

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

SCHEDULE 13G
Under the Securities Exchange Act of 1934
(Amendment No. __)*

CELLECTAR BIOSCIENCES, INC.

(Name of Issuer)

COMMON STOCK, \$0.00001 PAR VALUE

(Title of Class of Securities)

15117F500

(CUSIP Number)

October 21, 2022

(Date of Event Which Requires Filing of this Statement)

Check the appropriate box to designate the rule pursuant to which this Schedule is filed:

- ☐ Rule 13d-1(b)
☒ Rule 13d-1(c)
☐ Rule 13d-1(d)

(Page 1 of 13 Pages)

* The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter the disclosures provided in a prior cover page.

The information required on the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

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1		NAMES OF REPORTING PERSONS Lincoln Park Capital Fund, LLC
2		CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) ☐ (b) ☐
3		SEC USE ONLY
4		CITIZENSHIP OR PLACE OF ORGANIZATION Illinois
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH:	5	SOLE VOTING POWER 0
	6	SHARED VOTING POWER 937,588
	7	SOLE DISPOSITIVE POWER 0
	8	SHARED DISPOSITIVE POWER 937,588
9		AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 937,588
10		CHECK IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES ☐
11		PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9) 9.99%*
12		TYPE OF REPORTING PERSON OO

* Reporting person has rights, under various warrants, to acquire an aggregate number of shares of the Issuer's Common Stock which, except for the contractual caps in the warrants on the amount of outstanding shares of the Issuer's Common Stock that the reporting person may own, when combined with the 911,294 shares of Common Stock owned, would exceed such a cap. The ownership cap in the warrants is 9.99%. Thus, the number of shares of the Issuer's Common Stock beneficially owned by the reporting person as of the date of this filing was 937,588 shares, which is 9.99% of the 9,385,272 shares that were outstanding on that date (based on the shares reported outstanding in the Issuer's prospectus supplement filed on October 24, 2022).

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1		NAMES OF REPORTING PERSONS Lincoln Park Capital, LLC
2		CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) ☐ (b) ☐
3		SEC USE ONLY
4		CITIZENSHIP OR PLACE OF ORGANIZATION Illinois
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH:	5	SOLE VOTING POWER 0
	6	SHARED VOTING POWER 937,588
	7	SOLE DISPOSITIVE POWER 0
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11		PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9) 9.99%*
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* Reporting person has rights, under various warrants, to acquire an aggregate number of shares of the Issuer's Common Stock which, except for the contractual caps in the warrants on the amount of outstanding shares of the Issuer's Common Stock that the reporting person may own, when combined with the 911,294 shares of Common Stock owned, would exceed such a cap. The ownership cap in the warrants is 9.99%. Thus, the number of shares of the Issuer's Common Stock beneficially owned by the reporting person as of the date of this filing was 937,588 shares, which is 9.99% of the 9,385,272 shares that were outstanding on that date (based on the shares reported outstanding in the Issuer's prospectus supplement filed on October 24, 2022).

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1	NAMES OF REPORTING PERSONS Rockledge Capital Corporation	
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) ☐ (b) ☐	
3	SEC USE ONLY	
4	CITIZENSHIP OR PLACE OF ORGANIZATION Texas	
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH:	5	SOLE VOTING POWER 0
	6	SHARED VOTING POWER 937,588
	7	SOLE DISPOSITIVE POWER 0
	8	SHARED DISPOSITIVE POWER 937,588
9	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 937,588	
10	CHECK IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES ☐	
11	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9) 9.99%*	
12	TYPE OF REPORTING PERSON CO	

* Reporting person has rights, under various warrants, to acquire an aggregate number of shares of the Issuer's Common Stock which, except for the contractual caps in the warrants on the amount of outstanding shares of the Issuer's Common Stock that the reporting person may own, when combined with the 911,294 shares of Common Stock owned, would exceed such a cap. The ownership cap in the warrants is 9.99%. Thus, the number of shares of the Issuer's Common Stock beneficially owned by the reporting person as of the date of this filing was 937,588 shares, which is 9.99% of the 9,385,272 shares that were outstanding on that date (based on the shares reported outstanding in the Issuer's prospectus supplement filed on October 24, 2022).

