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

SCHEDULE 14A

**Proxy Statement Pursuant to Section 14(a) of the Securities
Exchange Act of 1934 (Amendment No. __)**

Check the appropriate box:

- Preliminary Proxy Statement
 Confidential, for Use of the Commission Only (as permitted by Rule 14a-6(e)(2))
 Definitive Proxy Statement
 Definitive Additional Materials
 Soliciting Material Pursuant to §240.14a-12

RESPIRERX PHARMACEUTICALS INC.

(Name of Registrant As Specified In Its Charter)

Payment of Filing Fee (Check the appropriate box):

- No fee required
 Fee computed on table below per Exchange Act Rules 14a-6(i)(1) and 0-11

(1) Title of each class of securities to which transaction applies:

(2) Aggregate number of securities to which transaction applies:

(3) Per unit price or other underlying value of transaction computed pursuant to Exchange Act Rule 0-11 (set forth the amount on which the filing fee is calculated and state how it was determined):

(4) Proposed maximum aggregate value of transaction:

(5) Total fee paid:

- Fee paid previously with preliminary materials.
 Check box if any part of the fee is offset as provided by Exchange Act Rule 0-11(a)(2) and identify the filing for which the offsetting fee was paid previously. Identify the previous filing by registration statement number, or the Form or Schedule and the date of its filing.

(1) Amount Previously Paid:

(2) Form, Schedule or Registration Statement No.:

(3) Filing Party:

(4) Date Filed:

PRELIMINARY PROXY STATEMENT—SUBJECT TO COMPLETION

**RESPIRERX PHARMACEUTICALS INC.
126 Valley Road, Suite C
Glen Rock, New Jersey 07452**

**NOTICE OF SPECIAL MEETING OF STOCKHOLDERS
To Be Held on August 16, 2016**

To the Stockholders of RespireRx Pharmaceuticals Inc.:

A Special Meeting of Stockholders of RespireRx Pharmaceuticals Inc. will be held at the New York offices of the Company's legal counsel, Drinker Biddle and Reath LLP, located at 1177 Avenue of the Americas, 41st Floor, New York, New York 10036-2714 on August 16, 2016 at 12:00 p.m., Eastern time, to approve an amendment to our second restated certificate of incorporation (i) to effect, at the discretion of our Board of Directors, a three hundred twenty five-to-one (325 to 1) reverse stock split of all of the outstanding shares of our common stock, par value \$0.001 per share, and (ii) to set the number of the company's authorized shares of stock at 70,000,000 shares consisting of 65,000,000 shares designated as common stock, par value \$0.001 per share, and 5,000,000 shares designated as preferred stock. Attached to this notice is a proxy statement setting forth information with respect to the proposal and certain other information.

The Board of Directors has established July 5, 2016 as the record date for the determination of stockholders entitled to notice of and to vote at the special meeting. For a period of 10 days prior to the special meeting, a complete list of stockholders of record entitled to vote at the special meeting will be available upon request from our corporate Secretary at 126 Valley Road, Suite C, Glen Rock, New Jersey 07452 for inspection by stockholders for proper purposes.

Registration will begin at 11:30 a.m., Eastern time. Please note that space limitations make it necessary to limit attendance at the meeting to stockholders. Please bring picture identification, such as a driver's license or passport, and if you hold your shares in brokerage accounts, a copy of a brokerage statement reflecting your stock ownership as of the record date. Please keep in mind that the use of cameras, recording devices, smart phones and other electronic devices is not permitted at the meeting and we will request that such devices be turned off.

This proxy statement and the accompanying form of proxy are being mailed to stockholders on or about July [●], 2016

By order of the Board of Directors,

Jeff E. Margolis
Vice President, Treasurer and Secretary

Dated: July [●], 2016

Important Notice Regarding the Availability of Proxy Materials for the Stockholder Meeting To Be Held on August 16, 2016. The notice of meeting and this proxy statement is available at www.respirerx.com.

PRELIMINARY PROXY STATEMENT—SUBJECT TO COMPLETION

**RESPIRERX PHARMACEUTICALS INC.
126 Valley Road, Suite C
Glen Rock, New Jersey 07452**

**PROXY STATEMENT
FOR
SPECIAL MEETING OF STOCKHOLDERS**

This proxy statement is furnished in connection with the solicitation of proxies by our Board of Directors for use at the Special Meeting of Stockholders of RespireRx Pharmaceuticals Inc., a Delaware corporation (the “Company,” “we,” “us” or “our”), to be held on August 16, 2016 or at any adjournment or postponement thereof, at the time and place and for the purposes specified in the accompanying notice of special meeting.

All properly delivered proxies pursuant to this solicitation, and not later revoked, will be voted at the special meeting in accordance with the instructions given in the proxy. When voting regarding the approval of the amendment to our second restated certificate of incorporation (i) to effect, at the discretion of our Board of Directors, a three hundred twenty five-to-one (325 to 1) reverse stock split of the outstanding shares of all of the outstanding shares of our common stock, par value \$0.001 per share, and (ii) to set the Company’s authorized shares of stock at 70,000,000 shares consisting of 65,000,000 shares designated as common stock, par value \$0.001 per share, and 5,000,000 shares designated as preferred stock, with stated value and other terms to be determined at the discretion of the Board of Directors (the “Proposal”), stockholders may vote for or against the Proposal or may abstain from voting. Stockholders should vote their shares on the proxy card we have provided. If no choice is indicated, proxies that are signed and returned will be voted for the Proposal.

All shares of our common stock represented by properly delivered and unrevoked proxies will be voted if such proxies are received in time for the meeting.

QUORUM, VOTE REQUIRED AND REVOCATION OF PROXIES

The Board of Directors has established July 5, 2016 as the record date for the determination of stockholders entitled to notice of and to vote at the special meeting. As of the record date, [●] shares of common stock and 37,500 of Series B Convertible Preferred Stock (“Series B Preferred”), which is non-voting, were outstanding. The Company previously had also issued Series G 1.5% Convertible Preferred Stock. All shares of Series G 1.5% Convertible Preferred Stock that had not been earlier converted were mandatorily redeemed by conversion according to the terms of the Series G into shares of the Company’s common stock on April 17, 2016, resulting in no shares of Series G 1.5% Convertible Preferred Stock outstanding as of the record date. The total of common stock mentioned above reflects the results of this conversion. Each share of common stock is entitled to one vote upon the Proposal. Based on the ownership of common stock as of the record date with respect to the special meeting, holders of the common stock are entitled to cast all of the votes entitled to be cast. The presence, in person or by proxy, of the holders of shares of capital stock entitled to cast a majority of the votes that could be cast at the special meeting by the holders of all outstanding shares of capital stock entitled to vote at the meeting is necessary to constitute a quorum.

