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

Washington, D.C. 20549

FORM S-8 REGISTRATION STATEMENT UNDER

THE SECURITIES ACT OF 1933

AN2 Therapeutics, Inc.

(Exact name of registrant as specified in its charter)

Delaware (State or other jurisdiction of incorporation or organization) 82-0606654 (I.R.S. Employer Identification No.)

1800 El Camino Real, Suite D Menlo Park, California 94027 (650) 331-9090 (Address of principal executive offices, including zip code)

AN2 Therapeutics, Inc. 2022 Equity Incentive Plan AN2 Therapeutics, Inc. 2022 Employee Stock Purchase Plan (Full titles of the plans)

Eric Easom Chief Executive Officer AN2 Therapeutics, Inc. 1800 El Camino Real, Suite D Menlo Park, California 94027 (650) 331-9090 (Name, address and telephone number, including area code, of agent for service)

Copies to:

Josh Seidenfeld Sally Kay Anitha Anne Cooley LLP 3175 Hanover Street Palo Alto, CA 94304 (650) 843-5000 Lucy O. Day Chief Financial Officer AN2 Therapeutics, Inc. 1800 El Camino Real, Suite D Menlo Park, California 94027 (650) 331-9090

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer □ Non-accelerated filer ⊠

Accelerated filer□Smaller reporting company⊠Emerging growth company⊠

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act. \Box

EXPLANATORY NOTE REGISTRATION OF ADDITIONAL SHARES

Pursuant to General Instruction E of Form S-8, AN2 Therapeutics, Inc. (the "*Registrant*") is filing this Registration Statement on Form S-8 with the Securities and Exchange Commission (the "*Commission*") for the purpose of registering (i) 776,106 additional shares of its Common Stock under the 2022 Equity Incentive Plan (the "*2022 Plan*"), pursuant to the provisions of the 2022 Plan providing for an automatic increase in the number of shares of Common Stock reserved and available for issuance under the 2022 Plan on January 1, 2023, and (ii) 194,026 additional shares of its Common Stock under the 2022 ESPP providing for an automatic increase in the number of shares of Common Stock reserved and available for issuance of shares of Common Stock reserved and available for issuance of shares of Common Stock reserved and available for issuance of shares of Common Stock reserved and available for issuance of shares of Common Stock reserved and available for issuance of shares of Common Stock reserved and available for issuance of shares of Common Stock reserved and available for issuance under the 2022 ESPP providing for an automatic increase in the number of shares of Common Stock reserved and available for issuance under the 2022 ESPP on January 1, 2023. In accordance with the instructional note to Part I of Form S-8 as promulgated by the Commission, the information specified by Part I of the Form S-8 has been omitted from this Registration Statement.

The Registrant previously registered shares of its Common Stock for issuance under the Plans on a Registration Statement on Form S-8 filed with the Commission on March 29, 2022 (File No. 333-263917). Pursuant to General Instruction E to Form S-8, this Registration Statement hereby incorporates by reference the contents of the Registration Statements referenced above except as set forth below.

PART II

INFORMATION REQUIRED IN 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, 2022, filed with the Commission on March 29, 2023 (the "2022 Form 10-K").

(b) The description of the Registrant's Common Stock which is contained in the Registrant's Registration Statement on Form 8-A filed on March 22, 2022 (File No. 001-41331) under the Securities Exchange Act of 1934, as amended (the "*Exchange Act*"), as updated by Exhibit 4.3 to the 2022 Form 10-K, including any amendment or report filed for the purpose of updating such description.

(c) 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 Delaware General Corporation Law 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 of 1933, as amended (the "*Securities Act*"). The Registrant's amended and restated certificate of incorporation permits indemnification of the Registrant's directors, officers, employees and other agents to the maximum extent permitted by the Delaware General Corporation Law, and the Registrant's amended and restated bylaws 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 Delaware General Corporation Law.