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1	NAMES OF REPORTING PERSONS Joshua B. Scheinfeld	
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) ☐ (b) ☐	
3	SEC USE ONLY	
4	CITIZENSHIP OR PLACE OF ORGANIZATION United States	
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH:	5	SOLE VOTING POWER 0
	6	SHARED VOTING POWER 937,588
	7	SOLE DISPOSITIVE POWER 0
	8	SHARED DISPOSITIVE POWER 937,588
9	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 937,588	
10	CHECK IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES ☐	
11	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9) 9.99%*	
12	TYPE OF REPORTING PERSON IN	

* Reporting person has rights, under various warrants, to acquire an aggregate number of shares of the Issuer's Common Stock which, except for the contractual caps in the warrants on the amount of outstanding shares of the Issuer's Common Stock that the reporting person may own, when combined with the 911,294 shares of Common Stock owned, would exceed such a cap. The ownership cap in the warrants is 9.99%. Thus, the number of shares of the Issuer's Common Stock beneficially owned by the reporting person as of the date of this filing was 937,588 shares, which is 9.99% of the 9,385,272 shares that were outstanding on that date (based on the shares reported outstanding in the Issuer's prospectus supplement filed on October 24, 2022).

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1	NAMES OF REPORTING PERSONS	Alex Noah Investors, Inc.
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) ☐ (b) ☐	
3	SEC USE ONLY	
4	CITIZENSHIP OR PLACE OF ORGANIZATION	Illinois
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH:	5	SOLE VOTING POWER 0
	6	SHARED VOTING POWER 937,588
	7	SOLE DISPOSITIVE POWER 0
	8	SHARED DISPOSITIVE POWER 937,588
9	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON	937,588
10	CHECK IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES ☐	
11	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)	9.99%*
12	TYPE OF REPORTING PERSON	CO

* Reporting person has rights, under various warrants, to acquire an aggregate number of shares of the Issuer's Common Stock which, except for the contractual caps in the warrants on the amount of outstanding shares of the Issuer's Common Stock that the reporting person may own, when combined with the 911,294 shares of Common Stock owned, would exceed such a cap. The ownership cap in the warrants is 9.99%. Thus, the number of shares of the Issuer's Common Stock beneficially owned by the reporting person as of the date of this filing was 937,588 shares, which is 9.99% of the 9,385,272 shares that were outstanding on that date (based on the shares reported outstanding in the Issuer's prospectus supplement filed on October 24, 2022).

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1	NAMES OF REPORTING PERSONS	Jonathan I. Cope
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) ☐ (b) ☐	
3	SEC USE ONLY	
4	CITIZENSHIP OR PLACE OF ORGANIZATION	United States
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH:	5	SOLE VOTING POWER 0
	6	SHARED VOTING POWER 937,588
	7	SOLE DISPOSITIVE POWER 0
	8	SHARED DISPOSITIVE POWER 937,588
9	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON	937,588
10	CHECK IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES ☐	
11	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)	9.99%*
12	TYPE OF REPORTING PERSON	IN

* Reporting person has rights, under various warrants, to acquire an aggregate number of shares of the Issuer's Common Stock which, except for the contractual caps in the warrants on the amount of outstanding shares of the Issuer's Common Stock that the reporting person may own, when combined with the 911,294 shares of Common Stock owned, would exceed such a cap. The ownership cap in the warrants is 9.99%. Thus, the number of shares of the Issuer's Common Stock beneficially owned by the reporting person as of the date of this filing was 937,588 shares, which is 9.99% of the 9,385,272 shares that were outstanding on that date (based on the shares reported outstanding in the Issuer's prospectus supplement filed on October 24, 2022).

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Item 1.

(a) **Name of Issuer:**

Collectar Biosciences, Inc., a Delaware corporation ("Issuer")

(b) **Address of Issuer's Principal Executive Offices:**

100 Campus Drive
Florham Park, New Jersey 07932

Item 2.

