

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

SCHEDULE 13D

Under the Securities Exchange Act of 1934
(Amendment No. _____)*

ATYR PHARMA, INC.
(Name of Issuer)

COMMON STOCK
(Title of Class of Securities)

002120103
(CUSIP Number)

PAUL SCHIMMEL
372 South Beach Road
Hobe Sound, FL 33455
(561) 228-2483

(Name, Address and Telephone Number of Person
Authorized to Receive Notices and Communications)

AUGUST 30, 2018
(Date of Event which Requires Filing of this Statement)

If the filing person has previously filed a statement on Schedule 13G to report the acquisition that is the subject of this Schedule 13D, and is filing this schedule because of §§240.13d-1(e), 240.13d-1(f) or 240.13d-1(g), check the following box.

Note: Schedules filed in paper format shall include a signed original and five copies of the schedule, including all exhibits. See §240.13d-7 for other parties to whom copies are to be sent.

* The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter disclosures provided in a prior cover page.

The information required on the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

1. NAMES OF REPORTING PERSONS I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY)

PAUL SCHIMMEL

2. CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP
(see instructions)

- (a)
(b)

3. SEC USE ONLY

4. SOURCE OF FUNDS (see instructions)

PF

5. CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEMS 2(d) or 2(e)

6. CITIZENSHIP OR PLACE OF ORGANIZATION

UNITED STATES

7. SOLE VOTING POWER

1,600,962 (1)

NUMBER OF
SHARES
BENEFICIALLY
OWNED BY EACH
REPORTING
PERSON WITH

8. SHARED VOTING POWER

0

9. SOLE DISPOSITIVE POWER

1,600,962

10. SHARED DISPOSITIVE POWER

0

11. AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

1,600,962

12. CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES
(see instructions)

13. PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11)

5.3% (2)

14. TYPE OF REPORTING PERSON (see instructions)

IN

(1) Includes as of September 9, 2018: (i) 40,440 shares of Common Stock held by Dr. Schimmel; (ii) 721,814 shares of Common Stock held by the Schimmel Revocable Trust U/A Dtd 9/6/2000; (iii) 735,077 shares of Common Stock held by the Paul Schimmel Prototype PSP, Paul Schimmel, Trustee, FBO Paul Schimmel; (vi) warrants to purchase 35,376 shares of Common Stock that are exercisable by the Paul Schimmel Prototype PSP, Paul Schimmel, Trustee, FBO Paul Schimmel within 60 days of September 9, 2018; and (v) 68,255 shares of Common Stock that Dr. Schimmel has the right to acquire within 60 days of September 9, 2018 pursuant to the exercise of stock options

(2) This calculation is based on 29,856,961 shares of Common Stock of the Issuer outstanding as of August 14, 2018, according to information set forth in the Issuer's Quarterly Report on Form 10-Q for the fiscal quarter ended June 30, 2018 ("Form 10-Q"), filed with the U.S. Securities and Exchange Commission on August 14, 2018.

1. NAMES OF REPORTING PERSONS I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY)

PAUL SCHIMMEL PROTOTYPE PSP, PAUL SCHIMMEL, TRUSTEE, FBO PAUL SCHIMMEL

2. CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP
(see instructions)

- (a)
(b)

3. SEC USE ONLY

4. SOURCE OF FUNDS (see instructions)

WC

5. CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEMS 2(d) or 2(e)

6. CITIZENSHIP OR PLACE OF ORGANIZATION

STATE OF FLORIDA

7. SOLE VOTING POWER

770,453 (1)

NUMBER OF
SHARES
BENEFICIALLY
OWNED BY EACH
REPORTING
PERSON WITH

8. SHARED VOTING POWER

0

9. SOLE DISPOSITIVE POWER

770,453

10. SHARED DISPOSITIVE POWER

0

11. AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

770,453

12. CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES

(see instructions)

13. PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11)

2.6% (2)

14. TYPE OF REPORTING PERSON (see instructions)

EP

- (1) Includes as of September 9, 2018: (i) 735,077 shares of Common Stock, and (ii) warrants to purchase 35,376 shares of Common Stock that are exercisable within 60 days of September 9, 2018
- (2) This calculation is based on 29,856,961 shares of Common Stock of the Issuer outstanding as of August 14, 2018, according to information set forth in the Issuer's Quarterly Report on Form 10-Q for the fiscal quarter ended June 30, 2018 ("Form 10-Q"), filed with the U.S. Securities and Exchange Commission on August 14, 2018.

