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

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

ATYR PHARMA, INC.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

20-3435077

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

**10240 Sorrento Valley Road, Suite 300
San Diego, CA 92121**

(Address of Principal Executive Offices) (Zip Code)

ATYR PHARMA, INC. 2015 STOCK OPTION AND INCENTIVE PLAN, AS AMENDED

ATYR PHARMA, INC. NON-QUALIFIED STOCK OPTION AGREEMENT FOR NON-PLAN INDUCEMENT GRANT

(Full title of the plans)

Sanjay S. Shukla, M.D., M.S.

President, Chief Executive Officer and Director

10240 Sorrento Valley Road, Suite 300

San Diego, CA 92121

(858) 731-8389

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

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	<input type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input checked="" type="checkbox"/>	Smaller reporting company	<input checked="" type="checkbox"/>
		Emerging growth company	<input type="checkbox"/>

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.

EXPLANATORY NOTE

This Registration Statement on Form S-8 (the “**Registration Statement**”) is being filed for the purpose of registering an additional 3,150,000 shares of common stock, par value \$0.001 per share (“**Common Stock**”), of aTyr Pharma, Inc. (the “**Registrant**”), consisting of:

- 3,000,000 shares of Common Stock issuable pursuant to the Registrant’s 2015 Stock Option and Incentive Plan, as amended (the “**2015 Plan**”), pursuant to an amendment to the 2015 Plan approved by the stockholders of the Registrant on May 22, 2024; and
- 150,000 shares of Common Stock issuable upon the exercise of an outstanding option granted to Jayant Aphale, Ph.D., Vice President, Technical Operations of the Registrant, which was granted outside of a plan as an inducement equity award (the “**Aphale Inducement Award**”) in accordance with Nasdaq Listing Rule 5635(c)(4). The Aphale Inducement Award was approved by the Compensation Committee of the Registrant’s Board of Directors, as an inducement material to Dr. Aphale entering into employment with the Registrant.

The Registrant previously registered shares of its Common Stock for issuance under the 2015 Plan under Registration Statements on Form S-8 filed with the Securities and Exchange Commission (the “**Commission**”) on [May 7, 2015](#) (File No. 333-203955), [April 1, 2016](#) (File No. 333-210543), [March 22, 2017](#) (File No. 333-216880), [March 23, 2018](#) (File No. 333-223865), [May 20, 2019](#) (File No. 333-231594), [August 18, 2020](#) (File No. 333-248090), [May 14, 2021](#) (File No. 333- 256145), [May 11, 2022](#) (File No. 333-264866) and [August 10, 2023](#) (File No. 333-273876) (the “**Prior Registration Statements**”).

This Registration Statement relates, in part, to securities of the same class as those to which the Prior Registration Statements relate and is submitted in accordance with General Instruction E of Form S-8. Pursuant to General Instruction E of Form S-8, the contents of Prior Registration Statements are incorporated by reference herein to the extent not modified or superseded hereby or by any subsequently filed document, which is incorporated by reference herein, except for Item 8, which is being updated by this Registration Statement.

The information specified in Item 1 and Item 2 of Part I of Form S-8 is omitted from this Registration Statement in accordance with the provisions of Rule 428 under the Securities Act of 1933, as amended (the “**Securities Act**”), and the introductory 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 the Registrant with the Commission are incorporated by reference into this Registration Statement:

- (a) the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2023, filed with the Commission on [March 14, 2024](#);
- (b) the Registrant's Quarterly Reports on Form 10-Q for the quarter ended March 31, 2024, filed with the Commission on [May 2, 2024](#), and for the quarter ended June 30, 2024, filed with the Commission on [August 13, 2024](#);
- (c) the Registrant's Current Reports on Form 8-K filed with the Commission on [May 29, 2024](#) and [July 22, 2024](#); and
- (d) the description of the Registrant's common stock which is contained in a Registration Statement on Form 8-A filed on [May 6, 2015](#) (File No. 001-37378) under Section 12(b) of the Securities Exchange Act of 1934, as amended (the "*Exchange Act*"), including any amendment or report filed for the purpose of updating such description, including [Exhibit 4.6](#) to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2023, as filed with the Commission on March 14, 2024.

