

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

AMENDMENT NO. 4
TO
FORM S-1
REGISTRATION STATEMENT
Under
The Securities Act of 1933

ZYVERSA THERAPEUTICS, INC.
(Exact name of Registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

2834

(Primary Standard Industrial
Classification Code Number)

86-2685744

(I.R.S. Employer
Identification Number)

**2200 N. Commerce Parkway, Suite 208
Weston, FL 33326
(754) 231-1688**

(Address, including zip code, and telephone number, including
area code, of Registrant's principal executive offices)

**Stephen C. Glover
Chief Executive Officer
ZyVersa Therapeutics, Inc.
2200 N. Commerce Parkway, Suite 208
Weston, FL 33326
(754) 231-1688**

(Name, address, including zip code, and telephone number, including
area code, of agent for service)

Copies of all communications, including communications sent to the agent for service, to:

**Faith L. Charles
Todd Mason
Thompson Hine LLP
300 Madison Avenue, 27th Floor
New York, New York 10017-6232
Phone: (212) 344-5680
Fax: (212) 344-6101**

Approximate date of commencement of proposed sale to the public: From time to time after this registration statement becomes effective.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933 check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, 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.

The Registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933, as amended, or until the registration statement shall become effective on such date as the Commission acting pursuant to said Section 8(a) may determine.

EXPLANATORY NOTE

This Amendment No. 4 to ZyVersa Therapeutics, Inc.'s Registration Statement on Form S-1 (File No. 333-268934) (the "Registration Statement") is being filed solely for the purpose of filing Exhibits 5.1 and 23.2 (which is included in Exhibit 5.1). Accordingly, this Amendment No. 4 consists only of the facing page, this explanatory note, Item 16 of Part II of the Registration Statement, the signature page, Exhibits 5.1 and 23.2 (which is included in Exhibit 5.1) and the Exhibit Index. The remainder of the Registration Statement is unchanged and therefore has not been included in this Amendment No. 4.

Item 16. Exhibits and Financial Statement Schedules.

The financial statements filed as part of this registration statement are listed in the index to the financial statements immediately preceding such financial statements, which index to the financial statements is incorporated herein by reference.

