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

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

Vor Biopharma Inc.
(Exact name of Registrant as specified in its charter)

Delaware
(State or other jurisdiction of
Incorporation or organization)

81-1591163
(I.R.S. Employer
Identification No.)

**100 Cambridgepark Drive
Suite 400
Cambridge, Massachusetts 02140**
(Address of principal executive offices)

02140
(Zip code)

**2015 Stock Incentive Plan
2021 Equity Incentive Plan
2021 Employee Stock Purchase Plan
Stock Option Awarded Outside Any Plan**
(Full titles of the plans)

**Robert Ang, M.B.B.S.
President and Chief Executive Officer
Vor Biopharma Inc.
100 Cambridgepark Drive
Suite 400
Cambridge, Massachusetts 02140
(617) 655-6580**
(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

**Richard Segal
Charles S. Kim
Divakar Gupta
Cooley LLP
500 Boylston Street
Boston, Massachusetts 02116
(617) 937-2300**

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer or a smaller reporting 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	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee
Common Stock, par value \$0.0001 per share				
– 2021 Equity Incentive Plan	3,134,776(2)	\$18.00(7)	\$56,425,968	\$6,157
– 2021 Equity Incentive Plan (Options)	323,011(3)	\$18.00(8)	\$5,814,198	\$635
– 2021 Employee Stock Purchase Plan	372,000(4)	\$15.30(9)	\$5,691,600	\$621
– 2015 Stock Incentive Plan (Options)	4,396,206(5)	\$2.32(8)	\$10,199,198	\$1,113
– Shares issuable upon exercise of an outstanding option granted outside any plan	294,117(6)	\$28.29(8)	\$8,320,570	\$908
Total	8,520,110		\$86,451,534	\$9,434

- (1) Pursuant to Rule 416(a) promulgated under the Securities Act of 1933, as amended (the “*Securities Act*”), this Registration Statement shall also cover any additional shares of Registrant’s common stock that become issuable under the Registrant’s 2021 Equity Incentive Plan (the “*2021 Plan*”), the Registrant’s 2021 Employee Stock Purchase Plan (the “*2021 ESPP*”), the Registrant’s 2015 Stock Incentive Plan, as amended (the “*2015 Plan*”), and the option referenced in Footnote 6 by reason of any stock dividend, stock split, recapitalization, or other similar transaction effected that results in an increase to the number of outstanding shares of Registrant’s common stock, as applicable.
- (2) Represents 2,699,062 shares reserved for future issuance pursuant to stock options, restricted stock unit awards (“*RSUs*”) and other awards under the 2021 Plan, plus 66,162 shares of common stock that were reserved but not issued pursuant to any awards granted under the 2015 Plan and were not subject to any awards granted thereunder as of the effective date of the 2021 Plan plus 369,552 shares of restricted common stock issued upon the early exercise of options granted under the 2015 Plan that are subject to a right of repurchase in favor of the Registrant. The number of shares reserved for issuance under the 2021 Plan will automatically increase on January 1st each year, starting on January 1, 2022, and continuing through January 1, 2031, by the lesser of (a) four percent (4%) of the total number of shares of the Registrant’s common stock outstanding on December 31st of the immediately preceding calendar year and (b) a number determined by the Registrant’s board of directors. The number of shares of common stock reserved for issuance under the 2021 Plan will also be increased by any shares of common stock subject to awards outstanding under the 2015 Plan that (i) terminate or expire prior to exercise or settlement; (ii) are not issued because the award is settled in cash; (iii) are forfeited because of the failure to vest; or (iv) are reacquired or withheld (or not issued) to satisfy a tax withholding obligation or the purchase or exercise price, subject to the maximum limit set forth in the 2021 Plan.
- (3) Represents shares of the Common Stock reserved for issuance upon the exercise of outstanding options granted under the 2021 Plan.
- (4) Represents shares of common stock reserved for future issuance under the 2021 ESPP. The number of shares reserved for issuance under the 2021 ESPP will automatically increase on January 1st of each year, starting on January 1, 2022 and continuing through January 1, 2031, by the lesser of (a) one percent (1%) of the total number of shares of the Registrant’s capital stock outstanding on December 31st of the preceding calendar year, (b) 1,800,000 shares of common stock or (c) a number determined by the Registrant’s board of directors.
- (5) Represents shares of common stock issuable upon exercise of stock options outstanding under the 2015 Plan as of the date of this Registration Statement. Any stock options outstanding under the 2015 Plan that (i) terminate or expire prior to exercise; (ii) are not issued because the award is settled in cash; (iii) are forfeited because of the failure to vest; or (iv) are reacquired or withheld (or not issued) to satisfy a tax withholding obligation or the purchase or exercise price, will become available for issuance as shares of common stock under the 2021 Plan, subject to the maximum limit set forth in the 2021 Plan.
- (6) Represents shares of common stock issuable upon exercise of stock options outstanding granted outside of any plan.
- (7) Estimated in accordance with Rule 457(h) solely for the purpose of calculating the registration fee on the basis of the initial public offering price of \$18.00 per share of common stock as set forth in the Registrant’s Registration Statement on Form S-1, as amended (File No. 333-252175), declared effective on February 4, 2021.
- (8) Estimated in accordance with Rule 457(h) solely for the purpose of calculating the registration fee on the basis of the weighted-average exercise price for such options.
- (9) Estimated in accordance with Rule 457(h) solely for the purpose of calculating the registration fee on the basis of the initial public offering price of \$18.00 per share of common stock as set forth in the Registrant’s Registration Statement on Form S-1, as amended (File No. 333-252175), declared effective on February 4, 2021, multiplied by 85%, which is the percentage of the price per share applicable to purchases under the 2021 ESPP.