All other reports and documents subsequently filed by the Registrant pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act (other than Current Reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits furnished on such form that relate to such items) on or after the date of this Registration Statement and prior to the filing of a post-effective amendment to this Registration Statement which indicates that all securities offered have been sold or which deregisters all securities then remaining unsold, shall be deemed to be incorporated by reference herein and to be a part of this Registration Statement from the date of the filing of such reports and documents. Any statement contained 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 that also is deemed to be incorporated by reference herein modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a 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 General Corporation Law of the State of Delaware (the "*DGCL*") authorizes a corporation to indemnify its directors and officers against liabilities arising out of actions, suits and proceedings to which they are made or threatened to be made a party by reason of the fact that they have served or are currently serving as a director or officer to a corporation. The indemnity may cover expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by the director or officer in connection with any such action, suit or proceeding. Section 145 permits corporations to pay expenses (including attorneys' fees) incurred by directors and officers in advance of the final disposition of such action, suit or proceeding. In addition, Section 145 provides that a corporation has the power to purchase and maintain insurance on behalf of its directors and officers against any liability asserted against them and incurred by them in their capacity as a director or officer, or arising out

of their status as such, whether or not the corporation would have the power to indemnify the director or officer against such liability under Section 145.

The Registrant has adopted provisions in the Registrant's certificate of incorporation and bylaws that limit or eliminate the personal liability of the Registrant's directors and officers to the fullest extent permitted by the DGCL, as it now exists or may in the future be amended. Consequently, a director or officer will not be personally liable to the Registrant or its stockholders for monetary damages or breach of fiduciary duty as a director, except for liability for:

- any breach of the director's duty of loyalty to the Registrant or its stockholders;
- any act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;
- any unlawful payments related to dividends or unlawful stock purchases, redemptions or other distributions; or
- any transaction from which the director derived an improper personal benefit.

These limitations of liability do not alter director liability under the federal securities laws and do not affect the availability of equitable remedies such as an injunction or rescission.

In addition, the Registrant's bylaws provide that:

- the Registrant will indemnify its directors, officers and, in the discretion of its board of directors, certain employees to the fullest extent permitted by the DGCL, as it now exists or may in the future be amended; and
- the Registrant will advance reasonable expenses, including attorneys' fees, to its directors and, in the discretion of its board of directors, to its officers and certain employees, in connection with legal proceedings relating to their service for or on behalf of the Registrant, subject to limited exceptions.

The Registrant has entered into indemnification agreements with each of its directors and intends to enter into such agreements with certain of its executive officers. These agreements provide that the Registrant will indemnify each of its directors, certain of its executive officers and, at times, their affiliates to the fullest extent permitted by the DGCL. The Registrant will advance expenses, including attorneys' fees (but excluding judgments, fines and settlement amounts), to each indemnified director, executive officer or affiliate in connection with any proceeding in which indemnification is available and the Registrant will indemnify its directors and officers for any action or proceeding arising out of that person's services as a director or officer brought on behalf of the Registrant or in furtherance of the Registrant's rights. Additionally, certain of the Registrant's directors may have certain rights to indemnification, advancement of expenses or insurance provided by their affiliates, which indemnification relates to and might apply to the same proceedings arising out of such director's services as a director referenced herein. Nonetheless, the Registrant has agreed in the indemnification agreements that the Registrant's obligations to those same directors are primary and any obligation of the affiliates of those directors to advance expenses or to provide indemnification for the expenses or liabilities incurred by those directors are secondary.

The Registrant also maintains general liability insurance which covers certain liabilities of its directors and officers arising out of claims based on acts or omissions in their capacities as directors or officers, including liabilities under the Securities Act.

Item 7. Exemption from Registration Claimed.

Not applicable.

Item 8. Exhibits.

The exhibits to this Registration Statement are listed below:

Exhibit Number	Exhibit Title	Form	Incorporated by Reference		Filing Date
			File No.	Exhibit	
4.1	Restated Certificate of Incorporation of the Registrant	10-Q	001-37378	3.1	November 14, 2022
4.2	Certificate of Amendment to Restated Certificate of Incorporation of the Registrant	8-K	001-37378	3.1	June 28, 2019
4.3	Certificate of Amendment to Restated Certificate of Incorporation of the Registrant	10-Q	001-37378	3.3	May 12, 2020
4.4	Certificate of Amendment to Restated Certificate of Incorporation of the Registrant	8-K	001-37378	3.1	May 4, 2021
4.5	Certificate of Amendment to Restated Certificate of Incorporation of the Registrant	8-K	001-37378	3.1	April 29, 2022
4.6	Certificate of Amendment to Restated Certificate of Incorporation of the Registrant	8-K	001-37378	3.1	May 19, 2023
4.7	Amended and Restated Bylaws of the Registrant	10-Q	001-37378	3.6	November 14, 2022
4.8	Specimen Common Stock Certificate	S-1/A	333-203272	4.1	April 27, 2015
4.9	Warrant to Purchase Stock issued to Silicon Valley Bank on December 22, 2017	10-K	001-37378	4.8	March 20, 2018
4.10	Warrant to Purchase Stock issued to Solar Capital Ltd. on December 22, 2017	10-K	001-37378	4.9	March 20, 2018
5.1	Opinion of Cooley LLP	—	—	—	Filed herewith
23.1	Consent of Cooley LLP (included in Exhibit 5.1)	—	—	—	Filed herewith
23.2	Consent of Independent Registered Public Accounting Firm	—	—	—	Filed herewith
24.1	Power of Attorney (included on the signature page hereto)	—	—	—	Filed herewith
99.1	aTyr Pharma, Inc. 2015 Stock Option and Incentive Plan, as amended	8-K	001-37378	10.1	May 29, 2024
99.2	Forms of agreement under 2015 Stock Option and Incentive Plan	S-1/A	333-203272	10.2	April 27, 2015
99.3	aTyr Pharma, Inc. Non-Qualified Option Agreement for Non-Plan Inducement Grant	10-Q	001-37378	10.1	November 14, 2016
107	Filing Fee Table	—	—	—	Filed herewith