(a) **Name of Person Filing:**

Lincoln Park Capital Fund, LLC ("LPC Fund")
Lincoln Park Capital, LLC ("LPC")
Rockledge Capital Corporation ("RCC")
Joshua B. Scheinfeld ("Mr. Scheinfeld")
Alex Noah Investors, Inc. ("Alex Noah")
Jonathan I. Cope ("Mr. Cope") and, collectively with LPC Fund, LPC, RCC, Mr. Scheinfeld and Alex Noah, the "Reporting Persons")

(b) **Address of Principal Business Office, or if None, Residence:**

The address of the principal business office of each of the Reporting Persons is:
440 North Wells, Suite 410
Chicago, Illinois 60654

(c) **Citizenship:**

LPC Fund is an Illinois limited liability company
LPC is an Illinois limited liability company
RCC is a Texas corporation
Mr. Scheinfeld is a United States citizen

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Alex Noah is an Illinois corporation
Mr. Cope is a United States citizen

(d) Title of Class of Securities:

Common Stock, \$0.00001 par value ("Common Stock")

(e) CUSIP Number:

15117F500

Item 3.

If this statement is filed pursuant to §§240.13d-1(b), or 240.13d-2(b) or (c), check whether the person filing is a:

- (a) ☐ Broker or dealer registered under Section 15 of the Act (15 U.S.C. 78o).
- (b) ☐ Bank as defined in Section 3(a)(6) of the Act (15 U.S.C. 78c).
- (c) ☐ Insurance company as defined in Section 3(a)(19) of the Act (15 U.S.C. 78c).
- (d) ☐ Investment company registered under Section 8 of the Investment Company Act of 1940 (15 U.S.C. 80a-8).
- (e) ☐ An investment adviser in accordance with §240.13d-1(b)(1)(ii)(E);
- (f) ☐ An employee benefit plan or endowment fund in accordance with §240.13d-1(b)(1)(ii)(F);
- (g) ☐ A parent holding company or control person in accordance with §240.13d-1(b)(1)(ii)(G);
- (h) ☐ A savings associations as defined in Section 3(b) of the Federal Deposit Insurance Act (12 U.S.C. 1813);
- (i) ☐ A church plan that is excluded from the definition of an investment company under section 3(c)(14) of the Investment Company Act of 1940 (15 U.S.C. 80a-3);
- (j) ☐ A non-U.S. institution in accordance with §240.13d-1(b)(1)(ii)(J);
- (k) ☐ Group, in accordance with §240.13d-1(b)(1)(ii)(K).

If filing as a non-U.S. institution in accordance with §240.13d-1(b)(1)(ii)(J), please specify the type of institution _____

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Item 4. Ownership.

Reporting person	Amount beneficially owned¹:	Percent of class²:	Sole power to vote or direct the vote:	Shared power to vote or to direct the vote³:	Sole power to dispose or to direct the disposition of:	Shared power to dispose or to direct the disposition of³:
Lincoln Park Capital Fund, LLC	937,588	9.998%	0	937,588	0	937,588
Lincoln Park Capital, LLC	937,588	9.99%	0	937,588	0	937,588
Rockledge Capital Corporation	937,588	9.99%	0	937,588	0	937,588
Joshua B. Scheinfeld	937,588	9.99%	0	937,588	0	937,588
Alex Noah Investors, Inc.	937,588	9.99%	0	937,588	0	937,588
Jonathan I. Cope	937,588	9.99%	0	937,588	0	937,588

- ¹ Represents (i) 911,294 shares of Common Stock purchased on October 21, 2022 by LPC Fund directly from the Issuer in a registered direct offering (the “RD Offering”), representing approximately 9.71% of the outstanding shares of Common Stock as of October 21, 2022 (based on the shares reported outstanding in the Issuer’s prospectus supplement for the RD Offering filed on October 24, 2022), (ii) 10,407 shares of Common Stock underlying a currently exercisable warrant purchased by LPC Fund from the Issuer on October 12, 2017 (the “Series D Warrant”), (iii) 50,000 shares of Common Stock underlying a currently exercisable warrant purchased by LPC Fund from the Issuer on July 31, 2018 (the “Series E Warrant”), (iv) 19,821 shares of Common Stock underlying a currently exercisable warrant purchased by LPC Fund from the Issuer on May 20, 2019 (the “Series F Warrant”), (v) 20,180 shares of Common Stock underlying a currently exercisable warrant purchased by LPC Fund from the Issuer on May 20, 2019 (the “Series G Warrant”), (vi) 54,348 shares of Common Stock underlying a currently exercisable warrant purchased by LPC Fund from the Issuer on June 5, 2020 (the “Series H Warrant”), (vii) 911,294 shares of Common Stock underlying warrant purchased by LPC Fund from the issuer in the RD Offering, which will be issued on and be immediately exercisable on October 25, 2022(the “2022 Warrant”). In the case of each of the warrants described in clauses (ii) through (vii) above (collectively, the “Warrants”), the warrant amounts are in addition to the 911,294 outstanding shares of Common Stock referred to in clause (i) above.