PART I

INFORMATION REQUIRED IN THE SECTION 10(A) PROSPECTUS

The information specified in Item 1 and Item 2 of Part I of Form S-8 is omitted from this Registration Statement. The documents containing the information specified in Part I of Form S-8 will be delivered to the participants in the plans covered by this Registration Statement as specified by Rule 428(b)(1) under the Securities Act of 1933, as amended (the "*Securities Act*").

PART II

ITEM 3. INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The following documents filed by Vor Biopharma Inc. (the "*Registrant*") with the Securities and Exchange Commission are incorporated by reference into this Registration Statement:

(a) The Registrant's prospectus filed on February 8, 2021 pursuant to Rule 424(b) under the Securities Act relating to the Registration Statement on Form S-1, as amended (File No. 333-252175), which contains audited financial statements for the Registrant's latest fiscal year for which such statements have been filed.

(b) The Registrant's Current Report on Form 8-K filed on February 9, 2021 (File No. 001-39979).

(c) The description of the Registrant's common stock which is contained in a registration statement on Form 8-A filed on February 1, 2021 (File No. 001-39979) under the Securities Exchange Act of 1934, as amended (the "*Exchange Act*"), including any amendment or report filed for the purpose of updating such description.

(d) 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

As of the date of the date hereof, GC&H Investments, LLC and GC&H Investments, a California partnership, which are entities beneficially owned by current and former partners and associates of Cooley LLP, counsel to the Registrant, beneficially hold an aggregate of 70,701 shares of the Registrant's Common Stock.

ITEM 6. INDEMNIFICATION OF DIRECTORS AND OFFICERS

Section 145 of the Delaware General Corporation Law (the "DGCL") authorizes a court to award, or a corporation's board of directors to grant, indemnity to directors and officers in terms sufficiently broad to permit such indemnification under certain circumstances for liabilities, including reimbursement for expenses incurred, arising under the Securities Act. The Registrant's amended and restated certificate of incorporation that became effective upon the closing of the Registrant's initial public offering permits indemnification of the Registrant's directors, officers, employees and other agents to the maximum extent permitted by the DGCL, and the Registrant's amended and restated bylaws that became effective upon the closing of the Registrant's initial public offering provide that the Registrant will indemnify its directors and executive officers and permit the Registrant to indemnify its other officers, employees and other agents, in each case to the maximum extent permitted by the DGCL.

The Registrant has entered into indemnification agreements with its directors and officers, whereby it has agreed to indemnify its directors and officers to the fullest extent permitted by law, including indemnification against expenses and liabilities incurred in legal proceedings to which the director or officer was, or is threatened to be made, a party by reason of the fact that such director or officer is or was a director, officer, employee or agent of the Registrant, provided that such director or officer acted in good faith and in a manner that the director or officer reasonably believed to be in, or not opposed to, the best interest of the Registrant. At present, there is no pending litigation or proceeding involving a director or officer of the Registrant regarding which indemnification is sought, nor is the registrant aware of any threatened litigation that may result in claims for indemnification.