The Proposal is subject to the approval of the holders of a majority in voting power of the outstanding common stock entitled to vote on the Proposal.

Brokers holding shares of our common stock must vote according to specific instructions they receive from the beneficial owners of those shares. If brokers do not receive specific instructions, they cannot vote on the Proposal. If you do not instruct your broker how to vote on the Proposal, your broker will not vote on your behalf.

Abstentions and broker non-votes are counted as present in determining whether the quorum requirement is satisfied. Because the Proposal requires the approval of the holders of a majority in voting power of the outstanding common stock, abstentions and broker non-votes will count as votes against the Proposal.

Any holder of our capital stock has the right to revoke his or her proxy at any time prior to the voting thereof at the special meeting by (1) filing a written revocation with the Secretary of the Company prior to the voting of such proxy, (2) giving a duly executed proxy bearing a later date, or (3) attending the special meeting and voting in person. Attendance by a stockholder at the special meeting will not itself revoke his or her proxy. If you hold your shares in the name of a bank, broker or other nominee, you should follow the instructions provided by your bank, broker or nominee in revoking your previously granted proxy.

COST AND METHOD OF PROXY SOLICITATION

The Company will bear the cost of the solicitation of proxies. In addition to solicitation by mail, our directors, officers and employees may solicit proxies from stockholders by telephone, facsimile or electronic mail (e-mail), or in person. We will supply banks, brokers, dealers and other custodian nominees and fiduciaries with proxy materials to enable them to send a copy of such material by mail to each beneficial owner of shares of our common stock that they hold of record and will, upon request, reimburse them for their reasonable expenses in doing so.

APPROVAL OF AMENDMENT OF RESTATED CERTIFICATE OF INCORPORATION TO EFFECT REVERSE STOCK SPLIT AND REVISE THE NUMBER OF AUTHORIZED SHARES

Amendment to Our Second Restated Certificate of Incorporation to Effect the Reverse Stock Split and Reduce Our Authorized Shares

Our Board of Directors has unanimously adopted a resolution declaring advisable, and recommending to our stockholders for their approval, an amendment to Article Fourth of our second restated certificate of incorporation (i) authorizing a three hundred twenty five-to-one (325 to 1) reverse stock split of the outstanding shares of our common stock (the "Reverse Stock Split"), (ii) restating the number of authorized shares of the Company to be 70,000,000 shares consisting of 65,000,000 shares designated as common stock, par value \$0.001 per share, and 5,000,000 shares designated as preferred stock, with stated value and other terms to be determined at the discretion of the Board of Directors, and (iii) granting the Board of Directors the discretion to file a certificate of amendment to our second restated certificate of incorporation with the Secretary of State of the State of Delaware effecting the Reverse Stock Split and restating the number of authorized shares or to abandon the Reverse Stock Split and the restatement of the number of authorized shares altogether. The form of the proposed amendment is attached to this proxy statement as Annex A (the "Proposed Amendment"). The Proposed Amendment will effect the Reverse Stock Split by reducing the number of outstanding shares of common stock to approximately one-three hundred and twenty fifth of the number of outstanding shares immediately prior to the effectiveness of the Reverse Stock Split, but will not increase the par value of common stock, and will change the number of authorized shares of our capital stock to be 70,000,000 shares consisting of 65,000,000 shares designated as common stock, par value \$0.001 per share, and 5,000,000 shares designated as preferred stock, with stated value and other terms to be determined at the discretion of the Board of Directors. If implemented, the number of shares of our common stock owned by each of our stockholders will be reduced by the same proportion as the reduction in the total number of shares of our common stock outstanding, so that the percentage of our outstanding common stock owned by each of our stockholders will remain approximately the same, except to the extent that the Reverse Stock Split could result in some or all of our stockholders receiving cash in lieu of any fractional shares.

Reasons for the Proposed Amendment

On the date of the mailing of this proxy statement, our common stock was quoted on the OTC QB under the symbol "RSPI".

Our Board of Directors has determined that the listing of our common stock on Nasdaq Capital Market or the NYSE MKT (formerly the American Stock Exchange) or some other national stock exchange in the United States (a "National Exchange") would be beneficial for our stockholders. The initial listing requirements of the Nasdaq Capital Market, for example, provide, among other things, that our common stock must maintain a closing bid price in excess of \$3.00 per share under certain circumstances. Continued listing requirements are somewhat less stringent. Our common stock has not maintained a bid price in excess of \$3.00 per share since October 2006. If our common stock is listed on a National Exchange, the Board of Directors believes that the trading market for our common stock could become significantly more liquid, which could further increase the trading price of our common stock and decrease the transaction costs of trading in shares of our common stock. However, there can be no assurance that this will occur.

The purpose of the Reverse Stock Split is to decrease the total number of shares of our common stock outstanding and increase the market price of our common stock. The Board of Directors intends to effect the Reverse Stock Split only if it believes that a decrease in the number of shares outstanding is in the best interests of the Company and our stockholders, and is likely to improve the trading price of our common stock and improve the likelihood that we will be able to list the Company on a National Exchange. There are other requirements to list on any National Exchange and the Reverse Split will not, in itself, permit us to list on such market or even guarantee that our stock price will increase and remain high enough to meet such requirement.