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

		Incorporate	corporated by Reference		
Exhibit <u>Number</u>	Description	Schedule Form	File Number	Exhibit	Filing Date
4.1	Amended and Restated Certificate of Incorporation of the Registrant	S-1	333-263295	3.2	March 4, 2022
4.2	Amended and Restated Bylaws of the Registrant	S-1	333-263295	3.4	March 4, 2022
4.3	Form of Common Stock Certificate of the Registrant	S-1	333-263295	4.1	March 21, 2022
5.1*	Opinion of Cooley LLP				

23.1* Consent of Cooley LLP (included in Exhibit 5.1)

23.2* Consent of Independent Registered Public Accounting Firm

*		Incorporated by Reference			
Exhibit Number	Description	Schedule Form	File Number	Exhibit	Filing Date
24.1*	Power of Attorney (included on the signature page of this registration statement)				
99.1	AN2 Therapeutics, Inc. 2022 Equity Incentive Plan	S-1	333-263295	10.3	March 4, 2022
99.2	Forms of Stock Option Grant Notice, Stock Option Agreement and Notice of Exercise under the AN2 Therapeutics, Inc. 2022 Equity Incentive Plan	S-1	333-263295	10.4	March 4, 2022
99.3	Form of Restricted Stock Unit Grant Notice and Award Agreement under the AN2 Therapeutics, Inc. 2022 Equity Incentive Plan	S-1	333-263295	10.5	March 4, 2022
99.4	AN2 Therapeutics, Inc. 2022 Employee Stock Purchase Plan	S-1	333-263295	10.6	March 4, 2022
107*	Filing Fee Table				

* Filed herewith.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the Registrant certifies that it has reasonable grounds to believe that it meets all 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 Menlo Park, State of California, on March 29, 2023.

AN2 THERAPEUTICS, INC.

By: /s/ Eric Easom

Eric Easom Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Eric Easom, Lucy Day and Michael A. Nazak, 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.

Signature	Title	Date
/s/ Eric Easom Eric Easom	Chief Executive Officer and Director (Principal Executive Officer)	March 29, 2023
/s/ Lucy Day Lucy Day	Chief Financial Officer (Principal Financial Officer)	March 29, 2023
/s/ Michael Nazak Michael Nazak	Vice President and Controller (Principal Accounting Officer)	March 29, 2023
/s/ Joseph S. Zakrzewski Joseph S. Zakrzewski	Board Chair	March 29, 2023
/s/ Kabeer Aziz Kabeer Aziz	Director	March 29, 2023
/s/ Rob Readnour Rob Readnour	Director	March 29, 2023
/s/ Gilbert L. Marks Gilbert L. Marks	Director	March 29, 2023
/s/ Stephanie Wong Stephanie Wong	Director	March 29, 2023
/s/ Patricia Martin Patricia Martin	Director	March 29, 2023
/s/ Melvin Spigelman Melvin Spigelman	Director	March 29, 2023
/s/ Maggie FitzPatrick Maggie FitzPatrick	Director	March 29, 2023



Josh Seidenfeld T: +1 650 843 5862 jseidenfeld@cooley.com

March 29, 2023

AN2 Therapeutics, Inc. 1800 El Camino Real, Suite D Menlo Park, CA 94027

Ladies and Gentlemen:

We have acted as counsel to AN2 Therapeutics, Inc., a Delaware corporation (the "*Company*"), in connection with the filing 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 970,132 shares (the "*Shares*") of the Company's common stock, par value \$0.00001 per share ("*Common Stock*"), consisting of (i) 776,106 shares of Common Stock issuable pursuant to the Company's 2022 Equity Incentive Plan (the "*2022 Plan*"), and (ii) 194,026 shares of Common Stock issuable pursuant to the Company's 2022 Employee Stock Purchase Plan (together with the 2022 Plan, the "*Plans*").

In connection with this opinion, we have examined and relied upon (i) the Registration Statement and related prospectuses, (ii) the Company's certificate of incorporation and bylaws, each as currently in effect, (iii) the Plans, and (iv) 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, the accuracy, completeness and authenticity of certificates of public officials and the due authorization, execution and delivery by all persons other than by the Company of all documents 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, the Registration Statement and 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).

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.