Item 9. Undertakings.

1. The undersigned registrant hereby undertakes:
 - (a) 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 a 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)(i) and (a)(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 Exchange Act that are incorporated by reference in the Registration Statement.
 - (b) 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 herein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.
 - (c) 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.
2. 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 herein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.
3. 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 Securities 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 Securities Act and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of San Diego, State of California, this 13th day of August, 2024.

ATYR PHARMA, INC.

By: /s/ Sanjay S. Shukla
Sanjay S. Shukla, M.D., M.S.
President, Chief Executive Officer and Director

POWER OF ATTORNEY AND SIGNATURES

We, the undersigned officers and directors of aTyr Pharma, Inc., hereby severally constitute and appoint Sanjay S. Shukla, M.D., M.S. and Jill M. Broadfoot, and each of them singly (with full power to each of them to act alone), our true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution in each of them for their and in their name, place and stead, and in any and all capacities, to sign for us and in our names in the capacities indicated below any and all amendments (including post-effective amendments) to this registration statement on Form S-8, and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite or necessary to be done in and about the premises, as full to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents or any of them, or their or his or her substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

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

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Sanjay S. Shukla</u> Sanjay S. Shukla, M.D., M.S.	President, Chief Executive Officer and Director <i>(Principal Executive Officer)</i>	August 13, 2024
<u>/s/ Jill M. Broadfoot</u> Jill M. Broadfoot	Chief Financial Officer <i>(Principal Financial and Accounting Officer)</i>	August 13, 2024
<u>/s/ Timothy P. Coughlin</u> Timothy P. Coughlin	Chairman of the Board and Director	August 13, 2024
<u>John K. Clarke</u>	Director	August 13, 2024
<u>/s/ Jane A. Gross</u> Jane A. Gross, Ph.D.	Director	August 13, 2024
<u>/s/ Svetlana Lucas</u> Svetlana Lucas, Ph.D.	Director	August 13, 2024
<u>/s/ Paul Schimmel</u> Paul Schimmel, Ph.D.	Director	August 13, 2024
<u>/s/ Sara L. Zaknoen</u> Sara L. Zaknoen, M.D.	Director	August 13, 2024



Charles J. Bair
+1 858 550 6142
cbair@cooley.com

August 13, 2024

aTyr Pharma, Inc.
10240 Sorrento Valley Road, Suite 300
San Diego, CA 92121

Ladies and Gentlemen:

You have requested our opinion, as counsel to aTyr Pharma, Inc., a Delaware corporation (the "**Company**"), in connection with the filing by the Company of a Registration Statement on Form S-8 (the "**Registration Statement**") with the Securities and Exchange Commission (the "**Commission**") covering the offering of up to 3,150,000 shares (the "**Shares**") of the Company's common stock, \$0.001 par value per share ("**Common Stock**"), consisting of (i) 3,000,000 shares of Common Stock issuable pursuant to the Company's 2015 Stock Option and Incentive Plan, as amended (the "**Plan**"); and (ii) 150,000 shares of Common Stock issuable pursuant to a nonqualified stock option agreement between the Company and an employee (the "**Inducement Award**").

In connection with this opinion, we have examined and relied upon the Registration Statement and related prospectuses, the Plan, the Inducement Award, the Company's certificate of incorporation and bylaws, each as currently in effect, and such other records, documents, certificates, memoranda and other instruments as in our judgment are necessary or appropriate to enable us to render the opinion expressed below. We have assumed the genuineness of all signatures, the authenticity of all documents submitted to us as originals, the conformity to originals of all documents submitted to us as copies, the accuracy, completeness and authenticity of certificates of public officials, and the due authorization, execution and delivery of all documents by all persons other than by the Company where authorization, execution and delivery are prerequisites to the effectiveness thereof. As to certain factual matters, we have relied upon a certificate of an officer of the Company and have not independently verified such matters.