In addition, if the number of the Company's outstanding common shares is reduced dramatically as proposed by the Reverse Stock Split, the Company would no longer need the number of authorized shares currently provided in its charter. Moreover, the state franchise tax of the Company may be reduced by reducing the number of authorized shares. However, the Board of Directors has determined that reducing the number of authorized shares by the same ratio as the number of outstanding shares will be reduced by the Proposed Amendment would not permit the Company sufficient shares to support the issuance of equity capital by the Company in the future. Historically, the Company has issued shares to settle debt, in connection with acquisitions, to pay compensation to its officers, directors, consultants and advisors, and to secure additional capital. The Company may use its additional equity for any or all of these purposes, or other purposes, in the future. Accordingly, the Board of Directors has approved the reduction of authorized shares as set forth in the Proposed Amendment, which balances these two concerns, reducing the number of authorized shares substantially, while retaining a sufficient number of shares for the use by Company for those purposes described above.

If the Proposed Amendment is approved by our stockholders, the Board of Directors will have the discretion to implement the Proposed Amendment or to not effect the Proposed Amendment at all. The Board of Directors currently intends to effect the Proposed Amendment unless it determines that doing so would not have the desired effect of supporting the listing of our common stock on a National Exchange. Following the Proposed Amendment, if implemented, there can be no assurance that the market price of our common stock will rise in proportion to the reduction in the number of outstanding shares resulting from the Reverse Stock Split, or that we can maintain such price if obtained. It is also possible that other factors will prevent the listing of our common stock on a National Exchange.

The market price of our common stock is dependent upon our performance and other factors, some of which are unrelated to the number of shares outstanding. If the Reverse Stock Split is effected and the market price of our common stock declines, the percentage decline as an absolute number and as a percentage of our overall market capitalization may be substantially greater than would occur in the absence of the Reverse Stock Split. Furthermore, the reduced number of shares that will be outstanding after the Reverse Stock Split could significantly reduce the trading volume and otherwise adversely affect the trading market in and the liquidity of our common stock.

If our stockholders approve the Proposed Amendment at the special meeting, the Reverse Stock Split will be effected, if at all, only upon a determination by the Board of Directors that the Reverse Stock Split is in the best interests of the Company and its stockholders at that time. No further action on the part of the stockholders will be required to either effect or abandon the Reverse Stock Split. An appropriate announcement and/or a filing with the Securities and Exchange Commission will be made if and when the Board of Directors determines to effect the Reverse Stock Split. The Company will also be required to advise FINRA OTC Corporate Actions of such corporate action.

We have not proposed the Reverse Stock Split in response to any effort of which we are aware to accumulate our shares of common stock or to facilitate any party obtaining control of the Company, nor is it a plan by management to recommend a series of similar actions to our Board of Directors or our stockholders. Notwithstanding the decrease in the number of outstanding shares of common stock following the Proposed Amendment, our Board of Directors does not intend for this transaction to be the first step in a "going private transaction" within the meaning of Rule 13e-3 of the Securities Exchange Act of 1934 (the "Exchange Act"). In addition, we have not proposed the Proposed Amendment, with its decrease, but not proportional decrease, in the authorized and unissued number of shares of common stock, with the intention of using the additional shares for anti-takeover purposes, although we could theoretically use the additional shares to make more difficult or to discourage an attempt to acquire control of the Company. The primary purpose of the Reverse Stock Split is to facilitate the Company's listing on a National Exchange, which management and the Board of Directors believe will increase the Company's ability to raise additional equity capital to fund its operations and, in particular, its research and development programs, including its ongoing and planned clinical trials.

We do not believe that our officers or directors have interests in this proposal that are different from or greater than those of any other of our stockholders, other than permitting there to be as sufficient number of outstanding shares to continue to compensate our officers and directors in part with equity, as we have done in the past. Recently, the Company has put in place management contracts that provide for cash payments of compensation for our officers in the future, and the Company expects to continue to move toward a balance of cash and equity compensation. Other than due to the immaterial effects of the Company paying cash in lieu of issuing fractional shares, we believe that the percentage ownership by management will not change materially after effecting the Reverse Stock Split.

Effects of the Reverse Stock Split on Common Stock

Pursuant to the Reverse Stock Split, each holder of our common stock outstanding immediately prior to the effectiveness of the Proposed Amendment (“Old Common Stock”) will become the holder of fewer shares of our common stock (“New Common Stock”) after consummation of the Reverse Stock Split.

Although the Reverse Stock Split will not, by itself, impact our assets, operations or prospects, the Reverse Stock Split could result in a decrease in the aggregate market value of our common stock. The Board of Directors believes that this risk is outweighed by the benefits of a potential listing of our common stock on a National Exchange.

If effected, the Reverse Stock Split will result in some stockholders owning “odd-lots” of less than 100 shares of common stock. Brokerage commissions and other costs of transactions in odd-lots are generally higher than the costs of transactions in “round-lots” of even multiples of 100 shares.

Based on [●] shares of our common stock outstanding as of the record date, the following table reflects an estimate of the approximate number of shares of our common stock that would be outstanding as a result of the Reverse Stock Split.

Approximate Number of Shares of Common Stock Outstanding before the Reverse Stock Split	Proposed Ratio	Approximate Number of Shares of Common Stock to be Outstanding after the Reverse Stock Split
[●]	325:1 (Old Common Stock: New Common Stock)	[●]

The Reverse Stock Split will affect all stockholders equally and will not affect any stockholder’s proportionate equity interest in the Company, except with respect to those stockholders whose fractional shares will be mandatorily repurchased by the Company. None of the rights currently accruing to holders of our common stock will be affected by the Reverse Stock Split. Following the Reverse Stock Split, each share of New Common Stock will entitle the holder thereof to one vote per share and will otherwise be identical to Old Common Stock. The Reverse Stock Split, in itself, also will have no effect on the number of authorized shares of our common stock, but the Proposed Amendment will also adjust the number of authorized shares as set forth in the Proposed Amendment. The shares of New Common Stock will be fully paid and non-assessable.