Item 1. Security and Issuer.

This statement on Schedule 13D relates to the Common Stock of the Issuer. The Issuer's principal executive offices are located at 3545 John Hopkins Court, Suite #250, San Diego, CA 92121.

Item 2. Identity and Background.

- (a) This Schedule 13D is being filed jointly by Dr. Paul Schimmel and the Schimmel Prototype PSP, Paul Schimmel, Trustee, FBO Paul Schimmel ("Prototype PSP," together with Dr. Schimmel, the "Reporting Persons") pursuant to Rule 13d-1 of Regulations D-G under the Act.
- (b) The business addresses of the Reporting Persons are as follows:
- Dr. Schimmel: 372 S. Beach Road, Hobe Sound, FL 33455
 - Prototype PSP: 372 S. Beach Road, Hobe Sound, FL 33455
- (c) Dr. Schimmel, a natural person, is a Professor, faculty member and Board member of Scripps Research. Prototype PSP is a profit sharing plan for the benefit of Dr. Schimmel. Dr. Schimmel is the trustee of Prototype PSP.
- (d) During the last five years, the Reporting Persons have not been convicted in a criminal proceeding (excluding traffic violations or similar misdemeanors).

- (e) During the last five years, the Reporting Persons have not been a party to a civil proceeding of a judicial or administrative body of competent jurisdiction resulting in his being subject to a judgment, decree or final order enjoining future violations of, or prohibiting or mandating activities subject to, federal or state securities laws or finding any violation with respect to such laws.
- (f) Dr. Schimmel is a citizen of the United States of America. The Prototype PSP is organized in the State of California.

Item 3. Source or Amount of Funds or Other Consideration.

The share and dollar amounts reported below for transactions prior to August 7, 2007 do not give effect to the one-for-three stock split of Issuer's Common Stock, Series A Preferred Stock and Series B Preferred Stock effected on August 7, 2007. The share and dollar amounts reported below for transactions prior to May 5, 2015 do not give effect to the one-for-7.95413 reverse stock of Issuer's Common Stock effected on May 5, 2015.

On September 8, 2005, the Dr. Schimmel purchased 325,000 shares of restricted Common Stock (the "Common Shares") at a purchase price of \$0.01 per share which was the price per share paid by other founders in a private placement transaction. On December 16, 2005, 32,000 of the Common Shares were gifted to certain individuals. On July 17, 2006, 15,000 of the Common Shares were gifted to an individual. On May 20, 2013, the remaining 278,000 Common Shares were transferred to the Schimmel Revocable Trust U/A Dtd 9/6/2000 (the "Schimmel Trust").

On September 8, 2005, Prototype PSP purchased 175,000 shares of Series A Convertible Preferred Stock (the "Series A Shares") at a purchase price of \$0.75 per share which was the price per share paid by other investors in a private placement transaction. On May 20, 2013, the Series A Shares were transferred to the Schimmel Trust. Upon completion of Issuer's initial public offering (the "Offering"), the Series A Shares converted to 66,003 shares of Common Stock.

On November 30, 2006, Prototype PSP purchased 400,000 shares of Series B-1 convertible preferred stock (the "Series B-1 Shares") at a purchase price of \$2.50 per share which was the price per share paid by other investors in a private placement transaction. On May 20, 2013, the Series B-1 Shares were transferred to the Schimmel Trust. Upon completion of the Offering, the Series B-1 Shares converted to 150,865 shares of Common Stock.

On June 30, 2009, the Prototype PSP purchased 1,440,058 shares of Series B-2 convertible preferred stock (the "Series B-2 Shares") at a purchase price of \$0.8333 per share which was the price per share paid by other investors in a private placement transaction. On May 20, 2013, the Series B-2 Shares were transferred to the Schimmel Trust. Upon completion of the Offering, the Series B-2 Shares converted to 181,045 shares of Common Stock.

On October 6, 2010, Prototype PSP purchased 239,361 shares of Series C convertible preferred stock (the "Prototype Series C Shares") at a purchase price of \$0.94 per share which was the price per share paid by other investors in a private placement transaction. On May 20, 2013, the Prototype Series C Shares were transferred to the Schimmel Trust. Upon completion of the Offering, the Prototype Series C shares converted to 30,093 shares of Common Stock.

On October 6, 2010, the Schimmel Trust purchased 212,765 shares of Series C convertible preferred stock (the "Series C Shares") at a purchase price of \$0.94 per share which was the price per share paid by other investors in a private placement transaction. Upon completion of the Offering, the Series C Shares converted to 26,749 shares of Common Stock.

