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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM S-8

REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

PHIO PHARMACEUTICALS CORP.

(Exact Name of Registrant as Specified in the Charter)

Delaware

(State or other jurisdiction of incorporation or organization)

45-3215903

(I.R.S. Employer Identification No.)

257 Simarano Drive, Suite 101

Marlborough, MA

(Address of principal executive offices)

01752

(Zip Code)

Non-Plan Stock Compensation Election and Terms and Conditions

(Full title of the plan)

Gerrit Dispersyn, Dr. Med. Sc.
President & Chief Executive Officer
Phio Pharmaceuticals Corp.
257 Simarano Drive, Suite 101
Marlborough, Massachusetts 01752
(508) 767-3861

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

Copies to:

Ryan A. Murr
Gibson, Dunn & Crutcher LLP
555 Mission Street, Suite 3000
San Francisco, CA 94105
Telephone: (415)393-8373
Facsimile: (415) 374 - 8430

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, 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 (3)	Proposed Maximum Aggregate Offering Price (3)	Amount of Registration Fee
Common Stock, par value \$0.0001 per share ("Common Stock")	446,334(2)	\$0.4302	\$191,990.56	\$23.27

- Pursuant to Rule 416(a) under the Securities Act of 1933, as amended (the “Securities Act”), this Registration Statement also covers such additional shares of Common Stock as may be issued in respect of the securities registered by this Registration Statement as a result of any stock dividend, stock split, recapitalization or other similar transaction.
- This Registration Statement covers the resale of 446,334 shares of Common Stock that have been previously issued to Dr. Geert Cauwenbergh (the “Selling Stockholder”) in the form of restricted shares subject to time-based vesting conditions. Such shares were granted to the Selling Stockholder by Phio Pharmaceuticals Corp. (the “Company”) following the Selling Stockholder’s election to receive such shares in lieu of cash-based compensation for his services to the Company as its President and Chief Executive Officer. The Selling Stockholder’s election is memorialized in the Non-Stock Plan Compensation Election and Terms and Conditions, dated August 31, 2018, as amended by Amendment No. 1 to the Non-Plan Stock Compensation Election and Terms and Conditions, dated December 19, 2018, and Amendment No. 2 to the Non-Plan Stock Compensation Election and Terms and Conditions, dated February 14, 2019.
- Calculated pursuant to Rule 457(h) of the Securities Act solely for the purpose of computing the amount of the registration fee, on the basis of the average of the high and low prices of the Common Stock quoted on The Nasdaq Capital Market on March 20, 2019.

EXPLANATORY NOTE

Phio Pharmaceuticals Corp. (the “Company” or the “Registrant”) has prepared this Registration Statement on Form S-8 (the “Registration Statement”) in accordance with the requirements of Form S-8 under the Securities Act of 1933, as amended (the “Securities Act”), to register the resale of up to 446,334 shares (the “Shares”) of its Common Stock, par value \$0.0001 per share, issued prior to the filing of this Registration Statement and held by the Selling Stockholder named herein in connection with such Selling Stockholder’s provision of services to the Registrant.

This Registration Statement contains two parts. The first part contains a “reoffer” prospectus prepared in accordance with Part I of Form S-3 (in accordance with Instruction C of the General Instructions to Form S-8). The reoffer prospectus permits reoffers and resales of those shares referred to above that constitute “restricted securities,” within the meaning of Form S-8, by the Selling Stockholder named herein. The second part contains information required to be set forth in the Registration Statement pursuant to Part II of Form S-8. The Company will provide, without charge, to any person, upon written or oral request of such person, a copy of each document incorporated by reference in Item 3 of Part II of this Registration Statement (which documents are also incorporated by reference in the reoffer prospectus as set forth in Form S-8), other than exhibits to such documents that are not specifically incorporated by reference.