We are currently authorized to issue a maximum of 1,400,000,000 shares of our common stock. As of the record date, there were [●] shares of our common stock issued and outstanding. The number of authorized shares of our common stock will change as a result of the Proposed Amendment, and the number of shares of our common stock issued and outstanding will be reduced substantially and at a higher ratio than the reduction of our authorized shares. As a result, the Proposed Amendment will effectively increase the number of authorized and unissued shares of our common stock available for future issuance. With respect to the number of shares reserved for issuance under our 2014 Equity, Equity-Linked and Equity Derivative Incentive Plan (the “2014 Plan”) and our 2015 Stock and Stock Option Plan (the “2015 Plan” and together with the 2014 Plan, the “Equity Plans”), our Board of Directors will proportionately reduce such reserve in accordance with the terms of the Plans. As of May 31, 2016, there were 40,633,002 shares of common stock reserved for issuance under the 2014 Plan, of which 20,551,702 remained available for future awards and 490,935,714 shares of common stock reserved for issuance under the 2015 Plan, of which 103,507,142 remained available for future awards. Following the Reverse Stock Split, if any, such reserve will be reduced to 125,024 shares of common stock, of which 63,236 will be available for future awards under the 2014 Plan, and 1,510,572 shares of common stock, of which 318,483 will be available for future awards under the 2015 Plan.

Following the Reverse Stock Split, the Board of Directors will have the authority, subject to applicable securities laws, to issue all authorized and unissued shares without further stockholder approval, upon such terms and conditions as the Board of Directors deems appropriate. We do not currently have any definitive or binding plans, proposals or understandings to issue the additional shares that would be available if the Reverse Stock Split is approved and effected. However, the Company continues to need capital to finance its future operations and business activities. We continue to consider and explore opportunities, and are in various stages of discussions with respect to potential transactions to raise new capital. The Company believes that it is likely that it will issue equity in the near future to obtain necessary capital. Additional financings based on debt, equity, some combination of debt and equity, or otherwise are likely in the future.

Effects of the Reverse Stock Split on Outstanding Stock Options and Warrants to Purchase Common Stock

If the Reverse Stock Split is effected, all outstanding stock options and warrants entitling their holders to purchase shares of our common stock will be proportionately reduced by our Board of Directors and/or by their terms in the same ratio as the reduction in the number of shares of outstanding common stock, except that any fractional shares resulting from such reduction will be rounded down to the nearest whole share to comply with the requirements of the Internal Revenue Code of 1986, as amended (the “Code”), Section 409A. Correspondingly, the per share exercise price of such stock options will be increased in direct proportion to the Reverse Stock Split ratio, so that the aggregate dollar amount payable for the purchase of the shares subject to the stock options and warrants will remain unchanged. For example, assuming that we effect the Reverse Stock Split and that an optionee holds stock options to purchase 975 shares of our common stock at an exercise price of \$1.00 per share, upon the effectiveness of the Reverse Stock Split, the number of shares of the common stock subject to that option would be reduced to 3 and the exercise price would be proportionately increased to \$325.00 per share. Holders of outstanding stock options and warrants to purchase shares of common stock do not have any rights of common stockholders, including voting rights, until such stock options or warrants are exercised and the underlying common shares are issued. Stock options and warrants to purchase shares of common stock do not have the right to receive cash under any circumstances.

Effects of the Reverse Stock Split on Preferred Stock

The Proposed Amendment will not change the number of authorized shares of Series B Preferred. As provided in the Certificate of Designation of our Series B Convertible Preferred Stock, included as Exhibit B in our second restated certificate of incorporation, the conversion rate of the Series B Preferred will automatically be adjusted to reflect the Reverse Stock Split.

Accounting Matters

The par value per share of the common stock will remain unchanged at \$0.001 per share after the Reverse Stock Split. As a result, on the effective date of the Reverse Stock Split, if any, the stated capital on our balance sheet attributable to the common stock will be reduced proportionately based on the three hundred twenty five-to-one (325 to 1) Reverse Stock Split ratio, from its present amount, and the additional paid-in capital account will be credited with the amount by which the stated capital is reduced. After the Reverse Stock Split, net income or loss per share and other per share amounts will be increased because there will be fewer shares of our common stock outstanding. In addition, other than as a result of paying cash in lieu of issuing fractional shares, the Reverse Stock Split will not impact the total amount of stockholder’s equity on the Company’s balance sheet. In future financial statements, net income or loss per share and other per share amounts for all periods ending before the Reverse Stock Split will be restated to give retroactive effect to the impact of the Reverse Stock Split.

As described above under “Effects of the Reverse Stock Split on Outstanding Stock Options and Warrants to Purchase Common Stock,” the per share exercise price of outstanding stock option awards and warrants would increase proportionately, and the number of shares of our common stock issuable upon the exercise of outstanding stock options and warrants would decrease proportionately, in each case based on the three hundred twenty five-to-one (325 to 1) Reverse Stock Split ratio. The Company does not anticipate that the Reverse Stock Split will have a material affect (other than those described above) on the Company’s results of operation, from a cash, revenue, expense or profitability perspective, or that any other accounting consequences would arise as a result of the Reverse Stock Split.

Shares of Common Stock Issued and Outstanding

With the exception of the number of shares issued and outstanding, the rights and preferences of the shares of our common stock prior and subsequent to the Reverse Stock Split will remain the same. After the effectiveness of the Reverse Stock Split, we do not anticipate that our financial condition, the percentage ownership of management, or any aspect of our business or operations would materially change as a result of the Reverse Stock Split. Any of our stockholders holding less than 325 shares of common stock will cease be a stockholder of the Company as a result of the payment of cash in lieu of issuing fractional shares.

Our common stock is currently registered under Section 12(b) of the Exchange Act, and as a result, we are subject to the periodic reporting and other requirements of the Exchange Act. If effected, the proposed Reverse Stock Split will not affect the registration of our common stock under the Exchange Act or our periodic or other reporting requirements thereunder.

Increase of Shares of Common Stock Available for Future Issuance

As a result of the Proposed Amendment, there will be a reduction in the number of shares of our common stock issued and outstanding, and a decrease, though not proportionate, in the number of authorized shares that would be unissued and available for future issuance after the Proposed Amendment is effected. Such shares could be used for any proper corporate purpose approved by the Board of Directors including, among other purposes, future financing transactions.

Holders of our common stock have no preemptive or other subscription rights.