On December 21, 2011, Prototype PSP purchased 106,382 shares of Series C convertible preferred stock (the "Prototype Second Closing Series C Shares") at a purchase price of \$0.94 per share. On May 20, 2013, the Prototype Second Closing Series C Shares were transferred to the Schimmel Trust. Upon completion of the Offering, the Prototype Second Closing Series C shares converted to 13,374 shares of Common Stock.

On September 13, 2012, Dr. Schimmel was granted an option to purchase 200,000 shares of Common Stock of the Issuer at a purchase price of \$0.11 per share pursuant to the Company's 2007 Stock Plan, as amended (subsequently amended and restated as the Issuer's 2014 Stock Plan).

On February 15, 2013, Dr. Schimmel exercised stock options for 200,000 shares of Common Stock (the "Option Shares"). On March 1, 2013, the Option Shares were transferred to the Schimmel Trust.

On April 8, 2013, Prototype PSP purchased 248,024 shares of Series D redeemable convertible preferred stock (the "Prototype Series D Shares") at a purchase price of \$2.529 per share (payable with cash and cancellation of indebtedness) which was the price per share paid by other investors in a private placement transaction. Upon completion of the Offering, the Prototype Series D shares converted to 31,181 shares of Common Stock.

On April 8, 2013, the Schimmel Trust purchased 15,031 shares of Series D redeemable convertible preferred stock (the "Series D Shares") at a purchase price of \$2.529 per share (payable with cash and cancellation of indebtedness) which was the price per share paid by other investors in a private placement transaction. Upon completion of the Offering, the Series D Shares converted to 1,889 shares of Common Stock.

On July 10, 2014, Dr. Schimmel was granted an option to purchase 100,000 shares of Common Stock at a purchase price of \$0.51 per share pursuant to the Issuer's 2014 Stock Plan.

On March 31, 2015 the Schimmel Trust purchased 446,827 shares of Series E redeemable convertible preferred stock (the "Series E Shares") at a purchase price of \$1.119 per share which was the price per paid by other investors in a private placement transaction. Upon completion of the Offering, the Series E Shares converted to 46,154 shares of Common Stock.

On April 2, 2015, Dr. Schimmel exercised stock options for 100,000 shares of Common Stock (the "Option Shares"). The Option Shares were subsequently transferred to the Schimmel Trust.

On April 25, 2015, Dr. Schimmel was granted an option to purchase 56,000 shares of Common Stock at a purchase price of \$1.15 per share pursuant to the Issuer's 2014 Stock Plan.

On July 8, 2015, Dr. Schimmel was granted an option to purchase 6,286 shares of Common Stock at a purchase price of \$14.96 per share pursuant to the Issuer's 2015 Stock Option and Incentive Plan (the "2015 Stock Plan").

On September 25, 2015, the Schimmel Trust gifted 11,925 shares to an individual.

On April 5, 2016, Prototype PSP purchased on the open market 25,000 shares of Common Stock at a weighted average purchase price of \$3.527 per share.

On January 27, 2016, Dr. Schimmel was granted an option to purchase 19,428 shares of Common Stock at a purchase price of \$6.14 per share pursuant to the Issuer's 2015 Stock Plan.

On April 6, 2016, Prototype PSP purchased on the open market 25,000 shares of Common Stock at a \$3.20 per share.

On April 7, 2016, Prototype PSP purchased on the open market 40,000 shares of Common Stock at a weighted average purchase price of \$3.1896 per share.

On April 8, 2016, Prototype PSP purchased on the open market 85,000 shares of Common Stock at a weighted average purchase price of \$3.2194 per share.

On April 11, 2016, Dr. Schimmel purchased 5,259 shares of Common Stock at a weighted average purchase price of \$3.5921 per share and Prototype PSP purchased on the open market 22,100 shares of Common Stock at a weighted average purchase price of \$3.5913 per share and 5,300 shares of Common Stock at a purchase a weighted average purchase price of \$3.4481 per share.

On April 12, 2016, Dr. Schimmel purchased on the open market 2,581 shares of Common Stock at a weighted average purchase price of \$3.7521 per share and Prototype PSP purchased on the open market 6,546 shares of Common Stock at a weighted average purchase price of \$3.6999 per share.

On April 13, 2016, Prototype PSP purchased on the open market 9,835 shares of Common Stock at a purchase price of \$3.85 per share.

