validly issued, fully paid and nonassessable.

The foregoing opinion is limited to the General Corporation Law of the State of Delaware.

This opinion speaks only as of the date the Registration Statement becomes effective under the Act, and we assume no obligation to revise or supplement this opinion thereafter. This opinion is limited to the specific issues addressed herein, and no opinion may be inferred or implied beyond that expressly stated herein.

We hereby consent to the filing of this opinion as an exhibit to the Registration Statement. In giving such consent, we do not thereby admit that we are in the category of persons whose consent is required under Section 7 of the Act or the rules and regulations of the Commission thereunder.

Very truly yours,

FAEGRE DRINKER BIDDLE & REATH LLP

By: /s/ Elizabeth A. Diffley

Elizabeth A. Diffley

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the Registration Statement on Form S-8 of RespireRx Pharmaceuticals Inc. (the “Company”), pertaining to its 2015 Stock and Stock Option Plan (as amended), of our report dated April 15, 2021, relating to our audit of the Company’s consolidated financial statements as of December 31, 2020 and 2019 and for each of the years then ended, included in the Company’s Annual Report on Form 10-K for the year ended December 31, 2020.

Our report dated April 15, 2021 contains an explanatory paragraph that states the Company has experienced recurring losses, negative cash flows from operations, has limited capital resources, and a net stockholders’ deficiency. These matters raise substantial doubt about the Company’s ability to continue as a going concern.

HASKELL & WHITE LLP

/s/ HASKELL & WHITE LLP

Irvine, California
July 30, 2021