Effectiveness of the Proposed Amendment

The Proposed Amendment, if approved by our stockholders, will become effective upon the filing with the Secretary of State of the State of Delaware of a certificate of amendment to our second restated certificate of incorporation, as amended, in substantially the form of the Proposed Amendment attached to this proxy statement as Annex A. The exact timing of the filing of the Proposed Amendment will be determined by the Board of Directors based upon its evaluation of when such action will be most advantageous to the Company and our stockholders. The Board of Directors reserves the right, notwithstanding stockholder approval and without further action by our stockholders, to elect not to proceed with the Proposed Amendment if, at any time prior to filing such Proposed Amendment, the Board of Directors, in its sole discretion, determines that it is no longer in the best interests of the Company and our stockholders. The Board of Directors currently intends to effect the Proposed Amendment unless it determines that doing so would not have the desired effect of supporting the listing of our common stock on a National Exchange.

Assuming the Proposed Amendment is approved by the stockholders, the Board of Directors intends to effect the amendment, or abandon it, within sixty days of the date of the Special Meeting.

Effect on Registered and Beneficial Stockholders

Upon the effectiveness of the Reverse Stock Split, the Company intends to treat stockholders holding shares of our common stock in “street name” (that is, held through a bank, broker or other nominee) in the same manner as stockholders of record whose shares of common stock are registered in their names. Banks, brokers or other nominees will be instructed to effect the Reverse Stock Split for their beneficial holders holding shares of our common stock in “street name;” however, these banks, brokers or other nominees may apply their own specific procedures for processing the Reverse Stock Split. If you hold your shares of our common stock with a bank, broker or other nominee, and have any questions in this regard, the Company encourages you to contact your nominee directly.

Effect on “Book-Entry” Stockholders of Record

The Company’s stockholders of record may hold some or all of their shares electronically in book-entry form. These stockholders will not have stock certificates evidencing their ownership of our common stock; however, they are provided with a statement reflecting the number of shares of common stock registered in their accounts.

If you hold registered shares of Old Common Stock in a book-entry form, you do not need to take any action to receive your shares of New Common Stock in registered book-entry form, if applicable. A transaction statement will automatically be sent to your address of record as soon as practicable after the effective time of the Reverse Stock Split indicating the number of shares of New Common Stock you hold, and, if applicable, payment with respect to any fractional shares will be deposited directly into your account with the organization holding your shares.

Effect on Registered Certificated Shares

Some stockholders of record hold their shares of our common stock in certificate form or a combination of certificate and book-entry form. If any of your shares of our common stock are held in certificate form, you will be sent a transmittal letter by the Company or the Company’s transfer agent as soon as practicable after the effective time of the Reverse Stock Split, if any. The transmittal letter will be accompanied by instructions specifying how to exchange your certificate representing the Old Common Stock for a statement of holding or a certificate of New Common Stock and, if applicable, payment with respect to any fractional shares, which will be made by check.

STOCKHOLDERS SHOULD NOT DESTROY ANY SHARE CERTIFICATE(S) AND SHOULD NOT SUBMIT ANY CERTIFICATE(S) UNTIL REQUESTED TO DO SO.

Fractional Shares

Fractional shares will not be issued in connection with the Reverse Stock Split. Any fractional shares resulting from the Reverse Stock Split will not be issued but will be paid out in cash (without interest or deduction) in an amount equal to the number of shares exchanged into such fractional share multiplied by the average closing trading price of our common stock on the OTC QB for the five trading days immediately before the certificate of amendment effecting the Reverse Share Split is filed with the Delaware Secretary of State.

If a stockholder who holds shares in certificated form is entitled to a payment in lieu of any fractional share interest, the stockholder will receive a check as soon as practicable after the effective time and after the stockholder has submitted an executed letter of transmittal and surrendered all stock certificates, as described above in “Effect on Registered Certificated Shares.” Stockholders who hold shares of common stock with a broker, bank or other nominee should contact their broker, bank or other nominee for information on the treatment and processing of fractional shares. By signing and cashing the check, stockholders will warrant that they owned the shares of common stock for which they received a cash payment. The cash payment is subject to applicable federal and state income tax and state abandoned property laws. Stockholders will not be entitled to receive interest for the period of time between the effective time and the date payment is received.

As a result of the Reverse Stock Split, holders of less than 325 shares of common stock would be eliminated as stockholders of the Company as a result of the payment of cash in lieu of issuing fractional shares.

Appraisal Rights

Under the Delaware General Corporation Law, our stockholders are not entitled to appraisal or dissenter's rights with respect to the Proposed Amendment, and we will not independently provide our stockholders with any such rights.

Certain Federal Income Tax Consequences

The following is a discussion of certain material U.S. federal income tax consequences of the Reverse Stock Split to U.S. holders (as defined below). This discussion is included for general information purposes only and does not purport to address all aspects of U.S. federal income tax law that may be relevant to U.S. holders in light of their particular circumstances. This discussion is based on the Code and current Treasury regulations, administrative rulings and court decisions, all of which are subject to change, possibly on a retroactive basis, and any such change could affect the continuing validity of this discussion.

STOCKHOLDERS ARE URGED TO CONSULT THEIR TAX ADVISORS AS TO THE PARTICULAR FEDERAL, STATE, LOCAL, OR FOREIGN TAX CONSEQUENCES TO THEM OF THE REVERSE STOCK SPLIT.

This discussion does not address tax consequences to stockholders that are subject to special tax rules, such as banks, insurance companies, regulated investment companies, personal holding companies, U.S. holders whose functional currency is not the U.S. dollar, partnerships (or other flow-through entities for U.S. federal income purposes and their partners or members), persons who acquired their shares in connection with employment or other performance of services, broker-dealers, foreign entities, nonresident alien individuals and tax-exempt entities. This summary also assumes that the Old Common Stock shares were, and the New Common stock shares will be, held as a "capital asset," as defined in Section 1221 of the Code.

As used herein, the term "U.S. holder" means a holder that is, for U.S. federal income tax purposes:

- an individual citizen or resident of the United States;
- a corporation or other entity taxed as a corporation created or organized in or under the laws of the United States or any political subdivision thereof;
- an estate the income of which is subject to U.S. federal income tax regardless of its source; or
- a trust (A) if a U.S. court is able to exercise primary supervision over the administration of the trust and one or more "U.S. persons" (as defined in the Code) have the authority to control all substantial decisions of the trust or (B) that has a valid election in effect to be treated as a U.S. person.