On April 14, 2016, Dr. Schimmel purchased on the open market 32,600 shares of Common Stock at a weighted average purchase price of \$4.4134 per share and Prototype PSP purchased on the open market 33,619 shares of Common Stock at a weighted average purchase price of \$4.2196 per share.

On May 24, 2016, Dr. Schimmel was granted an option to purchase 18,000 shares of Common Stock at a purchase price of \$3.33 per share pursuant to the Issuer's 2015 Stock Plan.

On December 15, 2016, the Schimmel Trust purchased on the open market 40,000 shares of Common Stock at a weighted average purchase price of \$2.4978 per share.

On December 16, 2016, the Schimmel Trust purchased on the open market 10,000 shares of Common Stock at a weighted average purchase price of \$2.3973 per share.

On December 20, 2016, the Schimmel Trust purchased on the open market 15,000 shares of Common Stock at a weighted average purchase price of \$2.274 per share.

On December 21, 2016, the Schimmel Trust purchased on the open market 10,000 shares of Common Stock at a weighted average purchase price of \$2.2818 per share.

On May 9, 2017, Dr. Schimmel was granted an option to purchase 20,000 shares of Common Stock at a purchase price of \$3.15 per share pursuant to the Issuer's 2015 Stock Plan.

On August 31, 2017, Prototype PSP purchased 94,336 shares of Common Stock and warrants to purchase 35,376 shares of Common Stock at a price per unit of \$2.65, which was the price per unit paid by other investors in a private placement transaction.

On May 15, 2018, Prototype PSP purchased on the open market 150,000 shares of Common Stock at a weighted average purchase price of \$0.9963 per share.

On May 15, 2018, Dr. Schimmel was granted an option to purchase 20,000 shares of Common Stock at a purchase price of \$1.35 per share pursuant to the Issuer's 2015 Stock Plan.

On August 29, 2018, Prototype PSP purchased on the open market 75,136 shares of Common Stock at a weighted average purchase price of \$0.7199 per share.

On August 30, 2018, Prototype PSP purchased on the open market 89,275 shares of Common Stock at a weighted average purchase price of \$0.7559 per share.

On August 31, 2018, Prototype PSP purchased on the open market 22,000 shares of Common Stock at a weighted average purchase price of \$0.716 per share.

On September 4, 2018, Prototype PSP purchased on the open market 20,749 shares of Common Stock at a weighted average purchase price of \$0.7571 per share.

The source of the funds for all purchases and acquisitions by Dr. Schimmel and the Schimmel Trust was from personal funds. The source of the funds for all purchases and acquisitions by Prototype PSP was working capital of Prototype PSP. No part of the purchase price was borrowed by Reporting Persons for the purpose of acquiring any securities discussed in this Item 3.

Item 4. Purpose of Transaction.

The Reporting Persons acquired the shares of Common Stock for investment in the ordinary course of business, as they believed that such shares represented an attractive investment opportunity.

In connection with the Reporting Persons' investment in the Issuer, and as may be appropriate from time to time, each of the Reporting Persons may also consider the feasibility and advisability of various alternative courses of action with respect to such investment, including, without limitation: (a) the acquisition or disposition by the Reporting Persons of its shares of Common Stock, including through derivative transactions which may include security-based swaps and short sales; (b) an extraordinary corporate transaction, such as a merger, reorganization or liquidation, involving the Issuer or any of its subsidiaries; (c) a sale or transfer of a material amount of assets of the Issuer or any of its subsidiaries; (d) changes in the present board of directors or management of the Issuer; (e) a material change in the present capitalization or dividend policy of the Issuer; (f) other material changes in the Issuer's business or corporate structure; (g) changes in the Issuer's certificate of incorporation or bylaws or other actions that may impede the acquisition of control of the Issuer by any person; (h) causing any class of the Issuer's securities to be delisted from a national securities exchange or to cease to be authorized to be quoted in an inter-dealer quotation system of a registered national securities association; (i) causing a class of equity securities of the Issuer to become eligible for termination of registration pursuant to Section 12 of the Exchange Act; or (j) any action similar to those enumerated above. The Reporting Persons may communicate with the Board, members of management and/or other stockholders from time to time with respect to operational, strategic, financial or governance matters or otherwise work with management and the Board. Except as described in Item 6 and this Item 4 and any plans or proposals that may from time to time be discussed or considered by the directors of the Issuer, including Dr. Schimmel, in his fiduciary capacity as a director of the Issuer, the Reporting Persons do not currently have any plans or proposals that relate to or would result in any of the actions specified in clause (a) through (j) of this paragraph.

