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

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**FORM S-8**  
REGISTRATION STATEMENT  
*Under*  
*The Securities Act of 1933*

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**Artelo Biosciences, Inc.**

(Exact name of registrant as specified in its charter)

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**Nevada**  
(State or other jurisdiction of  
incorporation or organization)

**33-1220924**  
(I.R.S. Employer  
Identification Number)

**505 Lomas Santa Fe, Suite 160**  
**Solana Beach, CA 92075**  
(Address of Principal Executive Offices, including zip code)

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**Artelo Biosciences, Inc. 2018 Equity Incentive Plan**  
(Full title of the plan)

**Gregory D. Gorgas**  
**Chief Executive Officer and President**  
**505 Lomas Santa Fe, Suite 160**  
**Solana Beach, CA 92075**  
**Telephone: (858) 925-7049**  
(Name, address, including zip code, and telephone number, including area code, of agent for service)

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*Copies to:*  
**Martin J. Waters**  
**Wilson Sonsini Goodrich & Rosati, P.C.**  
**12235 El Camino Real**  
**San Diego, CA 92130**  
**Telephone: (858) 350-2300**  
**Facsimile: (858) 350-2399**

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

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

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

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**EXPLANATORY NOTE**

**REGISTRATION OF ADDITIONAL SECURITIES PURSUANT TO GENERAL INSTRUCTION E**

This Registration Statement on Form S-8 (the “Registration Statement”) is being filed to register an additional 428,353 shares of common stock of Artelo Biosciences, Inc. (the “Registrant”) reserved for issuance pursuant to future awards under the Registrant’s 2018 Equity Incentive Plan, as amended (the “2018 Plan”).

These additional shares of common stock are securities of the same class as other securities for which previous Registration Statements on Form S-8 were filed by the Registrant with the Securities and Exchange Commission (the “SEC”) on January 15, 2020 (File No. 333-235916), June 25, 2020 (File No. 333-239434), December 16, 2020 (File No. 333-251387) and April 7, 2022 (File No. 333-264183) (the “Previous Registration Statements”). In accordance with General Instruction E of Form S-8, the contents of the Previous Registration Statements, including periodic reports filed after the Previous Registration Statements to maintain current information about the Registrant, are incorporated by reference into this Registration Statement.

**PART II**

**INFORMATION REQUIRED IN REGISTRATION STATEMENT**

**Item 3. Incorporation of Documents by Reference.**

The Registrant hereby incorporates by reference into this Registration Statement the following documents previously filed with the SEC:

- The Registrant's Annual Report on Form 10-K (File No. 001-38951) for the fiscal year ended December 31, 2022 filed with the SEC on March 31, 2023;
- All other reports filed with the SEC pursuant to Sections 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act") since the end of the fiscal year covered by the Registrant's Annual Report referred to in (1) above (other than the portions of these documents not deemed to be filed); and
- The description of the Registrant's common stock set forth in the Registrant's registration statement on Form 8-A registering the common stock under Section 12 of the Exchange Act filed on June 21, 2019, including any amendments or reports filed for purposes of updating such description.

All documents filed by the Registrant pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act on or after the date of this Registration Statement and prior to the filing of a post-effective amendment to this Registration Statement that indicates that all securities offered have been sold or that deregisters all securities then remaining unsold shall be deemed to be incorporated by reference in this Registration Statement and to be part hereof from the date of filing of such documents; *provided, however*, that documents or information deemed to have been furnished and not filed in accordance with the rules of the SEC shall not be deemed incorporated by reference into this Registration Statement. 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 which 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 8. Exhibits.**