PROSPECTUS

**446,334 SHARES
PHIO PHARMACEUTICALS CORP.
COMMON STOCK**

This prospectus relates to 446,334 shares (the “Shares”) of common stock, par value \$0.0001 per share (the “Common Stock”) of Phio Pharmaceuticals Corp. (the “Company”) which may be offered from time to time by the Selling Stockholder of the Company, named herein, for such Selling Stockholder’s own account. We will not receive any proceeds from any sale of Common Stock offered pursuant to this prospectus.

The Selling Stockholder may offer and sell the Shares at various times and in various types of transactions, including sales in the open market, sales in negotiated transactions and sales by a combination of these methods. The Shares may be sold at the market price of the Common Stock at the time of a sale, at prices relating to the market price over a period of time, or at prices negotiated with the buyers of shares. The Shares may be sold through underwriters or dealers which the Selling Stockholder may select. If underwriters or dealers are used to sell the Shares, we will name them and describe their compensation in a prospectus supplement. For a description of the various methods by which the Selling Stockholder may offer and sell the Shares described in this prospectus, see the section entitled “Plan of Distribution.”

Our Common Stock is quoted on the Nasdaq Capital Market under the symbol “PHIO.” On March 26, 2019, the closing price of our Common stock was \$0.425.

Investing in our Common Stock involves risks. See the sections entitled “[Disclosure Regarding Forward-Looking Statements](#)” on page 2 and “[Risk Factors](#)” on page 2 of this prospectus to read about factors to consider in connection with purchasing our Common Stock.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved these securities, or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus is March 27, 2019

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THE COMPANY

Unless otherwise noted, (1) the term “Phio” refers to Phio Pharmaceuticals Corp. and our subsidiary, MirImmune, LLC and (2) the terms “Company,” “we,” “us” and “our” refer to the ongoing business operations of Phio and MirImmune, LLC, whether conducted through Phio or MirImmune, LLC.

Phio Pharmaceuticals Corp. is a biotechnology company developing the next generation of immuno-oncology therapeutics based on our self-delivering RNAi (“sd-rxRNA[®]”) therapeutic platform. The Company’s efforts are focused on developing sd-rxRNA therapeutic compounds to be used in the context of adoptive cell transfer by targeting checkpoints or other gene targets, or to be used in immunotherapy following intra-tumoral injections. We aim to maximize the power of our sd-rxRNA therapeutic compounds by weaponizing therapeutic immune effector cells to attack cancer, and to make tumors more susceptible to such attacks, and ultimately provide patients battling cancers with a powerful new treatment option that goes beyond current treatment modalities.

In January 2017, the Company entered into a Stock Purchase Agreement pursuant to which it acquired all of the issued and outstanding shares of capital stock of MirImmune Inc. (“MirImmune”) for an aggregate of 275,036 shares of common stock of the Company and 1,118,224 shares of the Company’s Series C Convertible Preferred Stock. With the approval of the Company’s stockholders at the 2017 Annual Meeting of Stockholders, every ten shares of the Series C Convertible Preferred Stock issued and outstanding were automatically converted into one share of common stock.

Prior to the Company’s acquisition of MirImmune, our principal activities consisted of the preclinical and clinical development of the Company’s sd-rxRNA compounds and topical immunotherapy agent in the areas of dermatology and ophthalmology. In January 2018, after a thorough review of its business operations, development programs and financial resources, the Company made a strategic decision to focus its efforts solely on immuno-oncology to accelerate growth and support a potential return on investment for its stockholders. In connection with this decision, the Company completed all open clinical trials in dermatology and ophthalmology with RXI-109, our first sd-rxRNA clinical candidate, and Samcyprone[®], and reported out on the results of those clinical studies in 2018. The Company intends to seek a partner and/or out-licensee for its dermatology program and its ophthalmology program to continue with their development. The Company’s current business strategy solely focuses on the development of immuno-oncology therapeutics utilizing our proprietary sd-rxRNA technology.