The Series D Warrant is currently exercisable at a price of \$178.00 per share (subject to adjustment as provided in the Series D Warrant), subject to a 9.99% beneficial ownership cap that prohibits the issuance of shares of Common Stock upon exercise of the Series D Warrant to the extent such issuance would cause the holder's beneficial ownership of Common Stock (as calculated pursuant to Section 13(d) of the Act and Rule 13d-3 promulgated thereunder) to exceed 9.99% of the outstanding Common Stock, and expires on October 14, 2024. The Series E Warrant is currently exercisable at a price of \$40.00 per share (subject to adjustment as provided in the Series E Warrant), subject to a 9.99% beneficial ownership cap that prohibits the issuance of shares of Common Stock upon exercise of the Series E Warrant to the extent such issuance would cause the holder's beneficial ownership of Common Stock (as calculated pursuant to Section 13(d) of the Act and Rule 13d-3 promulgated thereunder) to exceed 9.99% of the outstanding Common Stock, and expires on July 27, 2023. The Series F Warrant is currently exercisable at a price of \$24.00 per share (subject to adjustment as provided in the Series F Warrant), subject to a 9.99% beneficial ownership cap that prohibits the issuance of shares of Common Stock upon exercise of the Series F Warrant to the extent such issuance would cause the holder's beneficial ownership of Common Stock (as calculated pursuant to Section 13(d) of the Act and Rule 13d-3 promulgated thereunder) to exceed 9.99% of the outstanding Common Stock, and expires on May 20, 2024. The Series G Warrant is currently exercisable at a price of \$24.00 per share (subject to adjustment as provided in the Series G Warrant), subject to a 9.99% beneficial ownership cap that prohibits the issuance of shares of Common Stock upon exercise of the Series G Warrant to the extent such issuance would cause the holder's beneficial ownership of Common Stock (as calculated pursuant to Section 13(d) of the Act and Rule 13d-3 promulgated thereunder) to exceed 9.99% of the outstanding Common Stock, and expires on May 20, 2024. The Series H Warrant is currently exercisable at a price of \$12.075 per share (subject to adjustment as provided in the Series H Warrant), subject to a 9.99% beneficial ownership cap that prohibits the issuance of shares of Common Stock upon exercise of the Series H Warrant to the extent such issuance would cause the holder's beneficial ownership of Common Stock (as calculated pursuant to Section 13(d) of the Act and Rule 13d-3 promulgated thereunder) to exceed 9.99% of the outstanding Common Stock, and expires on June 5, 2025. The 2022 Warrant will be issued and will become exercisable on October 25, 2022 at a price of \$1.96 per share (subject to adjustment as provided in the 2022 Warrant), subject to a 9.99% beneficial ownership cap that prohibits the issuance of shares of Common Stock upon exercise of the 2022 Warrant to the extent such issuance would cause the holder's beneficial ownership of Common Stock (as calculated pursuant to Section 13(d) of the Act and Rule 13d-3 promulgated thereunder) to exceed 9.99% of the outstanding Common Stock, and expires on October 25, 2027. Each of the warrants described in clauses (ii) through (xi) above include a customary "cashless" exercise provision, which may be used to acquire underlying shares of Common Stock if at the time of exercise an effective registration statement registering the resale of such shares under the Securities Act of 1933, as amended (the "Securities Act"), is not available to the warrant holder.