Our opinion is expressed only with respect to the General Corporation Law of the State of Delaware. We express no opinion to the extent that any other laws are applicable to the subject matter hereof and express no opinion and provide no assurance as to compliance with any federal or state securities law, rule or regulation.

On the basis of the foregoing, and in reliance thereon, we are of the opinion that the Shares, when sold and issued in accordance with the Plan or the Inducement Award, as applicable, and the Registration Statement and related prospectuses, will be validly issued, fully paid and nonassessable (except as to Shares issued pursuant to deferred payment arrangements, which will be fully paid and nonassessable when such deferred payments are made in full).

This opinion is limited to the matters expressly set forth in this letter, and no opinion has been or should be implied, or may be inferred, beyond the matters expressly stated. This opinion speaks only as to law and facts in effect or existing as of the date hereof and we undertake no obligation or responsibility to update or supplement this letter to reflect any facts or circumstances that may hereafter come to our attention or any changes in law that may hereafter occur.

We consent to the filing of this opinion as an exhibit to the Registration Statement. In giving such consent, we do not thereby admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act of 1933, as amended, or the rules and regulations of the Commission thereunder.

Sincerely,

Cooley LLP

By: /s/ Charles J. Bair
Charles J. Bair

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the Registration Statement (Form S-8) pertaining to the aTyr Pharma, Inc. 2015 Stock Option and Incentive Plan, as amended and the aTyr Pharma, Inc. Non-Qualified Stock Option Agreement for Non-Plan Inducement Grant of our report dated March 14, 2024, with respect to the consolidated financial statements of aTyr Pharma, Inc. included in its Annual Report (Form 10-K) for the year ended December 31, 2023, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

San Diego, California
August 13, 2024

Calculation of Filing Fee Table

Form S-8 (Form Type)

aTyr Pharma, Inc.
(Exact Name of Registrant as Specified in its Charter)

Table 1: Newly Registered Securities

Security Type	Security Class Title	Fee Calculation Rule	Amount Registered ⁽¹⁾	Proposed Maximum Offering Price Per Share	Maximum Aggregate Offering Price	Fee Rate	Amount of Registration Fee
Equity	2015 Stock Option and Incentive Plan, as amended Common Stock, par value \$0.001 per share	Other ⁽²⁾	3,000,000 ⁽³⁾	\$ 1.83	\$ 5,490,000	.0001476	\$810.32
Equity	Non-Qualified Stock Option Agreement for Non-Plan Inducement Grants Common Stock, par value \$0.001 per share	Other ⁽⁴⁾	150,000 ⁽⁵⁾	\$ 1.83	\$ 274,500	.0001476	\$40.52
Total Offering Amounts					\$ 5,764,500		\$850.84
Total Fee Offsets							—
Net Fee Due							\$850.84

- (1) Pursuant to Rule 416(a) under the Securities Act of 1933, as amended (the “*Securities Act*”), this Registration Statement shall also cover any additional shares of common stock, par value \$0.001 per share (“*Common Stock*”), of aTyr Pharma, Inc. (the “*Registrant*”) that become issuable under the aTyr Pharma, Inc. 2015 Stock Option and Incentive Plan, as amended (the “*2015 Stock Plan*”), as well as any outstanding stock options granted outside of any plan, by reason of any stock dividend, stock split, recapitalization or other similar transaction.
- (2) This estimate is made pursuant to Rule 457(h)(1) and Rule 457(c) under the Securities Act solely for purposes of calculating the registration fee. The proposed price per share and maximum aggregate offering price are based upon the average of the high and low prices of the Registrant’s Common Stock on August 9, 2024, as reported on the Nasdaq Capital Market.
- (3) Represents 3,000,000 additional shares of Common Stock reserved and available for issuance under the 2015 Stock Plan, as approved by the Registrant’s stockholders at its annual meeting of stockholders on May 22, 2024 (the “*2024 Annual Meeting*”). At the 2024 Annual Meeting, the Registrant’s stockholders approved an amendment to the 2015 Stock Plan to increase the maximum number of shares of Common Stock reserved and available for issuance under the 2015 Stock Plan by 3,000,000 shares.
- (4) Pursuant to Rule 457(h) of the Securities Act, estimated solely for the purpose of calculating the registration fee, the proposed price per share and maximum aggregate offering price are based upon \$1.83 per share, which is the exercise price of the option to purchase 150,000 shares of Common Stock granted by the Registrant to Jayant Aphale, Ph.D., its Vice President, Technical Operations, in August 2024 outside of a plan as a material inducement to his acceptance of employment with the Registrant in accordance with Nasdaq Listing Rule 5635(c)(4).
- (5) Represents 150,000 shares of Common Stock reserved for issuance upon the exercise of an option granted to Dr. Aphale.