Exhibit Number	Description
2.1+	<u>Business Combination Agreement, dated as of July 20, 2022, by and among Larkspur Health Acquisition Corp., Larkspur Merger Sub Inc., Stephen Glover and ZyVersa Therapeutics, Inc. (incorporated by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K filed with the SEC on July 22, 2022).</u>
3.1	<u>Second Amended and Restated Certificate of Incorporation of ZyVersa Therapeutics, Inc. (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K filed with the SEC on December 13, 2022).</u>
3.2	<u>Second Amended and Restated Bylaws of ZyVersa Therapeutics, Inc. (incorporated by reference to Exhibit 3.2 to the Company's Current Report on Form 8-K filed with the SEC on December 13, 2022).</u>
3.3	<u>Certificate of Designation relating to the Series A Convertible Preferred Stock (incorporated by reference to Exhibit 3.3 to the Company's Current Report on Form 8-K filed with the SEC on December 13, 2022).</u>
3.4	<u>Certificate of Designation relating to the Series B Convertible Preferred Stock (incorporated by reference to Exhibit 3.4 to the Company's Current Report on Form 8-K filed with the SEC on December 13, 2022).</u>
4.1	<u>Specimen Class A Common Stock Certificate of ZyVersa Therapeutics, Inc. (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed with the SEC on December 13, 2022).</u>
4.2	<u>Form of Warrant issued by the Company in connection with the Public Warrants (incorporated by reference to Exhibit 4.2 to the Company's Current Report on Form 8-K filed with the SEC on December 13, 2022).</u>
4.3	<u>Form of Warrant issued by the Company in connection with the Private Placement Warrants (incorporated by reference to Exhibit 4.3 to the Company's Current Report on Form 8-K filed with the SEC on December 13, 2022).</u>
4.4	<u>Form of Warrant issued by the Company to each PIPE Investor (incorporated by reference to Exhibit 4.4 to the Company's Current Report on Form 8-K filed with the SEC on December 13, 2022).</u>
4.5	<u>Form of Bridge Warrant issued by the Company (incorporated by reference to Exhibit 4.5 to the Company's Current Report on Form 8-K filed with the SEC on December 13, 2022).</u>
4.6	<u>Form of Warrant pursuant to License Agreement, dated April 18, 2019, by and between InflamaCORE, LLC and Variant Pharmaceuticals, Inc. (incorporated by reference to Exhibit 4.3 to the Company's Form S-4 filed with the SEC on October 21, 2022).</u>
4.7	<u>Form of Warrant pursuant to License Agreement, dated December 15, 2015, by and between L&F Research LLC and Variant Pharmaceuticals, Inc. (incorporated by reference to Exhibit 4.4 to the Company's Form S-4 filed with the SEC on October 21, 2022).</u>
4.8	<u>Form of Warrant issued by the Company in connection with the Offering (incorporated by reference to Exhibit 4.8 to the Company's Registration Statement filed with the SEC on April 24, 2023).</u>
4.9	<u>Form of Pre-Funded Warrant issued by the Company in connection with the Offering (incorporated by reference to Exhibit 4.9 to the Company's Registration Statement filed with the SEC on April 24, 2023).</u>
4.10	<u>Form of Pre-Funded Warrant (incorporated by reference to Exhibit 4.11 to the Company's Amendment No. 2 to Form S-1 Registration Statement, File No. 333-272657, filed with the SEC on July 7, 2023).</u>
4.11	<u>Form of Common Warrant (incorporated by reference to Exhibit 4.10 to the Company's Amendment No. 2 to Form S-1 Registration Statement, File No. 333-272657, filed with the SEC on July 7, 2023).</u>
4.12	<u>Warrant Amendment (incorporated by reference to Exhibit 4.8.1 to the Company's Post-Effective Amendment No. 1 to Form S-1 Registration Statement, File No. 333-272657, filed with the SEC on July 26, 2023).</u>
4.13	<u>Form of Inducement Warrant (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed with the SEC on September 14, 2023).</u>
5.1*	<u>Opinion of Thompson Hine LLP</u>
10.1	<u>Amended and Restated Registration Rights Agreement, dated as of December 12, 2022, by and among the Company and each of the purchasers identified on the signature pages thereto (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed with the SEC on December 13, 2022).</u>
10.2	<u>Form of Shareholder Support Agreement, dated as of July 20, 2022, by and among Larkspur Health Acquisition Corp., ZyVersa Therapeutics, Inc. and certain of the stockholders of ZyVersa Therapeutics, Inc., identified on the signature pages thereto (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K filed with the SEC on July 22, 2022).</u>
10.3	<u>Form of Lock-Up Agreement, dated as of July 20, 2022, by and among the Company and the parties listed on Schedule A thereto (incorporated by reference to Exhibit 10.4 to the Company's Current Report on Form 8-K filed with the SEC on July 22, 2022).</u>
10.4	<u>Registration Rights Agreement, relating to Series A Preferred Stock, dated as of December 12, 2022, by and among the Larkspur Health Acquisition Corp. and each of the PIPE Investors (incorporated by reference to Exhibit 10.4 to the Company's Current Report on Form 8-K filed with the SEC on December 13, 2022).</u>
10.5	<u>Registration Rights Agreement, relating to Series B Preferred Stock, dated as of December 12, 2022, by and among the Company and each purchaser identified on the signature pages thereto (incorporated by reference to Exhibit 10.5 to the Company's Current Report on Form 8-K filed with the SEC on December 13, 2022).</u>
10.6	<u>Business Combination Advisor Agreement, dated December 20, 2021, by and between the Company and A.G.P (incorporated by reference to Exhibit 1.2 to the Company's Current Report on Form 8-K filed with the SEC on December 23, 2021).</u>