On November 19, 2018, the Company changed its name from RXi Pharmaceuticals Corporation to Phio Pharmaceuticals Corp., which reflects the Company’s transition from a platform company to one that is fully committed to develop groundbreaking immuno-oncology therapeutics.

Our development efforts are based on our broadly patented sd-rxRNA technology platform. Our sd-rxRNA compounds do not require a delivery vehicle to penetrate into tissues and cells and are designed to “silence,” or down-regulate, the expression of a specific gene that may be over-expressed in a disease condition. We believe that our sd-rxRNA platform uniquely positions the Company in the field of immuno-oncology because of this and for the following reasons:

- Our sd-rxRNA compounds not require facilitated delivery (mechanical or formulation);
- Can target multiple genes (i.e. multiple immunosuppression pathways) in a single therapeutic entity;
- Demonstrate efficient uptake of sd-rxRNA to immune cells;
- Silencing by sd-rxRNA has been shown to have a sustained, or long-term, effect *in vivo*;
- Favorable clinical safety profile of sd-rxRNA with local administration; and
- Can be readily manufactured under current good manufacturing practices.

We are incorporated in Delaware, and our principal executive offices are located at 257 Simarano Drive, Suite 101, Marlborough, Massachusetts 01752, and our telephone number is (508) 767-3861. Additional information regarding the Company is set forth in the Company’s Annual Report on Form 10-K for the fiscal year ended December 31, 2018 (which is incorporated herein by reference).

DISCLOSURE REGARDING FORWARD-LOOKING STATEMENTS

This report contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements can be identified by words such as “intends,” “believes,” “anticipates,” “indicates,” “plans,” “expects,” “suggests,” “may,” “should,” “potential,” “designed to,” “will” and similar references, although not all forward-looking statements contain these words. Forward-looking statements are neither historical facts nor assurances of future performance. These statements are based only on our current beliefs, expectations and assumptions regarding the future of our business, future plans and strategies, projections, anticipated events and trends, the economy and other future conditions. Because forward-looking statements relate to the future, they are subject to inherent uncertainties, risks and changes in circumstances that are difficult to predict and many of which are outside of our control. Our actual results and financial condition may differ materially from those indicated in the forward-looking statements as a result of a number of important factors, including those identified in this Registration Statement on Form S-8 under the heading “Risk Factors” and in other filings the Company periodically makes with the Securities and Exchange Commission. Therefore, you should not rely on any of these forward-looking statements. Forward-looking statements contained in this Registration Statement on Form S-8 speak as of the date hereof and the Company does not undertake to update any of these forward-looking statements to reflect a change in its views or events or circumstances that occur after the date of this report.

RISK FACTORS

Investing in our securities involves a high degree of risk. You should carefully consider the risks and uncertainties described in the documents incorporated herein by reference, as well as other information we include or incorporate by reference. Our business, financial condition or results of operations could be materially adversely affected by the materialization of any of these risks. The trading price of our securities could decline due to the materialization of any of these risks, and you may lose all or part of your investment. This prospectus and the documents incorporated herein by reference also contain forward-looking statements that involve risks and uncertainties. Actual results could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including the risks described under the headings “Risk Factors” in the documents incorporated herein by reference, including in our Annual Report on Form 10-K for the year ended December 31, 2018 and any risk factors set forth in our other filings with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, including our Quarterly Reports on Form 10-Q and our Current Reports on Form 8-K, before making an investment decision.

USE OF PROCEEDS

The proceeds from the sale of the shares offered pursuant to this prospectus are solely for the account of the Selling Stockholder. We will not receive any of the proceeds from any sale of shares by the Selling Stockholder.

SELLING STOCKHOLDER

The Common Stock being registered by this prospectus consists of 446,334 shares that are currently held by Dr. Geert Cauwenbergh, the Selling Stockholder, and were issued to the Selling Stockholder pursuant to a written compensation contract by and between the Company and the Selling Stockholder in connection with his service as the President and Chief Executive Officer of the Company.