The Reporting Persons reserve the right, based on all relevant factors and subject to applicable law or other restrictions, at any time and from time to time, to acquire additional securities of the Issuer, dispose of some or all of the shares of Common Stock or such other securities, in each case in open market or private transactions, block sales or otherwise, and review or reconsider their position, change their purpose, take other actions (including actions that could involve one or more of the types of transactions or have one or more of the results described in clauses (a) through (j) of the foregoing paragraph of this Item 4) or formulate and implement plans or proposals with respect to any of the foregoing.

Item 5. Interest in Securities of the Issuer.

- (a) See items 11 and 13 of the cover pages to this Schedule 13D for the aggregate number of shares and percentage of Common Stock beneficially owned by each of the Reporting Persons as of September 9, 2018.
- (b) See items 7 through 10 of the cover pages to this Schedule 13D for the number of shares of Common Stock beneficially owned by each of the Reporting Persons as to which there is sole power to vote or to direct the vote, shared power to vote or to direct the vote and sole or shared power to dispose or to direct the disposition as of September 9, 2018.
- (c) During the period from July 8, 2018 through September 9, 2018, the following transactions occurred:
 - On August 29, 2018, Prototype PSP purchased on the open market 75,136 shares of Common Stock at a weighted average purchase price of \$0.7199 per share.
 - On August 30, 2018, Prototype PSP purchased on the open market 89,275 shares of Common Stock at a weighted average purchase price of \$0.7559 per share.
 - On August 31, 2018, Prototype PSP purchased on the open market 22,000 shares of Common Stock at a weighted average purchase price of \$0.716 per share.
 - On September 4, 2018, Prototype PSP purchased on the open market 20,749 shares of Common Stock at a weighted average purchase price of \$0.7571 per share.
- (d) None.
- (e) Not applicable.

Item 6. Contracts, Arrangements, Understandings or Relationships with Respect to Securities of the Issuer.

The Reporting Persons are party to a Registration Rights and Voting Agreement among the Issuer, the Reporting Persons and other stockholders. Subject to the terms of such Registration and Voting Rights Agreement, holders of Common Stock having registration rights can demand that Issuer file a registration statement or request that their shares be covered by a registration statement that the Issuer is otherwise filing. Such Registration and Voting Rights Agreement dated as of March 31, 2015 described in this Item 6, was filed on April 27, 2015 as Exhibit 10.11 to Amendment No. 1 to the Issuer's Registration Statement on Form S-1 (File No. 333-203272), and is incorporated herein by reference.

Prototype PSP holds warrants to purchase 33,376 shares of Common Stock. The form of warrant was filed on August 28, 2017 as an Exhibit to the Issuer's Form 8-K (File No. 001-37378), and is incorporated herein by reference.

Dr. Schimmel holds options to purchase shares of Common Stock under the Company's 2014 Stock Plan and 2015 Stock Plan, (collectively, the "Stock Plans"). The Stock Plans and forms of agreements thereunder were filed on April 27, 2015 as Exhibits 10.1 and 10.2 to Amendment No. 1 to the Issuer's Registration Statement on Form S-1 (File No. 333-203272), and are incorporated herein by reference.

Item 7. Material to Be Filed as Exhibits.

99.1 [Joint Filing Agreement](#)

SIGNATURE

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

Date: September 10, 2018

/s/ Paul Schimmel
Paul Schimmel, Ph.D.

PAUL SCHIMMEL PROTOTYPE PSP
PAUL SCHIMMEL, TRUSTEE
FBO PAUL SCHIMMEL

/s/ Paul Schimmel
Paul Schimmel, Ph.D.

Joint Filing Agreement

In accordance with Rule 13d-1(k)(1) under the Securities Exchange Act of 1934, as amended, the persons named below agree to the joint filing on behalf of each of them of a statement on Schedule 13D (including amendments thereto) with respect to the Common Stock of aTyr Pharma, Inc., a Delaware corporation, and further agree that this Joint Filing Agreement be included as an Exhibit to such joint filings. In evidence thereof, the undersigned, being duly authorized, have executed this Joint Filing Agreement this 9th day of September, 2018.

/s/ Paul Schimmel

Paul Schimmel, Ph.D.

PAUL SCHIMMEL PROTOTYPE PSP
PAUL SCHIMMEL, TRUSTEE
FBO PAUL SCHIMMEL

/s/ Paul Schimmel

Paul Schimmel, Ph.D.