10.7+†	License Agreement, dated April 18, 2019, by and between InflamaCORE, LLC and Variant Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.14 to the Company's Form S-4 filed with the SEC on October 21, 2022).
10.8+†	License Agreement, dated December 15, 2015, by and between L&F Research LLC and Variant Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.15 to the Company's Form S-4 filed with the SEC on October 21, 2022).
10.8.1	Second Amendment to Waiver of Certain Rights under License Agreement (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed with the SEC on December 23, 2022).
10.8.2	Amendment and Restatement Agreement, by and between L&F Research LLC and ZyVersa Therapeutics, Inc. (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed with the SEC on March 3, 2023).
10.9+†	First Amendment to License Agreement, dated January 9, 2020, by and between L&F Research LLC and Variant Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.16 to the Company's Form S-4 filed with the SEC on October 21, 2022).
10.10#	ZyVersa Therapeutics, Inc. 2022 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.10 to the Company's Current Report on Form 8-K filed with the SEC on December 13, 2022).
10.11#	Form of Incentive Stock Option Grant Agreement under the Combined Entity 2022 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.6.1 to the Company's Form S-4 filed with the SEC on September 27, 2022).
10.12#	Form of Restricted Stock Unit Award Agreement under the Combined Entity 2022 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.6.2 to the Company's Form S-4 filed with the SEC on September 27, 2022).
10.13#	Form of Non-Qualified Stock Option Grant Agreement under the Combined Entity 2022 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.6.3 to the Company's Form S-4 filed with the SEC on September 27, 2022).
10.14#	Variant Pharmaceuticals, Inc. 2014 Equity Incentive Plan (incorporated by reference to Exhibit 10.7 to the Company's Form S-4 filed with the SEC on September 27, 2022).
10.15#	Form of Indemnification Agreement by and between the Company and each of its officers and directors (incorporated by reference to Exhibit 10.15 to the Company's Current Report on Form 8-K filed with the SEC on December 13, 2022).
10.16#	Executive Employment Agreement, by and between the Company and Stephen Glover (incorporated by reference to Exhibit 10.16 to the Company's Current Report on Form 8-K filed with the SEC on December 13, 2022).
10.17#	Executive Employment Agreement, by and between the Company and Nicholas A. LaBella (incorporated by reference to Exhibit 10.17 to the Company's Current Report on Form 8-K filed with the SEC on December 13, 2022).
10.18#	Executive Employment Agreement, by and between the Company and Karen A. Cashmere (incorporated by reference to Exhibit 10.18 to the Company's Current Report on Form 8-K filed with the SEC on December 13, 2022).
10.19#	Executive Employment Agreement, by and between the Company and Peter Wolfe (incorporated by reference to Exhibit 10.19 to the Company's Current Report on Form 8-K filed with the SEC on December 13, 2022).
10.20#	Amendment to Variant Pharmaceuticals, Inc. 2014 Equity Incentive Plan (incorporated by reference to Exhibit 10.20 to the Company's Current Report on Form 8-K filed with the SEC on December 13, 2022).
10.21#	Executive Employment Agreement by and between the Company and Pablo Guzman, M.D. (incorporated by reference to Exhibit 10.21 to the Company's Registration Statement on Form S-1 filed with the SEC on January 27, 2023).
10.22	Form of Placement Agency Agreement (incorporated by reference to Exhibit 1.1 to Company's Registration Statement on Form S-1 filed with the SEC on April 24, 2023)
10.23	Form of Securities Purchase Agreement (incorporated by reference to Exhibit 10.22 to Company's Registration Statement on Form S-1 filed with the SEC on April 24, 2023)
10.24	Form of Escrow Agreement (incorporated by reference to Exhibit 10.23 to Company's Registration Statement on Form S-1 filed with the SEC on April 24, 2023)
10.25	Placement Agency Agreement (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed with the SEC on July 26, 2023).
10.26	Form of Securities Purchase Agreement (incorporated by reference to Exhibit 10.24 to the Company's Registration Statement on Form S-1/A filed with the SEC on July 7, 2023).
10.27	Form of Inducement Letter (incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K filed with the SEC on September 14, 2023).
16.1	Letter from Marcum LLP to the Securities and Exchange Commission (incorporated by reference to Exhibit 16.1 to the Company's Current Report on Form 8-K filed with the SEC on December 13, 2022).
21.1	Subsidiaries of the Company (incorporated by reference to Exhibit 21.1 to the Company's Current Report on Form 8-K filed with the SEC on December 13, 2022).
23.1	Consent of Ernst & Young LLP (incorporated by reference to Exhibit 23.1 to the Company's Registration Statement on Form S-1 filed with the SEC on October 5, 2023).
23.2*	Consent of Thompson Hine LLP (included as part of Exhibit 5.1)
24.1	Power of Attorney (included on the signature page of this Registration Statement)
99.1	Securities Purchase Agreement, dated as of July 20, 2022, by and among Larkspur Health Acquisition Corp. and each purchaser identified on the signature pages thereto (incorporated by reference to Exhibit 99.2 to the Company's Current Report on Form 8-K filed with the SEC on December 13, 2022).
99.2	Securities Purchase Agreement, dated as of December 12, 2022, by and among Larkspur Health Acquisition Corp. and each purchaser identified on the signature pages thereto (incorporated by reference to Exhibit 99.3 to the Company's Current Report on Form 8-K filed with the SEC on December 13, 2022).
107	Filing Fee Table (incorporated by reference to Exhibit 107 to the Company's Registration Statement on Form S-1 filed with the SEC on October 5, 2023).
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document