The Registrant maintains insurance policies that indemnify its directors and officers against various liabilities arising under the Securities Act and the Exchange Act that might be incurred by any director or officer in his or her capacity as such.

ITEM 7. EXEMPTION FROM REGISTRATION CLAIMED.

Not applicable.

ITEM 8. EXHIBITS

Exhibit Number	Description	Incorporated by Reference			
		Schedule Form	File Number	Exhibit	Filing Date
4.1	Amended and Restated Certificate of Incorporation of the Registrant.	8-K	001-39979	3.1	February 9, 2021
4.2	Amended and Restated Bylaws of the Registrant.	8-K	001-39979	3.2	February 9, 2021
4.3	Form of Common Stock Certificate of the Registrant.	S-1	333-252175	4.1	February 1, 2021
4.4	2015 Stock Incentive Plan and Forms of Option Grant Agreements, Exercise Notices and Restricted Stock Agreements.	S-1	333-252175	10.5	January 15, 2021
4.5	2021 Equity Incentive Plan and Forms of Stock Option Grant Notice, Stock Option Agreement, Restricted Stock Unit Grant Notice and Restricted Stock Unit Award Agreement.	S-1	333-252175	10.6	February 1, 2021
4.6	2021 Employee Stock Purchase Plan.	S-1	333-252175	10.7	February 1, 2021

- 4.7* [Form of Nonstatutory Stock Option Agreement Granted Outside of 2015 Stock Incentive Plan](#)
- 5.1* [Opinion of Cooley LLP.](#)
- 23.1* [Consent of Cooley LLP \(included in Exhibit 5.1\).](#)
- 23.2* [Consent of Ernst & Young LLP, independent registered public accounting firm.](#)
- 24.1* [Power of Attorney \(included on the signature page of this registration statement\).](#)

* 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.
 - (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 Securities and Exchange 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, as amended, 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 Cambridge, Commonwealth of Massachusetts, on February 9, 2021.

VOR BIOPHARMA INC.

By: /s/ Robert Ang

Robert Ang, M.B.B.S.

President and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Robert Ang and Nathan Jorgensen, and each of them, as his or her true and lawful attorneys-in-fact and agents, each with the full power of substitution, for him or her and in their name, place or stead, in any and all capacities, to sign any and all amendments to this Registration Statement (including post-effective amendments), 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 and necessary to be done in connection therewith, as fully 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 his, her or their substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

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

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Robert Ang</u> Robert Ang, M.B.B.S	President, Chief Executive Officer and Director <i>(Principal Executive Officer)</i>	February 9, 2021
<u>/s/ Nathan Jorgensen</u> Nathan Jorgensen, Ph.D.	Chief Financial Officer <i>(Principal Financial Officer and Principal Accounting Officer)</i>	February 9, 2021
<u>/s/ Daniella Beckman</u> Daniella Beckman	Director	February 9, 2021
<u>/s/ David C. Lubner</u> David C. Lubner	Director	February 9, 2021
<u>/s/ Sven (Bill) Ante Lundberg</u> Sven (Bill) Ante Lundberg, M.D.	Director	February 9, 2021
<u>/s/ Kush M. Parmar</u> Kush M. Parmar, M.D., Ph.D.	Director	February 9, 2021
<u>/s/ Matthew Patterson</u> Matthew Patterson	Director	February 9, 2021
<u>/s/ Joshua Resnick</u> Joshua Resnick, M.D	Director	February 9, 2021

VOR BIOPHARMA INC.

Nonstatutory Stock Option Agreement

Granted Outside of 2015 Stock Incentive Plan1. Grant of Option.

This agreement evidences the grant by Vor Biopharma Inc., a Delaware corporation (the "Company"), [____], 2020 (the "Grant Date") to [____] (the "Participant"), of an option to purchase, in whole or in part, on the terms provided herein and subject to the terms of the Company's 2015 Stock Incentive Plan (the "Plan"), a total of [____] shares (the "Shares") of common stock, \$0.0001 par value per share, of the Company ("Common Stock") at \$[____] per Share. Unless earlier terminated, this option shall expire at 5:00 p.m., Eastern time, on [____], 2030 (the "Final Exercise Date").