We are registering these shares to permit the Selling Stockholder to resell these shares when he deems appropriate. The Selling Stockholder may resell all, a portion, or none of the shares, at any time and from time to time. The Selling Stockholder may also sell, transfer or otherwise dispose of some or all of the shares in transactions exempt from the registration requirements of the Securities Act. We do not know when or in what amounts the Selling Stockholders may offer the shares of common stock for sale under this prospectus.

The Selling Stockholder holds less than 5% of the Company’s outstanding common stock and is an affiliate of the Company. The Selling Stockholder has served as the President and Chief Executive Officer of the Company during the last three years. The following table sets forth: (i) the number and percentage of shares of our common stock that the Selling Stockholder beneficially owned as of March 1, 2019 prior to the offering for resale of the shares under this prospectus; (ii) the number of shares of our Common Stock that may be offered for resale for the account of the Selling Stockholder under this prospectus; and (iii) the number and percentage of shares of our Common Stock to be beneficially owned by the Selling Stockholder after the offering of the resale shares (assuming all of the offered resale shares are sold by such Selling Stockholder).

Selling Stockholder	Number of Shares Beneficially Owned Prior to Offering		Number of Shares Being Offered	Number of Shares Beneficially Owned After the Offering	
	Number	Percent		Number	Percent
Dr. Geert Cauwenbergh	502,862	2.41%	446,334	56,528	*

* Less than 1%

PLAN OF DISTRIBUTION

The purpose of this reoffer prospectus is to allow the Selling Stockholder to offer for sale and sell all or a portion of his shares acquired in connection with the provision of services to the Company. The Selling Stockholder may sell the shares of common stock registered pursuant to this reoffer prospectus directly to purchasers or through broker-dealers or agents, who may receive compensation in the form of discounts, concessions or commissions from the Selling Stockholder or the purchasers. These commissions as to any particular broker-dealer or agent may be in excess of those customary in the types of transactions involved. Neither we nor the Selling Stockholder can presently estimate the amount of this compensation.

The common stock offered under this reoffer prospectus may be sold in one or more transactions at fixed prices, at prevailing market prices at the time of sale, at prices related to the prevailing market prices, at varying prices determined at the time of sale, or at negotiated prices. These sales may be effected in transactions, which may involve block transactions, on any national securities exchange on which the Company's common stock may be then-listed.

The aggregate proceeds to the Selling Stockholder from the sale of the shares will be the purchase price of the common stock less discounts and commissions, if any. The Selling Stockholder reserves the right to accept and, together with his agents from time to time, to reject, in whole or in part, any proposed purchase of the shares to be made directly or through agents. We will not receive any of the proceeds from a sale of the shares by the Selling Stockholder.

The Selling Stockholder and any broker-dealers or agents that participate in the sale of the shares may be deemed to be "underwriters" under the Securities Act. Any discounts, commissions, concessions or profit they earn on any resale of the shares may be underwriting discounts and commissions under the Securities Act. If the Selling Stockholder is an "underwriter" under the Securities Act, the Selling Stockholder will be subject to the prospectus delivery requirements of the Securities Act.

The shares to be offered or resold by means of this reoffer prospectus by the Selling Stockholder may not exceed, during any three-month period, the amount specified in Rule 144(e) under the Securities Act. In addition, any securities covered by this reoffer prospectus which qualify for sale pursuant to Rule 144 of the Securities Act may be sold under Rule 144 of the Securities Act rather than pursuant to this reoffer prospectus.

There can be no assurance that the Selling Stockholder will sell any or all of the securities offered by them hereby.

LEGAL MATTERS

We are being represented by Gibson, Dunn & Crutcher LLP, who will pass upon the validity of the shares being offered by this prospectus.

EXPERTS

The consolidated financial statements as of December 31, 2018 and 2017 and for each of the two years in the period ended December 31, 2018 incorporated by reference in this Prospectus have been so incorporated in reliance on the report of BDO USA, LLP, an independent registered public accounting firm, incorporated herein by reference, given on the authority of said firm as experts in auditing and accounting.

