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

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): June 22, 2020

ATYR PHARMA, INC.
(Exact name of registrant as specified in its charter)

Delaware	**001-37378**	**20-3435077**
(State or other jurisdiction of incorporation)	**(Commission File Number)**	**(IRS Employer Identification No.)**

3545 John Hopkins Court, Suite #250	
San Diego	**92121**
(Address of Principal Executive Offices)	**(Zip Code)**

Registrant's telephone number, including area code: (858) 731-8389

Not Applicable
(Former Name or Former Address, if Changed Since Last Report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligations of the registrant under any of the following provisions:

☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $0.001 per share	LIFE	The Nasdaq Capital Market

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 or Rule 12b-2 of the Securities Exchange Act of 1934.

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 13(a) of the Exchange Act. ☒

Item 7.01 Regulation FD Disclosure.

aTyr Pharma, Inc. (the "Company") is participating at the 2020 American Association for Cancer Research (AACR) Virtual Annual Meeting II which is being held on June 22 - 24, 2020. The Company will present a poster entitled "Domain-Specific Antibodies to Neuropilin-2 Implicate VEGF-C and Not Semaphorin 3F in Breast Cancer Stem Cell Function" via a pre-recorded audio recording on the AACR website. The poster presentation has been posted on the Company's website and is attached hereto as Exhibit 99.1.

The information under this Item 7.01, including Exhibit 99.1, is being furnished and shall not be deemed "filed" for the purposes of Section 18 of the Securities and Exchange Act of 1934, as amended, or the Exchange Act, or otherwise subject to the liabilities of that section, nor shall such information be deemed incorporated by reference into any filing under the Securities Act of 1933, as amended, or the Exchange Act, except as expressly set forth by specific reference in such filing.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits

Exhibit No.	Description
99.1	Poster presentation titled "Domain-Specific Antibodies to Neuropilin-2 Implicate VEGF-C and Not Semaphorin 3F in Breast Cancer Stem Cell Function."

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

ATYR PHARMA, INC.

By: /s/ Jill M. Broadfoot
Jill M. Broadfoot
Chief Financial Officer

Date: June 22, 2020

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Domain-specific A Breast Cancer Ste

Leslie A. Nangle[1,*], Luke Burman[1], Hira Lal G

1. aTyr Pharma, 2. UMass Medical School, *Contact: lnangle@atyrp

Abstract

INTRODUCTION: There is a strong body of evidence indicating that the expression of Neuro signaling is critical for breast CSC function and resistance development. For this reason, the ra A major limitation that has hampered the development of such a therapy, however, has antibodies (mAbs) that block NRP2 signaling.

aTyr Pharma has generated a panel of high-quality, anti-human NRP2 mAbs that have the po including cancer and inflammation. A significant advance made by aTyr is that through spec blocking, receptor homo and heterodimerization and functional activity. Importantly a subse triple negative breast cancer.

RESULTS: Flow cytometry was used to assess the specificity of the aTyr anti-NRP2 mAbs to N NRP2 mAbs bound to A549 wild-type cells while showing little or no binding to the NRP2 kn compared to existing commercially available antibodies. Displacement studies demonstrated VEGF-C or SEMA-3F binding to Expi293-hNRP2 cells, and were categorized as blockers (>90% inhibition).

To further extend the assessment of the biological activity of the anti-NRP2 antibodies, their a luciferase, and a cell permeable substrate, were obtained from Promega corporation. The (VEGFR3), KDR (VEGFR2) and plexin A1 (PLXNA1) were cloned into the vectors and screene were able to impair respective VEGF and SEMA3 induced dimerization of receptor pairs NR specific and non-obvious functional differentiation.

Direct functional assessment of a subset of these antibodies on breast CSCs revealed that the to inhibit serial passage mammosphere formation, an indicator of self-renewal potential.