This option is granted outside of, but subject to the terms of, the Plan and other relevant Plan provisions as if the option had been granted as a Nonstatutory Stock Option under the Plan, provided that for the avoidance of doubt, the Shares subject to this option shall not reduce and shall have no impact on the number of shares available for grant under the Plan. Except as otherwise indicated by the context, the term "Participant", as used in this option, shall be deemed to include any person who acquires the right to exercise this option validly under its terms.

2. Vesting Schedule.

This option will become exercisable ("vest") as to 25% of the original number of Shares on the first anniversary of the Vesting Commencement Date and as to an additional 1/48th of the original number of Shares at the end of each subsequent month of service following the first anniversary of the Vesting Commencement Date until the fourth anniversary of the Vesting Commencement Date. The "Vesting Commencement Date" shall be the Grant Date.

The right of exercise shall be cumulative so that to the extent the option is not exercised in any period to the maximum extent permissible it shall continue to be exercisable, in whole or in part, with respect to all Shares for which it is vested until the earlier of the Final Exercise Date or the termination of this option under Section 3 hereof or the Plan.

3. Exercise of Option.

(a) Form of Exercise. Each election to exercise this option shall be accompanied by a completed Notice of Stock Option Exercise in the form attached hereto as Exhibit A, signed by the Participant, and received by the Company at its principal office, accompanied by this Agreement, and payment in full in the manner provided in the Plan. The Participant may purchase less than the number of shares covered hereby, provided that no partial exercise of this option may be for any fractional share.

(b) Continuous Relationship with the Company Required. Except as otherwise provided in this Section 3, this option may not be exercised unless the Participant, at the time he or she exercises this option, is, and has been at all times since the Grant Date, an employee or officer of, or consultant or advisor to, the Company or any other entity the employees, officers, directors, consultants, or advisors of which are eligible to receive option grants under the Plan (an "Eligible Participant").

(c) Termination of Relationship with the Company. If the Participant ceases to be an Eligible Participant for any reason, then, except as provided in paragraphs (d) and (e) below, the right to exercise this option shall terminate three months after such cessation (but in no event after the Final Exercise Date), provided that this option shall be exercisable only to the extent that the Participant was entitled to exercise this option on the date of such cessation. Notwithstanding the foregoing, if the Participant, prior to the Final Exercise Date, violates the non-competition or confidentiality provisions of any employment contract, confidentiality and nondisclosure agreement or other agreement between the Participant and the Company, the right to exercise this option shall terminate immediately upon such violation.

(d) Exercise Period Upon Death or Disability. If the Participant dies or becomes disabled (within the meaning of Section 22(e)(3) of the Internal Revenue Code of 1986, as amended) prior to the Final Exercise Date while he or she is an Eligible Participant and the Company has not terminated such relationship for "cause" as specified in paragraph (e) below, this option shall be exercisable, within the period of one year following the date of death or disability of the Participant, by the Participant (or in the case of death by an authorized transferee), provided that this option shall be exercisable only to the extent that this option was exercisable by the Participant on the date of his or her death or disability, and further provided that this option shall not be exercisable after the Final Exercise Date.

(e) Termination for Cause. If, prior to the Final Exercise Date, the Participant's employment or other relationship with the Company is terminated by the Company for Cause (as defined below), the right to exercise this option shall terminate immediately upon the effective date of such termination of employment or other relationship. If the Participant is party to an employment, consulting or severance agreement with the Company that contains a definition of "cause" for termination of employment or other relationship, "Cause" shall have the meaning ascribed to such term in such agreement. Otherwise, "Cause" shall mean willful misconduct by the Participant or willful failure by the Participant to perform his or her responsibilities to the Company (including, without limitation, breach by the Participant of any provision of any employment, consulting, advisory, nondisclosure, non-competition or other similar agreement between the Participant and the Company), as determined by the Company, which determination shall be conclusive. The Participant's employment or other relationship shall be considered to have been terminated for "Cause" if the Company determines, within 30 days after the Participant's resignation, that termination for Cause was warranted.

4. Company Right of First Refusal.

(a) Notice of Proposed Transfer. If the Participant proposes to sell, assign, transfer, pledge, hypothecate or otherwise dispose of, by operation of law or otherwise (collectively, "transfer") any Shares acquired upon exercise of this option, then the Participant shall first give written notice of the proposed transfer (the "Transfer Notice") to the Company. The Transfer Notice shall name the proposed transferee and state the number of such Shares the Participant proposes to transfer (the "Offered Shares"), the price per share and all other material terms and conditions of the transfer.