- 2 Based on the shares reported outstanding in the Issuer's prospectus supplement filed on October 24, 2022, which includes the 911,294 shares of Common Stock issued to LPC Fund. Therefore, as of October 21, 2022, the Reporting Persons may be deemed to beneficially own an aggregate of 937,588 shares of Common Stock (as calculated pursuant to Section 13(d) of the Act, and Rule 13d-3 promulgated thereunder), representing the 911,294 shares of Common Stock presently owned combined with number of shares of Common Stock that may be acquired by LPC Fund as of October 21, 2022 under the Warrants without exceeding the 9.99% beneficial ownership limitation on the exercise of the Warrants.
 - 3 Represents the total number of shares of Common Stock beneficially owned by the Reporting Persons as of the date of this statement (as calculated pursuant to Section 13(d) of the Act and Rule 13d-3 promulgated thereunder), as described in Footnote 1 above.
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As of October 21, 2022, LPC Fund beneficially owned, directly, the following securities of the Issuer: (i) 911,294 shares of Common Stock, purchased by LPC Fund directly from the Issuer in the RD Offering (ii) 10,407 shares of Common Stock currently exercisable under the Series D Warrant, (iii) 50,000 shares of Common Stock currently exercisable under the Series E Warrant, (iv) 19,821 shares of Common Stock currently exercisable under the Series F Warrant, (v) 20,180 shares of Common Stock currently exercisable under the Series G Warrant, (vi) 54,348 shares of Common Stock currently exercisable under the Series H Warrant, and (vii) 911,294 shares of Common Stock underlying warrant purchased by LPC Fund from the issuer in the RD Offering, which will be issued on and be immediately exercisable on October 25, 2022. In the case of each of the Warrants, the warrant amounts are in addition to the 911,294 outstanding shares of Common Stock issued to LPC Fund and referred to in clause (i) above and are subject to a 9.99% beneficial ownership cap that prohibits the issuance of shares of Common Stock upon exercise of any Warrants to the extent such issuance would cause the holder's beneficial ownership of Common Stock (as calculated pursuant to Section 13(d) of the Act and Rule 13d-3 promulgated thereunder) to exceed 9.99% of the outstanding Common Stock.

The Warrants each include a customary "cashless" exercise provision, which may be used to acquire underlying shares of Common Stock if at the time of exercise an effective registration statement registering the resale of such shares under the Act is not available to the warrant holder.

LPC is the Managing Member of LPC Fund. RCC and Alex Noah are the Managing Members of LPC. Mr. Scheinfeld is the president and sole shareholder of RCC, as well as a principal of LPC. Mr. Cope is the president and sole shareholder of Alex Noah, as well as a principal of LPC. As a result of the foregoing, Mr. Scheinfeld and Mr. Cope have shared voting and shared investment power over the shares of Common Stock of the Issuer held directly by LPC Fund.

Pursuant to Section 13(d) of the Act and the rules thereunder, each of LPC, RCC, Mr. Scheinfeld, Alex Noah, and Mr. Cope may be deemed to be a beneficial owner of the shares of Common Stock of the Issuer beneficially owned directly by LPC Fund.

The foregoing should not be construed in and of itself as an admission by any Reporting Person as to beneficial ownership of any shares of Common Stock owned by another Reporting Person. Pursuant to Rule 13d-4 of the Act, each of LPC, RCC, Mr. Scheinfeld, Alex Noah, and Mr. Cope disclaims beneficial ownership of the shares of Common Stock of the Issuer held directly by LPC Fund.

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Item 5. Ownership of Five Percent or Less of a Class.

If this statement is being filed to report the fact that as of the date hereof the reporting person has ceased to be the beneficial owner of more than five percent of the class of securities, check the following ☐.

Item 6. Ownership of More Than Five Percent on Behalf of Another Person.

Not applicable.

Item 7. Identification and Classification of Subsidiary Which Acquired the Security Being Reported on by the Parent Holding Company or Control Person.

Not applicable.

Item 8. Identification and Classification of Members of the Group.

Not applicable.

Item 9. Notice of Dissolution of Group.

Not applicable.

Item 10. Certifications.

By signing below I certify that, to the best of my knowledge and belief, the securities referred to above were not acquired and are not held for the purpose of or with the effect of changing or influencing the control of the issuer of the securities and were not acquired and are not held in connection with or as a participant in any transaction having that purpose or effect.