#Management contract or compensatory plan or arrangement.

+Schedules and exhibits have been omitted pursuant to Item 601(b)(2) of Regulation S-K. The Registrant agrees to furnish supplementally a copy of any omitted schedule or exhibit to the SEC upon its request.

†Certain portions of this Exhibit have been omitted in accordance with Regulation S-K Item 601(b)(10). The Registrant agrees to furnish supplementally an unredacted copy of this Exhibit to the SEC upon its request.

Item 17. Undertakings.

The undersigned registrant hereby undertakes:

- (1) 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 of 1933, as amended (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; and (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 (i), (ii) and (iii) do not apply if the registration statement is on Form S-1 and 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 Securities Exchange Act of 1934 that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement;
- (2) 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 therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof;
- (3) 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;
- (4) that, for the purpose of determining liability under the Securities Act to any purchaser:

Each prospectus filed pursuant to Rule 424(b) as part of a registration statement relating to an offering, other than registration statements relying on Rule 430B or other than prospectuses filed in reliance on Rule 430A, shall be deemed to be part of and included in the registration statement as of the date it is first used after effectiveness.

Provided, however, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such first use, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such date of first use; and

- (5) that, for the purpose of determining liability of the registrant under the Securities Act to any purchaser in the initial distribution of the securities, the undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:
 - (a) any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424;
 - (b) any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;
 - (c) the portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of an undersigned registrant; and
 - (d) any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

Insofar as indemnification for liabilities arising under the Securities Act of 1933 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 of 1933 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 of 1933 and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this registration statement on Form S-1 to be signed on its behalf by the undersigned, in the city of Weston, State of Florida, on October 17, 2023.

ZYVERSA THERAPEUTICS, INC.

By: /s/ Stephen C. Glover

Name: Stephen C. Glover

Title: Chief Executive Officer

POWER OF ATTORNEY

Each person whose signature appears below constitutes and appoints each of Stephen Glover and Peter Wolfe, acting alone or together with another attorney-in-fact, as his or her true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution, for such person and in his or her name, place and stead, in any and all capacities, to sign any or all further amendments (including post-effective amendments) to this registration statement (and any additional registration statement related hereto permitted by Rule 462(b) promulgated under the Securities Act (and all further amendments, including post-effective amendments, thereto)), and to file the same, with all exhibits thereto, and other documents in connection therewith, with the SEC, 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 and about the premises, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agent, or his or her substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this registration statement on Form S-1 to be signed on its behalf by the undersigned, thereunto duly authorized.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Stephen C. Glover</u> Stephen C. Glover	Chief Executive Officer, President and Chairman (Principal Executive Officer)	October 17, 2023
<u>/s/ Peter Wolfe</u> Peter Wolfe	Chief Financial Officer and Secretary (Principal Financial Officer and Principal Accounting Officer)	October 17, 2023
<u>/s/ Robert G. Finizio*</u> Robert G. Finizio	Director	October 17, 2023
<u>/s/ Min Chul Park, Ph.D.*</u> Min Chul Park, Ph.D.	Director	October 17, 2023
<u>/s/ James Sapirstein</u> James Sapirstein	Director	October 17, 2023
<u>/s/ Gregory Frietag</u> Gregory Frietag	Director	October 17, 2023

* /s/ Stephen C. Glover

By: Stephen C. Glover

Attorney-in-fact



ATLANTA CINCINNATI COLUMBUS NEW YORK
CHICAGO CLEVELAND DAYTON WASHINGTON, D.C.