(b) Company Right to Purchase. For 30 days following its receipt of such Transfer Notice, the Company shall have the option to purchase all or part of the Offered Shares at the price and upon the terms set forth in the Transfer Notice. In the event the Company elects to purchase all or part of the Offered Shares, it shall give written notice of such election to the Participant within such 30-day period. Within 10 days after his or her receipt of such notice, the Participant shall tender to the Company at its principal offices the certificate or certificates representing the Offered Shares to be purchased by the Company, duly endorsed in blank by the Participant or with duly endorsed stock powers attached thereto, all in a form suitable for transfer of the Offered Shares to the Company. Promptly following receipt of such certificate or certificates, the Company shall deliver or mail to the Participant a check in payment of the purchase price for such Offered Shares; provided that if the terms of payment set forth in the Transfer Notice were other than cash against delivery, the Company may pay for the Offered Shares on the same terms and conditions as were set forth in the Transfer Notice; and provided further that any delay in making such payment shall not invalidate the Company's exercise of its option to purchase the Offered Shares.

(c) Shares Not Purchased By Company. If the Company does not elect to acquire all of the Offered Shares, the Participant may, within the 30-day period following the expiration of the option granted to the Company under subsection (b) above, transfer the Offered Shares which the Company has not elected to acquire to the proposed transferee, provided that such transfer shall not be on terms and conditions more favorable to the transferee than those contained in the Transfer Notice. Notwithstanding any of the above, all Offered Shares transferred pursuant to this Section 4 shall remain subject to the right of first refusal set forth in this Section 4 and such transferee shall, as a condition to such transfer, deliver to the Company a written instrument confirming that such transferee shall be bound by all of the terms and conditions of this Section 4.

(d) Consequences of Non-Delivery. After the time at which the Offered Shares are required to be delivered to the Company for transfer to the Company pursuant to subsection (b) above, the Company shall not pay any dividend to the Participant on account of such Offered Shares or permit the Participant to exercise any of the privileges or rights of a stockholder with respect to such Offered Shares, but shall, insofar as permitted by law, treat the Company as the owner of such Offered Shares.

(e) Exempt Transactions. The following transactions shall be exempt from the provisions of this Section 4:

(1) any transfer of Shares to or for the benefit of any spouse, child or grandchild of the Participant, or to a trust for their benefit;

(2) any transfer pursuant to an effective registration statement filed by the Company under the Securities Act of 1933, as amended (the "Securities Act"); and

(3) the sale of all or substantially all of the outstanding shares of capital stock of the Company (including pursuant to a merger or consolidation);

provided, however, that in the case of a transfer pursuant to clause (1) above, such Shares shall remain subject to the right of first refusal set forth in this Section 4.

(f) Assignment of Company Right. The Company may assign its rights to purchase Offered Shares in any particular transaction under this Section 4 to one or more persons or entities.

(g) Termination. The provisions of this Section 4 shall terminate upon the earlier of the following events:

(1) the closing of the sale of shares of Common Stock in an underwritten public offering pursuant to an effective registration statement filed by the Company under the Securities Act; or

(2) the sale of all or substantially all of the outstanding shares of capital stock, assets or business of the Company, by merger, consolidation, sale of assets or otherwise (other than a merger or consolidation in which all or substantially all of the individuals and entities who were beneficial owners of the Company's voting securities immediately prior to such transaction beneficially own, directly or indirectly, more than 50% (determined on an as-converted basis) of the outstanding securities entitled to vote generally in the election of directors of the resulting, surviving or acquiring corporation in such transaction).

(h) No Obligation to Recognize Invalid Transfer. The Company shall not be required to transfer on its books any of the Shares which shall have been sold or transferred in violation of any of the provisions set forth in this Section 4, or (2) to treat as owner of such Shares or to pay dividends to any transferee to whom any such Shares shall have been so sold or transferred.

(i) Legends. The certificate representing Shares shall bear a legend substantially in the following form (in addition to, or in combination with, any legend required by applicable federal and state securities laws and agreements relating to the transfer of the Company securities):

“The shares represented by this certificate are subject to a right of first refusal in favor of the Company, as provided in a certain stock option agreement with the Company.”