| <b>Exhibit Number</b> | <b>Description</b>   |
|-----------------------|--|
| <a href="#">4.1</a>   | <a href="#">Specimen Common Stock Certificate of the Registrant (which is incorporated herein by reference to Exhibit 4.1 to the Registrant's Registration Statement on Form S-8 (Registration No. 333-251387) filed with the SEC on December 16, 2020).</a>   |
| <a href="#">4.2+</a>  | <a href="#">Artelo Biosciences, Inc. 2018 Equity Incentive Plan, as amended and Forms of Award Agreements thereunder (which is incorporated herein by reference to Exhibit 99.1 to the Registrant's Registration Statement on Form S-8 (Registration No. 333-251387) filed with the SEC on December 16, 2020).</a> |
| <a href="#">5.1*</a>  | <a href="#">Opinion of Fennemore Craig, P.C.</a>   |
| <a href="#">23.1*</a> | <a href="#">Consent of MaloneBailey, LLP, Independent Registered Public Accounting Firm.</a>   |
| <a href="#">23.2*</a> | <a href="#">Consent of Fennemore Craig, P.C. (contained in Exhibit 5.1 hereto).</a>  |
| <a href="#">24.1*</a> | <a href="#">Power of Attorney (contained on the signature page hereto).</a>  |
| <a href="#">107*</a>  | <a href="#">Filing Fee Table</a>   |

+ Indicates management contract or compensatory plan, contract or arrangement.

\* Filed herewith

## SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of San Diego, State of California, on April 21, 2023.

### ARTELO BIOSCIENCES, INC.

By: /s/ Gregory D. Gorgas

Name: Gregory D. Gorgas

Title: President & Chief Executive Officer

### Power of Attorney

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Gregory D. Gorgas, as his or her true and lawful attorney-in-fact and agent with full power of substitution and resubstitution, for such person in any and all capacities, to sign any and all amendments to this Registration Statement (including post-effective amendments) on Form S-8, and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorney-in-fact, proxy, and agent 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 for all intents and purposes as such person might or could do in person, hereby ratifying and confirming all that any said attorney-in-fact, proxy and agent, or his substitute, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated:

| <u>Name</u>   | <u>Title</u>  | <u>Date</u>    |
|---|---|----------------|
| <u>/s/ Gregory D. Gorgas</u><br>Gregory D. Gorgas                       | President, Chief Executive Officer, Chief Financial Officer, Treasurer, and Director<br>(Principal Executive Officer, Principal Financial Officer and Principal Accounting Officer) | April 21, 2023 |
| <u>/s/ Connie Matsui</u><br>Connie Matsui                               | Director, Chair of the Board  | April 21, 2023 |
| <u>/s/ Steven Kelly</u><br>Steven Kelly                                 | Director  | April 21, 2023 |
| <u>/s/ Douglas Blayney</u><br>Douglas Blayney                           | Director  | April 21, 2023 |
| <u>/s/ R. Martin Emanuele</u><br>R. Martin Emanuele                     | Director  | April 21, 2023 |
| <u>/s/ Tamara A. (Seymour) Favorito</u><br>Tamara A. (Seymour) Favorito | Director  | April 21, 2023 |
| <u>/s/ Gregory R. Reyes</u><br>Gregory R. Reyes                         | Director  | April 21, 2023 |

**FENNEMORE.**7800 Rancharrah Parkway  
Reno, NV 89511  
PH (775) 788-2200 | FX (775) 786-1177  
fennemorelaw.com

April 21, 2023

Artelo Biosciences, Inc.  
505 Lomas Santa Fe, Suite 160  
Solano Beach, CA 92075**Re: Registration Statement on Form S-8**

Ladies and Gentlemen:

You have requested our opinion with respect to certain matters in connection with the registration under the Securities Act of 1933, as amended (the "Act"), by Artelo Biosciences, Inc., a Nevada corporation (the "Company"), by means of a registration statement on Form S-8 (as it may be amended and supplemented, the "Registration Statement"), filed with the Securities and Exchange Commission (the "Commission"), of an additional 428,353 shares (the "Incentive Shares") of common stock, par value \$0.001 per share of the Company (the "Common Stock"), that will be issued pursuant to the Artelo Biosciences, Inc. 2018 Equity Incentive Plan, as amended (the "Plan").

In connection with this opinion, we have examined and relied upon (i) the Registration Statement, (ii) the Plan and (iii) the Company's Articles of Incorporation and Bylaws, each as amended and currently in effect, and the originals or copies certified to our satisfaction of such other documents, records, certificates, memoranda and other instruments as in our judgment are necessary or appropriate to enable us to render the opinion expressed below.