Other than with respect to any stockholder that receives cash in lieu of any fractional share, a stockholder generally will not recognize a gain or loss by reason of such stockholder's receipt of shares of New Common Stock pursuant to the Reverse Stock Split solely in exchange for shares of Old Common Stock held by such stockholder immediately prior to the Reverse Stock Split. A stockholder's aggregate tax basis in the shares of New Common Stock received pursuant to the Reverse Stock Split (including any fractional shares) will equal the stockholder's aggregate basis in the Old Common Stock exchanged therefore and will be allocated among the shares of New Common Stock received in the Reverse Stock Split on a pro-rata basis. Stockholders who have used the specific identification method to identify their basis in the shares of Old Common Stock held immediately prior to the Reverse Stock Split should consult their own tax advisers to determine their basis in the shares of New Common Stock received in exchange therefor in the Reverse Stock Split. A stockholder's holding period in the shares of New Common Stock received pursuant to the Reverse Stock Split will include the stockholder's holding period in the shares of Old Common Stock surrendered in exchange therefore, provided the shares of Old Common Stock surrendered are held as capital assets at the time of the Reverse Stock Split.

No gain or loss will be recognized by us for accounting or tax purposes as a result of the Reverse Stock Split.

This section does not address, and the Company makes no representations regarding, any state, local or foreign tax law consequences. As mentioned above, you are urged to consult your tax advisor regarding these potential tax consequences.

Vote Required and Board Recommendation

Approval of the foregoing proposal requires the affirmative vote of the holders of a majority in voting power of the common stock. Your board of directors recommends a vote “FOR” approval of the amendment of the second restated certificate of incorporation to effect the Proposed Amendment.

SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNER AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Beneficial Ownership of Common Stock

The following table sets forth certain information regarding the beneficial ownership of the Company’s common stock as of May 31, 2016, by (i) each person known by the Company to be the beneficial owner of more than 5% of the outstanding common stock, (ii) each of the Company’s directors, (iii) each of the Company’s named executive officers, and (iv) all of the Company’s executive officers and directors as a group. For purposes of this calculation, the Company has used the number of shares of common stock outstanding on May 31, 2016 of 648,767,561. Except as indicated in the footnotes to this table, the Company believes that the persons named in this table have sole voting and investment power with respect to the shares of common stock indicated. In computing the number and percentage ownership of shares beneficially owned by a person, shares of common stock that a person has a right to acquire within sixty (60) days of May 31, 2016 pursuant to stock options, warrants or other rights are considered as outstanding, while these shares are not considered as outstanding for computing the percentage ownership of any other person or group.

Directors, Officers and 5% Stockholders⁽¹⁾	Number of Shares of Beneficial Ownership of Common Stock	Percent of Class
Arnold Lippa Family Trust of 2007 ⁽²⁾	92,695,306	14.28%
Dariusz Nasiek ⁽³⁾ 55 Hardwick Lane Wayne, NJ 07470	69,148,014	10.43%
Ayer Special Situations Fund I, LP c/o Ayer Capital Management, LP 616 Corporate Way, Suite 2-4931 Valley Cottage, NJ 10989	40,216,312	6.20%
Jaideep Mehta ⁽⁴⁾ 4 Stillforest Street Houston, TX 77024	35,663,340	5.36%
Barton Asset Management LLC c/o KLH & Associates 135 Main Street, Suite 850 San Francisco, CA 94105	33,040,665	5.01%
DIRECTORS AND OFFICERS		
James S. Manuso, Ph.D. ⁽⁵⁾	111,543,337	15.14%
Arnold S. Lippa, Ph.D. ⁽⁶⁾	38,539,553	5.61%
Jeff E. Margolis ⁽⁷⁾	56,209,670	8.15%
Robert N. Weingarten ⁽⁸⁾	54,500,000	7.92%
James Sapirstein ⁽⁹⁾	11,250,000	1.71%
Kathryn MacFarlane ⁽¹⁰⁾	11,250,000	1.71%
Richard Purcell ⁽¹¹⁾	16,250,000	2.45%
All directors and officers as a group (six persons)	299,542,560	33.72%

- (1) Except as otherwise indicated, the address of such beneficial owner is c/o RespireRx Pharmaceuticals Inc., 126 Valley Road, Suite C, Glen Rock, New Jersey 07452.
- (2) Holdings include: (i) 92,006,072 shares of common stock, (ii) 194,403 shares of common stock owned by T. Morgen Capital LLC, an entity owned by the Trust, (as defined below), and (iii) 494,831 warrants to purchase shares of common owned by T. Morgen Capital LLC received as an owner of Aurora Capital LLC from the warrants Aurora received as a placement agent in various financings of the Company. All of these holdings were acquired by Dr. Arnold Lippa and subsequently transferred to the Arnold Lippa Family Trust of 2007 (the "Trust"), or are held by an entity owned by the Trust. Dr. Lippa is neither the trustee nor the beneficiary of the Trust. Linda Lippa, his wife, is a beneficiary of the Trust.
- (3) Dariusz J. Nasiek's holdings include (i) 54,826,568 shares of common stock, and (ii) warrants to purchase 14,321,446 shares of common stock. These holding are held individually by Dr. Nasiek or jointly with his spouse.
- (4) Jaideep Mehta's Holdings include (i) 19,020,448 shares of common stock, and (ii) warrants to purchase 16,642,892 shares of common stock. A portion of these shares and warrants are held (x) jointly with Dr. Mehta's spouse, and (y) by Mehta Ventures Corp., an entity that Dr. Mehta controls.
- (5) Dr. Manuso's holdings include: (i) 23,775,558 shares of common stock, (ii) options to acquire an additional 73,250,000 shares of common stock, (iii) 11,887,779 warrants to purchase shares of common stock, and (iv) 2,630,000 additional warrants to purchase shares of common stock.
- (6) Dr. Lippa's holdings include: (i) warrants to purchase 3,350,319 shares of common stock, (ii) stock options to acquire an additional 34,500,000 shares of common stock (iii) 194,403 shares of common stock owned by T. Morgen Capital LLC, an entity in which Dr. Lippa shares investment control, and (iv) 494,831 warrants to purchase shares of common owned by T. Morgen Capital LLC received as an owner of Aurora Capital LLC from the warrants Aurora received as a placement agent in various financings of the Company. Dr. Lippa has also transferred certain shares into family trusts, of which he is neither the trustee nor the beneficiary, including the Arnold Lippa Family Trust of 2007 as noted in footnote 2 above. The holdings of T. Morgen Capital LLC are also counted in footnote 2 above. In addition, Dr. Lippa has been awarded stock options to acquire an additional 5,000,000 shares of common stock which have been assigned to another family trust for the benefit of other family members. Dr. Lippa is neither the trustee nor the beneficiary of that trust.
- (7) Mr. Margolis's holdings include: (i) 15,134,944 shares of common stock, (ii) options to acquire an additional 39,500,000 shares of common stock, and (iii) the 1,574,726 warrants to purchase shares of common received as an owner of Aurora Capital LLC from the warrants Aurora received as a placement agent in the sale of the Company's Common Stock and Warrant Financing.
- (8) Mr. Weingarten's holdings include: (i) 15,000,000 shares of common stock, and (ii) options to acquire an additional 39,500,000 shares of common stock. Mr. Weingarten holds these shares of common stock and a portion of his stock options indirectly through Resource One Group LLC, an entity he controls.
- (9) Dr. Sapirstein's holdings include: (i) 2,000,000 shares of common stock, and (ii) stock options to acquire an additional 9,250,000 shares of common stock.
- (10) Dr. MacFarlane's holdings include: (i) 2,000,000 shares of common stock, and (ii) stock options to acquire an additional 9,250,000 shares of common stock.
- (11) Dr. Purcell's holdings include: (i) 2,000,000 shares of common stock, and (ii) stock options to acquire an additional 14,250,000 shares of common stock.