5. Agreement in Connection with Initial Public Offering.

The Participant agrees, in connection with the initial underwritten public offering of the Common Stock pursuant to a registration statement under the Securities Act, (i) not to (a) offer, pledge, announce the intention to sell, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, or otherwise transfer or dispose of, directly or indirectly, any shares of Common Stock or any other securities of the Company or (b) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of shares of Common Stock or

other securities of the Company, whether any transaction described in clause (a) or (b) is to be settled by delivery of securities, in cash or otherwise, during the period beginning on the date of the filing of such registration statement with the Securities and Exchange Commission and ending 180 days after the date of the final prospectus relating to the offering (plus up to an additional 34 days to the extent requested by the managing underwriters for such offering in order to address Rule 2711(f) of the National Association of Securities Dealers, Inc. or any similar successor provision), and (ii) to execute any agreement reflecting clause (i) above as may be requested by the Company or the managing underwriters at the time of such offering. The Company may impose stop-transfer instructions with respect to the shares of Common Stock or other securities subject to the foregoing restriction until the end of the “lock-up” period.

6. Withholding.

No Shares will be issued pursuant to the exercise of this option unless and until the Participant pays to the Company, or makes provision satisfactory to the Company for payment of, any federal, state or local withholding taxes required by law to be withheld in respect of this option.

7. Transfer Restrictions.

(a) This option may not be sold, assigned, transferred, pledged or otherwise encumbered by the Participant, either voluntarily or by operation of law, except by will or the laws of descent and distribution, and, during the lifetime of the Participant, this option shall be exercisable only by the Participant.

(b) The Participant agrees that he or she will not transfer any Shares issued pursuant to the exercise of this option unless the transferee, as a condition to such transfer, delivers to the Company a written instrument confirming that such transferee shall be bound by all of the terms and conditions of Section 4 and Section 5; provided that such a written confirmation shall not be required with respect to (1) Section 4 after such provision has terminated in accordance with Section 4(g) or (2) Section 5 after the completion of the lock-up period in connection with the Company’s initial underwritten public offering.

8. Provisions of the Plan.

This option is granted outside, but is subject to the provisions, of the Plan (including the provisions relating to amendments to the Plan), a copy of which is furnished to the Participant with this option.

IN WITNESS WHEREOF, the Company has caused this option to be executed under its corporate seal by its duly authorized officer. This option shall take effect as a sealed instrument.

VOR BIOPHARMA INC.

By: _____
Name:
Title:

PARTICIPANT'S ACCEPTANCE

The undersigned hereby accepts the foregoing option and agrees to the terms and conditions thereof. The undersigned hereby acknowledges receipt of a copy of the Company's 2015 Stock Incentive Plan.

PARTICIPANT:

Address: _____

EXHIBIT A
NOTICE OF STOCK OPTION EXERCISE

[DATE]¹

Vor Biopharma Inc.
100 Cambridgepark Drive, Suite 400
Cambridge, MA 02140

Attention: Treasurer

Dear Sir or Madam:

I am the holder of a Nonstatutory Stock Option granted to me outside of, but subject to the terms of, the Vor Biopharma Inc. (the “**Company**”) 2015 Stock Incentive Plan on October [____], 2020 for the purchase of [____] shares of Common Stock of the Company at a purchase price of \$[____] per share.

I hereby exercise my option to purchase [____]² shares of Common Stock (the “**Shares**”), for which I have enclosed [____]³ in the amount of [____]⁴. Please register my stock certificate as follows:

Name(s): _____⁵

Address: _____

I represent, warrant and covenant as follows:

-
- ¹ Enter date of exercise.
 - ² Enter the number of shares of Common Stock to be purchased upon exercise of all or part of the option.
 - ³ Enter “cash”, “personal check” or if permitted by the option or Plan, “stock certificates No. XXXX and XXXX”.
 - ⁴ Enter the dollar amount (price per share of Common Stock times the number of shares of Common Stock to be purchased), or the number of shares tendered. Fair market value of shares tendered, together with cash or check, must cover the purchase price of the shares issued upon exercise.
 - ⁵ Enter name(s) to appear on stock certificate in one of the following formats: (a) your name only (i.e., John Doe); (b) your name and other name (i.e., John Doe and Jane Doe, Joint Tenants with Right to Survivorship); or for Nonstatutory Stock Options only, (c) a child’s name, with you as custodian (i.e. Jane Doe, Custodian for Tommy Doe). Note: There may be income and/or gift tax consequences for registering shares in a child’s name.