October 17, 2023

ZyVersa Therapeutics, Inc.
2200 N. Commerce Parkway, Suite 208
Weston, Florida 33326

Re: Registration Statement on Form S-1

Ladies and Gentlemen:

We have acted as counsel to ZyVersa Therapeutics, Inc., a Delaware corporation (the “**Company**”), in connection with the preparation and filing with the U.S. Securities and Exchange Commission (the “**Commission**”) of the Registration Statement on Form S-1 on the date hereof, as amended from time to time (the “**Registration Statement**”), under the Securities Act of 1933, as amended (the “**Securities Act**”), with respect to the resale by the selling securityholders named in the Registration Statement under the caption “Selling Securityholders” (the “**Selling Securityholders**”) of an aggregate of 24,647,598 shares of our common stock, par value \$0.0001 per share (“**Common Stock**”), consisting of up to (i) 5,858,714 shares of our Common Stock issued to certain investors in various private placements to Larkspur Health LLC (the “**Sponsor**” or “**Larkspur**”) and certain other investors in connection with the formation of the Sponsor, consummation of Larkspur Health Acquisition Corp.’s initial public offering consummated December 23, 2021 (the “**Larkspur IPO**”) and at subsequent times (the “**Private Placements**”), and which includes 35 shares of Series A Preferred Stock (the “**Series A Preferred Stock**”) converted into 17,500 shares of Common Stock at the new conversion price of \$2.00 per share, and 25,000 shares of Common Stock underlying our Series A Preferred Stock; (ii) 4,878,875 shares of our Common Stock (the “**PIPE Warrant Shares**”) issuable upon the exercise of certain private warrants having an exercise price of \$11.50 (the “**PIPE Warrants**”) issued pursuant to the PIPE Subscription Agreement to the investors signatory thereto (the “**PIPE Subscription Agreement**”); (iii) 723,234 shares of our Common Stock underlying our Series B Convertible Preferred Stock (the “**Series B Preferred Stock**”) issued to certain advisors in exchange for services at a price of \$1,000 per share of such preferred stock and convertible into our Common Stock at a conversion price of \$7.00; (iv) 5,825,358 shares of our Common Stock (the “**Public Warrant Shares**”) issuable upon the exercise of certain public warrants having an exercise price of \$11.50 (the “**Public Warrants**”) issued with shares of Larkspur Class A common stock in the form of units to investors in connection with the Larkspur IPO at a purchase price of \$10.00 per unit; (v) 240,204 shares of our Common Stock (the “**Private Placement Warrant Shares**”) issuable upon the exercise of warrants, having an exercise price of \$11.50 issued in connection with the consummation of the Business Combination (as defined in the Registration Statement), which replaced the warrants exercisable for Larkspur Class A common stock (the “**Private Placement Warrants**”) issued with Larkspur Class A common stock in the form of units to the Sponsor and certain other investors concurrently with the closing of the Larkspur IPO at a purchase price of \$10.00 per unit; and (vi) 7,121,213 shares of the Company’s Common Stock (the “**Inducement Warrant Shares**”) in the form of Inducement Warrants (the “**Inducement Warrants**”), having an exercise price of \$0.1357, issued pursuant to the warrant exercise inducement offer letter (the “**Inducement Letter**”) entered into on September 13, 2023, by and between the Company and the holder thereto.

In connection with this opinion letter, we have examined and relied upon the Registration Statement, the Company’s second amended and restated certificate of incorporation, as amended, and the Company’s second amended and restated bylaws, each as currently in effect, a certificate of good standing, issued by the Delaware Secretary of State as of a recent date, and the 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 opinions expressed below.