We have examined originals or copies of such other corporate records, certificates of corporate officers and public officials and other agreements and documents as we have deemed necessary or advisable for purposes of this opinion letter. We have relied upon the certificates of all public officials and corporate officers with respect to the accuracy of all factual matters contained therein. With respect to the Incentive Shares, we have assumed that at the time of issuance, the Company has sufficient authorized, but unissued shares available to allow for such issuance.

On the basis of the foregoing, and in reliance thereon, we are of the opinion that when Incentive Shares are issued pursuant to the Plan or pursuant to stock options or other instruments that have been issued pursuant to the Plan, such Incentive Shares will be validly issued, fully paid and nonassessable.

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# FENNEMORE.

April 21, 2023

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Our opinion is limited to the laws of the State of Nevada. We express no opinion as to the effect of the law of any other jurisdiction. Our opinion is rendered as of the date hereof, and we assume no obligation to advise you of changes in law or fact (or the effect thereof on the opinions expressed herein) that hereafter may come to our attention.

We hereby consent to the inclusion of this opinion as Exhibit 5.1 to the Registration Statement and to the references to our firm therein and in the Prospectus and in any Prospectus Supplement under the caption "Legal Matters." In giving our consent, we do not admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations thereunder.

Very truly yours,

/s/ Fennemore Craig, P.C.

Fennemore Craig, P.C.

CETE/cdol

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**CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

We consent to the incorporation by reference in this Registration Statement on Form S-8 of our report dated March 31, 2023 with respect to the audited consolidated financial statements of Artelo Biosciences, Inc. and its subsidiaries for the years ended December 31, 2022 and 2021.

*/s/ MaloneBailey, LLP*  
www.malonebailey.com  
Houston, Texas  
April 21, 2023

## Calculation of Filing Fee Tables

**Form S-8**  
(Form Type)

**Artelo Biosciences, Inc.**  
(Exact name of registrant as specified in its charter)

Table 1 – Newly Registered Securities

| Security Type                          | Security Class Title   | Fee Calculation Rule        | Amount Registered <sup>(1)</sup> | Proposed Maximum Offering Price Per Unit | Maximum Aggregate Offering Price | Fee Rate                 | Amount of Registration Fee |
|--|--|-----------------------------|----------------------------------|--|----------------------------------|--------------------------|----------------------------|
| Equity                                 | Common Stock, par value \$0.001 per share, reserved for issuance under the Registrant's 2018 Equity Incentive Plan, as amended | Rule 457(c) and Rule 457(h) | 428,353                          | \$2.70 <sup>(2)</sup>                    | \$1,156,554                      | \$110.20 per \$1,000,000 | \$128.00                   |
| <b>Total Offering Amounts</b>          |  |                             |                                  |  | \$1,156,554                      |                          | \$128.00                   |
| <b>Total Fee Offsets<sup>(3)</sup></b> |  |                             |                                  |  |                                  |                          | –                          |
| <b>Net Fee Due</b>                     |  |                             |                                  |  |                                  |                          | \$128.00                   |

- (1) Pursuant to Rule 416(a) of the Securities Act of 1933, as amended (the “Securities Act”), this registration statement (the “Registration Statement”) shall also cover any additional shares of the Registrant’s Common Stock that become issuable under the Registrant's 2018 Equity Incentive Plan, as amended (the “2018 Plan”) by reason of any stock dividend, stock split, recapitalization or other similar transaction effected without receipt of consideration or conversion of the Registrant’s Common Stock that increases the number of outstanding shares of Common Stock.
- (2) Pursuant to Rule 457(c) and 457(h) under the Securities Act, and solely for the purpose of calculating the registration fee, the proposed maximum offering price per share is \$2.70, which is the average of the high and low prices of shares of Common Stock on The Nasdaq Capital Market (“Nasdaq”) on April 18, 2023 (such date being within five business days of the date that this Registration Statement was filed with the U.S. Securities and Exchange Commission (the “SEC”)).
- (3) The Registrant does not have any fee offsets.