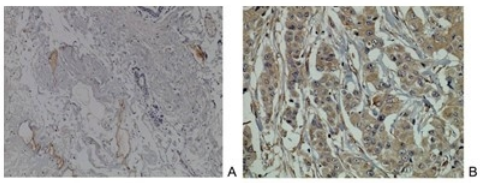
CONCLUSIONS: aTyr has developed and characterized a series of domain specific antibodies NRP2, can inhibit either VEGF-C or Sema3F binding to NRP2, and differentially effect recepto C/NRP2 signaling but not SEMA-3F/NRP2 signaling in the function of breast CSCs.

Introductio

Figure 1. NRP2 Association with Breast Cancer

A

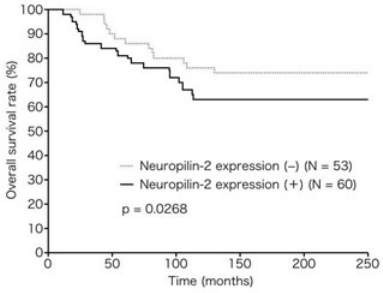
NRP2 expression in breast carcinoma tissue



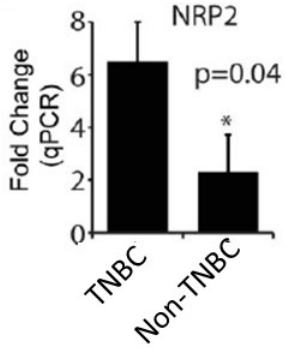
Normal breast epithelium | Breast carcinoma tissue

B

NRP2 expression worsens breast cancer outcomes



C



NRP2 expression is much higher in TNBC (n=2 than non-TNBC (n=22)

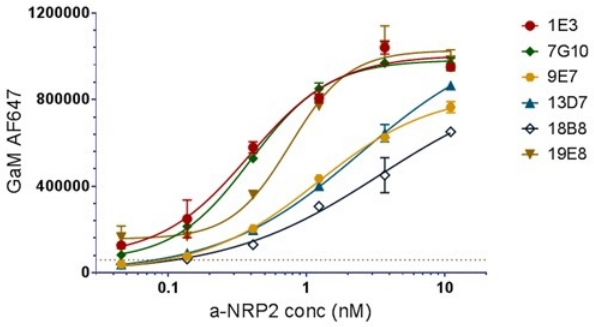
- Published data demonstrate that triple negative breast cancer (TNBC) is a highly aggressive sub cells (CSCs) than other subtypes, which may be responsible for poor patient outcomes by prom
- NRP2 is enriched in TNBC and breast CSCs (Fig. 1). VEGF-NRP2 signaling promotes stem-like tra

Results

Figure 2. aTyr Developed a-NRP2 mAbs Exhibit Superior Specificity and S

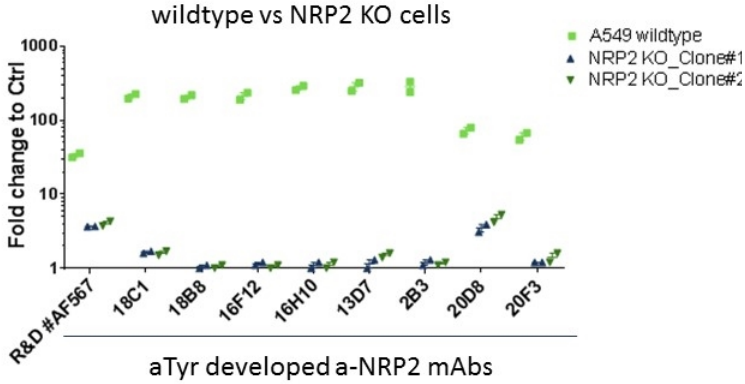
A

aTyr a-NRP2 mAbs binding to Expi293-hNRP2 cell surface



B

a-NRP2 binding to A549 wildtype vs NRP2 KO cells



aTyr developed a-NRP2 mAbs

Reference

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3. Goel, H. L. & Mercurio, A. M. VEGF Targets The Tumour Cell. Nat Rev Cancer 13, 871-882, doi:10.1038/nrc3627 (2013).
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