ADDITIONAL INFORMATION

Stockholder Proposals for the 2016 Annual Meeting

To be included in the proxy materials for the 2016 annual meeting, stockholder proposals that are submitted for presentation at that annual meeting and are otherwise eligible for inclusion in the proxy statement must be received by us a reasonable time before our next annual meeting. It is suggested that proponents submit their proposals by certified mail, return receipt requested.

Discretionary Voting of Proxies on Other Matters

Management does not intend to bring before the special meeting any matters other than those disclosed in the notice of special meeting of stockholders attached to this proxy statement, and it does not know of any business that persons other than management intend to present at the meeting. If any other matters are properly presented at the special meeting for action, the persons named in the form of proxy and acting thereunder generally will have discretion to vote on those matters in accordance with their best judgment.

Delivery of Documents to Security Holders Sharing an Address

The Company will deliver only one copy of this Proxy Statement to multiple stockholders sharing an address unless the Company has received contrary instructions from one or more of the stockholders. The Company undertakes to deliver promptly upon written or oral request a separate copy of the Proxy Statement to a stockholder at a shared address to which a single copy of the Proxy Statement is delivered. A stockholder can notify us that the stockholder wishes to receive a separate copy of the Proxy Statement by contacting the Company at: RespireRx Pharmaceuticals Inc., 126 Valley Road, Suite C, Glen Rock, New Jersey 07452, Attention: Corporate Secretary. If multiple stockholders sharing an address receive multiple Proxy Statements and wish to receive only one, such stockholders can notify the Company at the address set forth above.

**Third Certificate of Amendment
of
Second Restated Certificate of Incorporation
of
RespireRx Pharmaceuticals Inc.**

RespireRx Pharmaceuticals Inc. (the "Corporation"), a corporation organized and existing under the General Corporation Law of the State of Delaware (the "DGCL"), hereby adopts this Third Certificate of Amendment (this "Certificate of Amendment"), which amends its Second Restated Certificate of Incorporation (as amended by the Certificate of Designation filed March 14, 2014 and the Certificate of Amendment filed April 17, 2014 and the Second Certificate of Amendment filed December 16, 2015, the "Certificate of Incorporation"), as described below, and does hereby further certify that:

1. The Board of Directors of the Corporation duly adopted a resolution proposing and declaring advisable the amendment to the Certificate of Incorporation described herein, and the Corporation's stockholders duly adopted such amendment, all in accordance with the provisions of Section 242 of the DGCL.

2. Article Fourth of the Certificate of Incorporation is hereby amended by (i) amending and restating the first paragraph of such article in its entirety as follows:

FOURTH: (A)(1) - AUTHORIZED CAPITAL. The total number of shares of capital stock which the Corporation has the authority to issue is 70,000,000 consisting of 65,000,000 shares of Common Stock, \$0.001 par value per share (the "Common Stock"), and 5,000,000 shares of Preferred Stock, \$0.001 par value per share (the "Preferred Stock").

(ii) adding the following paragraph to succeed the first paragraph of such article and to precede the current second paragraph of such article:

(2) Effective as of the close of business, Eastern Time, on the date of filing of this Certificate of Amendment with the Secretary of State of the State of Delaware (the "Effective Time"), each three hundred twenty five (325) outstanding shares of the Corporation's Common Stock, par value \$0.001 per share, shall automatically and without any action on the part of the respective holders thereof be exchanged and combined into one (1) share of Common Stock, par value \$0.001 per share. No fractional shares shall be issued in connection with the exchange. Any fractional shares resulting from the reverse stock split will not be issued but will be paid out in cash (without interest or deduction) in an amount equal to the number of shares exchanged into such fractional share multiplied by the average closing trading price of our common stock on the OTC QB for the five trading days immediately before the Effective Time."

and (iii), changing the paragraph number at the beginning of the subsequent paragraph from "(2)" to "(3)".

3. All other provisions of the Certificate of Incorporation shall remain in full force and effect.

By: _____

Name: Jeff Margolis

Title: Vice President, Treasurer and Secretary

SPECIAL MEETING OF SHAREHOLDERS OF
RESPIRERX PHARMACEUTICALS INC.

August 16,
2016

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NOTICE OF INTERNET AVAILABILITY OF PROXY MATERIAL:

The Notice of Meeting, proxy statement and proxy card are available at – www.respirerx.com

Please sign, date and mail
your proxy card in the
envelope provided as soon
as possible.