Cooley LLP 3175 Hanover Street Palo Alto, CA 94304-1130 t: +1 650 843 5862 f: +1 650 849 7400 cooley.com



AN2 Therapeutics, Inc. March 29, 2023 Page Two

Very truly yours,

COOLEY LLP

By: /s/ Josh Seidenfeld

Josh Seidenfeld

Cooley LLP 3175 Hanover Street Palo Alto, CA 94304-1130 t: +1 650 843 5862 f: +1 650 849 7400 cooley.com

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in this Registration Statement on Form S-8 of AN2 Therapeutics, Inc. of our report dated March 29, 2023 relating to the financial statements, which appears in AN2 Therapeutics, Inc's Annual Report on Form 10-K for the year ended December 31, 2022.

/s/ PricewaterhouseCoopers LLP San Jose, California March 29, 2023

CALCULATION OF FILING FEE TABLES

Form S-8

AN2 Therapeutics, Inc.

Table 1: Newly Registered Securities

Security Type	Security Class Title	Fee Calculation Rule	Amount to be Registered ⁽¹⁾	Proposed Maximum Offering Price Per Share	Proposed Maximum Aggregate Offering Price	Fee Rate	Amount of Registration Fee
Equity	Common Stock, \$0.00001 par value per share, reserved for issuance pursuant to the Registrant's 2022 Equity Incentive Plan	457(c) and 457(h)	776,106 ⁽²⁾	\$9.51(4)	\$7,380,768	0.00011020	\$814
Equity	Common Stock, \$0.00001 par value per share, reserved for future issuance pursuant to the Registrant's 2022 Employee Stock Purchase Plan	457(c) and 457(h)	194,026 ⁽³⁾	\$8.09 ⁽⁵⁾	\$1,569,670	0.00011020	\$173
	Total Offering Amounts				\$8,950,438		\$987
	Total Fee Offsets						N/A
	Net Fee Due						\$987

(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 Common Stock of AN2 Therapeutics, Inc. (the "Registrant") that become issuable under the Registrant's 2022 Equity Incentive Plan (the "2022 Plan") and the Registrant's 2022 Employee Stock Purchase Plan (the "2022 ESPP") 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 the Registrant's Common Stock, as applicable.

- (2) Represents shares of Common Stock that were added to the shares reserved for future issuance under the 2022 Plan on January 1, 2023, pursuant to an evergreen provision contained in the 2022 Plan. Pursuant to such provision, the number of shares reserved for issuance under the 2022 Plan will automatically increase on January 1 of each year for a period of 10 years, beginning on January 1, 2023 and ending on (and including) January 1, 2032, in an amount equal to four percent (4%) of the total number of shares of the Registrant's Common Stock outstanding on December 31 of the preceding calendar year; provided, however, that the Company's board of directors may act prior to January 1st of a given year to provide that the increase for such year will be a lesser number of shares of Common Stock.
- (3) Represents shares of Common Stock that were added to the shares reserved for future issuance under the 2022 ESPP on January 1, 2023, pursuant to an evergreen provision contained in the 2022 ESPP. Pursuant to such provision, the number of shares reserved for issuance under the 2022 ESPP will automatically increase on January 1 of each year for a period of 10 years, beginning on January 1, 2023 and continuing through (and including) January 1, 2032, by the lesser of (i) one percent (1%) of the total number of shares of the Registrant's Common Stock outstanding on the prior December 31st of the preceding calendar year, and (ii) 561,000 shares of Common stock. Notwithstanding the foregoing, the Company's board of directors may act prior to January 1st of a given year to provide that there will be no January 1st increase in the share reserve for such calendar year will be a lesser number of shares of Common Stock than would otherwise occur pursuant to the preceding sentence.
- (4) Estimated in accordance with Rules 457(c) and 457(h) solely for the purpose of calculating the registration fee on the basis of \$9.51 per share, which is the average of the high and low selling prices per share of the Registrant's Common Stock on March 28, 2023 as reported on the Nasdaq Global Select Market.
- (5) Estimated in accordance with Rules 457(c) and 457(h) solely for the purpose of calculating the registration fee. The offering price per share and the aggregate offering price are based upon \$8.09 which is the average of the high and low selling prices per share of the Registrant's Common Stock on March 28, 2023 as reported on the Nasdaq Global Select Market multiplied by 85%, which is the percentage of the price per share applicable to purchases under the 2022 ESPP.