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SIGNATURE

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

Dated: October 25, 2022

LINCOLN PARK CAPITAL FUND, LLC

BY: LINCOLN PARK CAPITAL, LLC

BY: ROCKLEDGE CAPITAL CORPORATION

By: /s/ Joshua B. Scheinfeld
Name: Joshua B. Scheinfeld
Title: President

LINCOLN PARK CAPITAL FUND, LLC

BY: LINCOLN PARK CAPITAL, LLC

BY: ALEX NOAH INVESTORS, INC.

By: /s/ Jonathan I. Cope
Name: Jonathan I. Cope
Title: President

ROCKLEDGE CAPITAL CORPORATION

By: /s/ Joshua B. Scheinfeld
Name: Joshua B. Scheinfeld
Title: President

JOSHUA B. SCHEINFELD

By: /s/ Joshua B. Scheinfeld
Name: Joshua B. Scheinfeld
Title: President

LINCOLN PARK CAPITAL, LLC

BY: ROCKLEDGE CAPITAL CORPORATION

By: /s/ Joshua B. Scheinfeld
Name: Joshua B. Scheinfeld
Title: President

LINCOLN PARK CAPITAL, LLC

BY: ALEX NOAH INVESTORS, INC.

By: /s/ Jonathan I. Cope
Name: Jonathan I. Cope
Title: President

ALEX NOAH INVESTORS, INC.

By: /s/ Jonathan I. Cope
Name: Jonathan I. Cope
Title: President

JONATHAN I. COPE

By: /s/ Jonathan I. Cope
Name: Jonathan I. Cope
Title: President

LIST OF EXHIBITS

<u>Exhibit No.</u>	<u>Description</u>
<u>1</u>	<u>Joint Filing Agreement</u>

Joint Filing Agreement

The undersigned hereby agree that they are filing this statement jointly pursuant to Rule 13d-1(k)(1). Each of them is responsible for the timely filing of such Schedule 13G, and for the completeness and accuracy of the information concerning such person contained therein; but none of them is responsible for the completeness or accuracy of the information concerning the other persons making the filing, unless such person knows or has reason to believe that such information is inaccurate.

In accordance with Rule 13d-1(k)(1) promulgated under the Securities and Exchange Act of 1934, as amended, the undersigned hereby agree to the joint filing with each other on behalf of each of them of such Schedule 13G with respect to the Common Stock of the Issuer, beneficially owned by each of them. This Joint Filing Agreement shall be included as an exhibit to such Schedule 13G.

[Signature Page Follows]

IN WITNESS WHEREOF, the undersigned hereby execute this Agreement as of October 25, 2022.

LINCOLN PARK CAPITAL FUND, LLC

BY: LINCOLN PARK CAPITAL, LLC

BY: ROCKLEDGE CAPITAL CORPORATION

By: /s/ Joshua B. Scheinfeld
Name: Joshua B. Scheinfeld
Title: President

LINCOLN PARK CAPITAL FUND, LLC

BY: LINCOLN PARK CAPITAL, LLC

BY: ALEX NOAH INVESTORS, INC.

By: /s/ Jonathan I. Cope
Name: Jonathan I. Cope
Title: President

ROCKLEDGE CAPITAL CORPORATION

By: /s/ Joshua B. Scheinfeld
Name: Joshua B. Scheinfeld
Title: President

JOSHUA B. SCHEINFELD

By: /s/ Joshua B. Scheinfeld
Name: Joshua B. Scheinfeld
Title: President

LINCOLN PARK CAPITAL, LLC

BY: ROCKLEDGE CAPITAL CORPORATION

By: /s/ Joshua B. Scheinfeld
Name: Joshua B. Scheinfeld
Title: President

LINCOLN PARK CAPITAL, LLC

BY: ALEX NOAH INVESTORS, INC.

By: /s/ Jonathan I. Cope
Name: Jonathan I. Cope
Title: President

ALEX NOAH INVESTORS, INC.

By: /s/ Jonathan I. Cope
Name: Jonathan I. Cope
Title: President

JONATHAN I. COPE

By: /s/ Jonathan I. Cope
Name: Jonathan I. Cope
Title: President