↓ Please detach along perforated line and mail in the envelope provided. ↓

<p>THE BOARD OF DIRECTORS RECOMMENDS A VOTE "FOR" THE PROPOSED AMENDMENT IN PROPOSAL 1. PLEASE SIGN, DATE AND RETURN PROMPTLY IN THE ENCLOSED ENVELOPE. PLEASE MARK YOUR VOTE IN BLUE OR BLACK INK AS SHOWN HERE</p>	
	<p>FOR <input type="checkbox"/> AGAINST <input type="checkbox"/> ABSTAIN <input checked="" type="checkbox"/></p>
	<p>1. TO APPROVE AN AMENDMENT OF THE COMPANY'S RESTATED CERTIFICATE OF INCORPORATION (i) TO EFFECT, AT THE DISCRETION OF THE BOARD OF DIRECTORS, A THREE HUNDRED TWENTY FIVE-TO-ONE (325-TO-1) REVERSE STOCK SPLIT OF ALL OF THE COMPANY'S OUTSTANDING SHARES OF COMMON STOCK, PAR VALUE \$0.001 PER SHARE, AND (ii) SET THE COMPANY'S AUTHORIZED SHARES OF STOCK AT 70,000,000, WITH 65,000,000 DESIGNATED AS COMMON STOCK AND 5,000,000 DESIGNATED AS PREFERRED STOCK.</p>
	<p>In their discretion, the proxies are authorized to vote upon such other business as may properly come before the Special Meeting. This proxy when properly executed will be voted as directed herein by the undersigned shareholder. If no direction is made, this proxy will be voted FOR Proposal 1.</p>
	<p>MARK "X" HERE IF YOU PLAN TO ATTEND THE MEETING. <input type="checkbox"/></p>
<p>To change the address on your account, please check the box at right and indicate your new address in the address space above. Please note that changes to the registered name(s) on the account may not be submitted via this method. <input type="checkbox"/></p>	
Signature of Shareholder <input type="text"/>	Date: <input type="text"/>
Signature of Shareholder <input type="text"/>	Date: <input type="text"/>
<p>Note: Please sign exactly as your name or names appear on this Proxy. When shares are held jointly, each holder should sign. When signing as executor, administrator, attorney, trustee or guardian, please give full title as such. If the signer is a corporation, please sign full corporate name by duly authorized officer, giving full title as such. If signer is a partnership, please sign in partnership name by authorized person.</p>	

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**RESPIRERX
PHARMACEUTICALS
INC.**

**Proxy for Special Meeting of Shareholders on August 16,
2016**

Solicited on Behalf of the Board of Directors

The undersigned hereby appoints Jeff E. Margolis, Robert N. Weingarten and Arnold S. Lippa, and each of them, with full power of substitution and power to act alone, as proxies to vote all the shares of Common Stock which the undersigned would be entitled to vote if personally present and acting at the Special Meeting of Shareholders of RespireRx Pharmaceuticals Inc., to be held August 16, 2016 at 1177 Avenue of the Americas, 41st Floor, New York, New York 10036-2714, and at any adjournments or post-ponelements thereof, as follows:

(Continued and to be signed on the reverse side.)

■ ■

**SPECIAL MEETING OF SHAREHOLDERS OF
RESPIRERX PHARMACEUTICALS INC.
August 16, 2016**

PROXY VOTING INSTRUCTIONS

INTERNET - Access "www.voteproxy.com" and follow the on-screen instructions or scan the QR code with your smartphone. Have your proxy card available when you access the web page.



Vote online until 11:59 PM EST the day before the meeting.

MAIL - Sign, date and mail your proxy card in the envelope provided as soon as possible.

IN PERSON - You may vote your shares in person by attending the Annual Meeting.

GO GREEN - e-Consent makes it easy to go paperless. With e-Consent, you can quickly access your proxy material, statements and other eligible documents online, while reducing costs, clutter and paper waste. Enroll today via www.amstock.com to enjoy online access.

COMPANY NUMBER	
ACCOUNT NUMBER	

NOTICE OF INTERNET AVAILABILITY OF PROXY MATERIAL: The Notice of Meeting, proxy statement and proxy card are available at - www.respirerx.com

Please detach along perforated line and mail in the envelope provided IF you are not voting via telephone or the Internet.

THE BOARD OF DIRECTORS RECOMMENDS A VOTE "FOR" THE PROPOSED AMENDMENT IN PROPOSAL 1.
PLEASE SIGN, DATE AND RETURN PROMPTLY IN THE ENCLOSED ENVELOPE. PLEASE MARK YOUR VOTE IN BLUE OR BLACK INK AS SHOWN HERE

Address space for the shareholder.

1. TO APPROVE AN AMENDMENT OF THE COMPANY'S RESTATED CERTIFICATE OF INCORPORATION (i) TO EFFECT, AT THE DISCRETION OF THE BOARD OF DIRECTORS, A THREE HUNDRED TWENTY FIVE-TO-ONE (325-TO-1) REVERSE STOCK SPLIT OF ALL OF THE COMPANY'S OUTSTANDING SHARES OF COMMON STOCK, PAR VALUE \$0.001 PER SHARE, AND (ii) SET THE COMPANY'S AUTHORIZED SHARES OF STOCK AT 70,000,000, WITH 65,000,000 DESIGNATED AS COMMON STOCK AND 5,000,000 DESIGNATED AS PREFERRED STOCK.

FOR AGAINT ABSTAIN

In their discretion, the proxies are authorized to vote upon such other business as may properly come before the Special Meeting. This proxy when properly executed will be voted as directed herein by the undersigned shareholder. If no direction is made, this proxy will be voted Proposal 1.

To change the address on your account, please check the box at right and indicate your new address in the address space above. Please note that changes to the registered name(s) on the account may not be submitted via this method.

MARK "X" HERE IF YOU PLAN TO ATTEND THE MEETING.

Signature of Shareholder _____ Date: _____ Signature of Shareholder _____ Date: _____

Note: Please sign exactly as your name or names appear on this Proxy. When shares are held jointly, each holder should sign. When signing as executor, administrator, attorney, trustee or guardian, please give full title as such. If the signer is a corporation, please sign full corporate name by duly authorized officer, giving full title as such. If signer is a partnership, please sign in partnership name by authorized person.