PART I
INFORMATION REQUIRED IN THE SECTION 10(a) PROSPECTUS

Item 1. Plan Information

Information required by Part I to be contained in the Section 10(a) prospectus is omitted from this Registration Statement in accordance with Rule 428 under the Securities Act of 1933, as amended (the “Securities Act”), and the Note to Part I of Form S-8.

PART II
INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 3. Incorporation of Documents by Reference.

The following documents filed by Phio Pharmaceuticals Corp. (the “Registrant”) with the Securities and Exchange Commission are incorporated herein by reference:

- (1) the Registrant’s Annual Report on Form 10-K for the year ended December 31, 2018, filed with the SEC on March 27, 2019;
- (2) the Registrant’s Current Reports on Form 8-K, filed with the SEC on January 28, 2019 and February 15, 2019; and
- (3) the description of the Registrant’s Common Stock, par value \$0.0001 per share, which is contained in the Registrant’s registration statement on Form 8-A filed with the SEC under Section 12 of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), on February 7, 2014, including any amendments or reports filed for the purpose of updating such description.

All documents subsequently filed by the Registrant pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act prior to the filing of a post-effective amendment to this Registration Statement that indicates that all securities offered have been sold or which deregisters all securities then remaining unsold, shall be deemed to be incorporated herein by reference from the date of filing of such documents. Any statement contained herein or in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for purposes of this Registration Statement to the extent that a statement contained herein or in any subsequently filed document which also is incorporated or is deemed to be incorporated by reference herein modifies or supersedes such earlier statement. Any statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute part of this Registration Statement.

Item 4. Description of Securities.

Not applicable.

Item 5. Interests of Named Experts and Counsel.

Not applicable.

Item 6. Indemnification of Directors and Officers.

Section 145 of the Delaware General Corporation Law (the “DGCL”) provides that a corporation may indemnify any current or former director, officer or employee or other individual against expenses, judgments, fines and amounts paid in settlement in connection with civil, criminal, administrative or investigative actions or proceedings, other than a derivative action by or in the right of the corporation, if the director, officer, employee or other individual acted in good faith and in a manner he or she reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, if he or she had no reasonable cause to believe his or her conduct was unlawful. A similar standard is applicable in the case of derivative actions, except that indemnification extends only to expenses incurred in connection with the defense or settlement of such actions, and the statute requires court approval before there can be any indemnification where the person seeking indemnification has been found liable to the corporation. The statute provides that it is not exclusive of other indemnification that may be granted by a corporation’s by-laws, disinterested director vote, stockholder vote, agreement or otherwise.

Our certificate of incorporation provides that we will indemnify to the fullest extent authorized or permitted by the DGCL or any other applicable law as now or hereafter in effect any person made, or threatened to be made, a defendant or witness to any action, suit or proceeding (whether civil, criminal or otherwise) by reason of the fact that he is or was a director of our corporation or by reason of the fact that such director, at our request, is or was serving any other corporation, partnership, joint venture, trust, employee benefit plan or other enterprise in any capacity. Our certificate of incorporation also provides that no amendment or repeal of the certificate of incorporation will apply to or have any effect on any right to indemnification provided in the certificate of incorporation with respect to any acts or omissions occurring prior to such amendment or repeal.

As permitted by the DGCL, our bylaws, as amended, provide that we will indemnify to the fullest extent authorized or permitted by applicable law as now or hereafter in effect any person who was or is made, or is threatened to be made, a party or is otherwise involved in any action, suit or proceeding (whether civil, criminal, administrative or investigative), by reason of the fact that he (or a person for whom he is the legal representative) is or was a director or officer of our corporation, is or was serving at our request as a director, officer, employee, member, trustee or agent of another corporation or of a partnership, joint venture, trust, nonprofit entity or other enterprise.