1. I am purchasing the Shares for my own account for investment only, and not with a view to, or for sale in connection with, any distribution of the Shares in violation of the Securities Act of 1933 (the "Securities Act"), or any rule or regulation under the Securities Act.
2. I have had such opportunity as I have deemed adequate to obtain from representatives of the Company such information as is necessary to permit me to evaluate the merits and risks of my investment in the Company.
3. I have sufficient experience in business, financial and investment matters to be able to evaluate the risks involved in the purchase of the Shares and to make an informed investment decision with respect to such purchase.
4. I can afford a complete loss of the value of the Shares and am able to bear the economic risk of holding such Shares for an indefinite period.
5. I understand that (i) the Shares have not been registered under the Securities Act and are "restricted securities" within the meaning of Rule 144 under the Securities Act, (ii) the Shares cannot be sold, transferred or otherwise disposed of unless they are subsequently registered under the Securities Act or an exemption from registration is then available; (iii) in any event, the exemption from registration under Rule 144 will not be available for at least one year and even then will not be available unless a public market then exists for the Common Stock, adequate information concerning the Company is then available to the public, and other terms and conditions of Rule 144 are complied with; and (iv) there is now no registration statement on file with the Securities and Exchange Commission with respect to any stock of the Company and the Company has no obligation or current intention to register the Shares under the Securities Act.

Very truly yours,

Participant



Richard Segal
617 937 2332
rsegal@cooley.com

February 9, 2021

Vor Biopharma Inc.
100 Cambridgepark Drive, Suite 400
Cambridge, MA 02140

Ladies and Gentlemen:

We have represented Vor Biopharma 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 covering the offering of up to 8,520,110 shares (the “**Shares**”) of the Company’s common stock, par value \$0.0001 per share (the “**Common Stock**”), consisting of (i) 4,396,206 shares of Common Stock issuable pursuant to the Company’s 2015 Stock Incentive Plan (the “**Existing Plan**”), (ii) 3,457,787 shares of Common Stock issuable pursuant to the Company’s 2021 Equity Incentive Plan (the “**New Plan**”), (iii) 372,000 shares of Common Stock issuable pursuant to the Company’s 2021 Employee Stock Purchase Plan (together with the Existing Plan and the New Plan, the “**Plans**”) and (iv) 294,117 shares of Common Stock (the “**Non-Plan Shares**”) pursuant to a stock option grant outside of the Plans (the “**Non-Plan Option**”).

In connection with this opinion, we have examined and relied upon (a) the Registration Statement and the related prospectuses, (b) the Company’s Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws, each as currently in effect, (c) the Plans, and (d) originals or copies certified to our satisfaction of such 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 thereof, 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 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 Plans (and in the case of the Non-Plan Shares, in accordance with the resolutions adopted by the Board of Directors of the Company with respect to the Non-Plan Option), the Registration Statement and the related prospectuses, will be validly issued, fully paid and nonassessable (except as to shares issued pursuant to certain deferred payment arrangements, which will be fully paid and nonassessable when such deferred payments are made in full).

Cooley LLP 500 Boylston Street 14th Floor Boston, MA 02116
t: (617) 937-2300 f: (650) 937-2400 cooley.com



Vor Biopharma Inc.
February 9, 2021
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We consent to the filing of this opinion as an exhibit to the Registration Statement.

Sincerely,

Cooley LLP

By: /s/ Richard Segal
Richard Segal

Cooley LLP 500 Boylston Street 14th Floor Boston, MA 02116
t: (617) 937-2300 f: (650) 937-2400 cooley.com

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the Registration Statement (Form S-8) pertaining to the 2015 Stock Incentive Plan, the 2021 Equity Incentive Plan, the 2021 Employee Stock Purchase Plan, and the Stock Option Awarded Outside Any Plan of Vor Biopharma Inc. of our report dated November 6, 2020, except for the reverse stock split described in Note 17, as to which the date is February 1, 2021, with respect to the financial statements of Vor Biopharma Inc. included in Amendment No. 2 to the Registration Statement (Form S-1 No. 333-252175) and related Prospectus of Vor Biopharma Inc., filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

Boston, Massachusetts
February 8, 2021