THOMPSON HINE LLP
ATTORNEYS AT LAW

300 Madison Avenue, 27th Floor
New York, New York 10017-6232

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In such examination and in rendering the opinions expressed below, we have assumed, without independent investigation or verification: (i) the genuineness of all signatures on all agreements, instruments, corporate records, certificates, and other documents submitted to us; (ii) the legal capacity, competency, and authority of all individuals executing documents submitted to us; (iii) the authenticity and completeness of all agreements, instruments, corporate records, certificates, and other documents submitted to us as originals; (iv) that all agreements, instruments, corporate records, certificates, and other documents submitted to us as certified, electronic, facsimile, conformed, photostatic, or other copies conform to the originals thereof, and that such originals are authentic and complete; (v) the due authorization, execution, and delivery of all agreements, instruments, corporate records, certificates and other documents by all parties thereto (other than the Company); (vi) that no documents submitted to us have been amended or terminated orally or in writing, except as has been disclosed to us in writing; and (vii) that the statements contained in the certificates and comparable documents of public officials, officers, and representatives of the Company and other persons on which we have relied for the purposes of this opinion letter are true and correct on and as of the date hereof.

Our opinions are limited to the matters stated herein and no opinion is implied or may be inferred beyond the matters expressly stated. Our opinions herein are expressed solely with respect to the federal laws of the United States, the laws of the State of New York, and the General Corporation Law of the State of Delaware as in effect on the date hereof. We are not rendering any opinion as to compliance with any federal or state antifraud law, rule, or regulation relating to securities, or to the sale or issuance thereof. Our opinions are based on these laws as in effect on the date hereof, and we disclaim any obligation to advise you of facts, circumstances, events, or developments which hereafter may be brought to our attention and which may alter, affect, or modify any of the opinions expressed herein. We express no opinion as to whether the laws of any particular jurisdiction other than those identified above are applicable to the subject matter hereof.

On the basis of the foregoing, and in reliance thereon, we are of the opinion that:

1. The shares of Common Stock are validly issued, fully paid, and nonassessable.
2. Assuming the Series A Preferred Stock has been issued in accordance with the terms of the Certificate of Designation relating to the Series A Preferred Stock, the shares of Common Stock underlying the Series A Preferred Stock, when issued upon conversion of the Series A Preferred Stock in accordance with the Certificate of Designation relating to the Series A Preferred Stock, will be validly issued, paid, and non-assessable.
3. Assuming the PIPE Warrants have been issued in accordance with the terms of the PIPE Subscription Agreement and delivered against payment therefor in accordance with the terms of the PIPE Subscription Agreement, the PIPE Warrant Shares, when issued and paid for upon the exercise of the PIPE Warrants in accordance with the terms of the PIPE Warrants and the PIPE Subscription Agreement, will be validly issued, fully paid, and non-assessable.
4. Assuming the Series B Preferred Stock has been issued in accordance with the terms of the Certificate of Designation relating to the Series B Preferred Stock, the shares of Common Stock underlying the Series B Preferred Stock, when issued upon conversion of the Series B Preferred Stock in accordance with the Certificate of Designation relating to the Series B Preferred Stock, will be validly issued, paid, and non-assessable.
5. Assuming the Private Placement Warrants have been issued in accordance with the terms of the Warrant Agreement, the Private Warrant Shares, when issued and paid for upon the exercise of the Private Placement Warrants in accordance with the terms of the Private Placement Warrants and the Warrant Agreement, will be validly issued, fully paid, and non-assessable.
6. Assuming the Public Warrants have been issued in accordance with the terms of the Warrant Agreement, the Public Warrant Shares, when issued and paid for upon the exercise of the Public Warrants in accordance with the terms of the Public Warrants and the Warrant Agreement, will be validly issued, fully paid, and non-assessable.
7. Assuming the Inducement Warrants have been issued in accordance with the terms of the Inducement Letter, the Inducement Warrant Shares, when issued and paid for upon the exercise of the Inducement Warrants in accordance with the terms of the Inducement Warrants and the Inducement Letter, will be validly issued, fully paid, and non-assessable.

We hereby consent to the filing of this opinion letter as an exhibit to the Registration Statement, and to being named under the caption "Legal Matters" contained therein. In giving this consent, we do not hereby admit that we are within the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission promulgated thereunder.

Very truly yours,

/s/ Thompson Hine LLP

Thompson Hine LLP