Consequently, no director of the corporation will be personally liable to the corporation or its stockholders for monetary damages for any breach of fiduciary duty by such a director as a director. However, notwithstanding the preceding sentence, a director will be liable to the extent provided by Delaware law (1) for any breach of the director's duty of loyalty to the corporation or its stockholders, (2) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (3) for payments of unlawful dividends or for unlawful stock repurchases or redemption, or (4) for any transaction from which the director derived an improper personal benefit.

We have entered into indemnification agreements with each of our executive officers and directors. These agreements provide that, subject to limited exceptions and among other things, we will indemnify each of our executive officers and directors to the fullest extent permitted by law and advance expenses to each indemnitee in connection with any proceeding in which a right to indemnification is available.

We also maintain insurance on behalf of any person who is or was our director, officer, trustee, employee or agent or serving at our request as a director, officer, trustee, employee or agent of another corporation, partnership, joint venture, trust, non-profit entity or other enterprise against any liability asserted against the person and incurred by the person in any such capacity, or arising out of his or her status as such.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted for directors, officers, or persons who control us, we have been informed that, in the opinion of the SEC, such indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

Item 7. Exemption from Registration Claimed.

Not applicable.

Item 8. Exhibits.

See exhibits listed under Exhibit Index below.

Item 9. Undertakings.

(a) The undersigned Registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this Registration Statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the Registration Statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the Registration Statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20% change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the Registration Statement or any material change to such information in the Registration Statement;

provided, however, that paragraphs (a)(1)(i) and (a)(1)(ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the Registrant pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the Registration Statement;

(2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof; and

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(b) The undersigned Registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the Registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Exchange Act (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act) that is incorporated by reference in the Registration Statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(c) Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the Registrant pursuant to the foregoing provisions, or otherwise, the Registrant has been advised that in the opinion of the Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer or controlling person of the Registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

EXHIBIT INDEX

Exhibit No.	Description
4.1	Amended and Restated Certificate of Incorporation of the Company (incorporated by reference to Exhibit 3.2 of the Company's Current Report on Form 8-K filed on November 19, 2018)
4.2	Amended and Restated Bylaws of the Company (incorporated by reference to Exhibit 3.3 of the Company's Current Report on Form 8-K filed on November 19, 2018)
5.1	Opinion of counsel *
10.1	Non-Stock Plan Compensation Election and Terms and Conditions, dated August 31, 2018 (incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K filed on September 4, 2018)
10.2	Amendment No. 1 to the Non-Plan Stock Compensation Election and Terms and Conditions, dated December 19, 2018 (incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K filed on December 21, 2018)
10.3	Amendment No. 2 to the Non-Plan Stock Compensation Election and Terms and Conditions, dated February 14, 2019 (incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K filed on February 15, 2019)
23.1	Consent of Independent Registered Public Accounting Firm *
23.2	Consent of counsel (included in Exhibit 5.1)*
24	Power of Attorney (included on signature page)*

* Filed herewith

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the Registrant certifies that it has reasonable grounds to believe that it meets all 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 Marlborough, Massachusetts, on March 27, 2019.

PHIO PHARMACEUTICS CORP.

By: /s/Gerrit Dispersyn
Gerrit Dispersyn, Dr. Med. Sc.
President and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Gerrit Dispersyn, Dr. Med. Sc. as attorney-in-fact and agent, with full power of substitution and resubstitution, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this registration statement, and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorney-in-fact and agent, with full power 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 might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agent, or his substitute or substitutes, may do or cause to be done by virtue thereof.

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

Signature	Title	Date
<u>/s/Gerrit Dispersyn</u> Gerrit Dispersyn, Dr. Med. Sc.	President and Chief Executive Officer (Principal Executive Officer and Principal Financial Officer)	March 27, 2019
<u>/s/Caitlin Kontulis</u> Caitlin Kontulis	Vice President of Finance and Administration and Secretary (Principal Accounting Officer)	March 27, 2019
<u>/s/Robert J. Bitterman</u> Robert J. Bitterman	Director	March 27, 2019
<u>/s/Keith L. Brownlie</u> Keith L. Brownlie	Director	March 27, 2019
<u>/s/Geert Cauwenbergh</u> Geert Cauwenbergh, Dr. Med. Sc.	Director	March 27, 2019
<u>/s/H. Paul Dorman</u> H. Paul Dorman	Director	March 27, 2019
<u>/s/Jonathan Freeman</u> Jonathan E. Freeman, Ph.D.	Director	March 27, 2019
<u>/s/Curtis A. Lockshin</u> Curtis A. Lockshin, Ph.D.	Director	March 27, 2019

March 27, 2019

Phio Pharmaceuticals Corp.
257 Simarano Drive, Suite 101
Marlborough, MA

Re: Registration Statement on Form S-8

Ladies and Gentlemen:

We have examined the Registration Statement on Form S-8 (the "Registration Statement"), of Phio Pharmaceuticals Corp., a Delaware corporation (the "Company") to be filed with the Securities and Exchange Commission (the "Commission") pursuant to the Securities Act of 1933, as amended (the "Securities Act"), covering the resale of 446,334 shares of Common Stock that have been previously issued to Dr. Geert Cauwenbergh (the "Selling Stockholder") in the form of restricted shares subject to time-based vesting conditions pursuant to the Non-Stock Plan Compensation Election and Terms and Conditions, dated August 31, 2018, as amended on December 19, 2018 and February 14, 2019 (the "Plan").

We have examined the Plan and the originals, or photostatic or certified copies, of such records of the Company and certificates of officers of the Company and of public officials and such other documents as we have deemed relevant and necessary as the basis for the opinions set forth below. We have also made such other investigations as we have deemed relevant and necessary or appropriate in connection with the opinion hereinafter set forth. In our examination, we have assumed the genuineness of all signatures, the legal capacity and competency of all natural persons, the authenticity of all documents submitted to us as originals and the conformity to original documents of all documents submitted to us as copies. We have also assumed that there are no agreements or understandings between or among the Company and any participants in the Plan that would expand, modify or otherwise affect the terms of the Plan or the respective rights or obligations of the participants thereunder. Finally, we have assumed the accuracy of all other information provided to us by the Company during the course of our investigations, on which we have relied in issuing the opinion expressed below.

Based upon the foregoing examination and in reliance thereon, and subject to the assumptions stated and in reliance on statements of fact contained in the documents that we have examined, we are of the opinion that the shares of Common Stock issuable under the Plan, when issued and sold in accordance with the terms of the Plan and against payment therefor, and when the Registration Statement has become effective under the Securities Act, will be validly issued, fully paid and non-assessable.

We render no opinion herein as to matters involving the laws of any jurisdiction other than the Delaware General Corporation Law (the "DGCL"). We are not admitted to practice in the State of Delaware; however, we are generally familiar with the DGCL as currently in effect and have made such inquiries as we consider necessary to render the opinions above. This opinion is limited to the effect of the current state of the law of the DGCL and the facts as they currently exist. We assume no obligation to revise or supplement this opinion in the event of future changes in such law or the interpretations thereof or such facts.

We consent to the filing of this opinion as an exhibit to the Registration Statement. In giving this consent, we do not thereby 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.

Very truly yours,

/s/ Gibson, Dunn & Crutcher LLP

Consent of Independent Registered Public Accounting Firm

Phio Pharmaceuticals Corp.
Marlborough, Massachusetts

We hereby consent to the incorporation by reference in the Prospectus constituting a part of this Registration Statement of our report dated March 27, 2019, relating to the consolidated financial statements of Phio Pharmaceuticals Corp. appearing in the Company's Annual Report on Form 10-K for the year ended December 31, 2018.

We also consent to the reference to us under the caption "Experts" in the Prospectus.

/s/ BDO USA, LLP
Boston, Massachusetts

March 27, 2019