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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549

FORM 10-Q

☒ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended June 30, 2022

or

□ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from to

Commission File Number: 001-37937

XENETIC BIOSCIENCES, INC.

(Exact name of registrant as specified in its charter)

Nevada	**45-2952962**
(State or other jurisdiction of incorporation or organization)	**(IRS Employer Identification No.)**

40 Speen Street, Suite 102
Framingham, Massachusetts 01701
(Address of principal executive offices and zip code)

781-778-7720
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $0.001 par value per share	XBIO	The Nasdaq Stock Market
Purchase Warrants	XBIOW	The Nasdaq Stock Market

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days: Yes ☒ No □

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files): Yes ☒ No □

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	□	Accelerated filer	□
Non-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 13(a) of the Exchange Act. □

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act): Yes □ No ☒

As of August 5, 2022, the number of outstanding shares of the registrant's common stock was 14,316,596.

XENETIC BIOSCIENCES, INC.
FORM 10-Q
QUARTERLY PERIOD ENDED JUNE 30, 2022

PART I – FINANCIAL INFORMATION

ITEM 1 – FINANCIAL STATEMENTS

XENETIC BIOSCIENCES, INC.
CONDENSED CONSOLIDATED BALANCE SHEETS

	June 30, 2022 (Unaudited)	December 31, 2021
ASSETS		
Current assets:		
Cash	$ 14,927,440	$ 18,244,030
Prepaid expenses and other	448,733	479,399
Total current assets	15,376,173	18,723,429
Other assets	1,091,931	1,091,931
Total assets	$ 16,468,104	$ 19,815,360
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 472,699	$ 362,470
Accrued expenses and other current liabilities	806,484	1,058,633
Total current liabilities	1,279,183	1,421,103
Total liabilities	1,279,183	1,421,103
Commitments and contingencies (Note 10)		
Stockholders' equity:		
Preferred stock, 10,000,000 shares authorized		
Series B, $0.001 par value: 1,804,394 shares issued and outstanding as of June 30, 2022 and December 31, 2021	1,804	1,804
Series A, $0.001 par value: 970,000 shares issued and outstanding as of June 30, 2022 and December 31, 2021	970	970
Common stock, $0.001 par value; 50,000,000 shares authorized as of June 30, 2022 and December 31, 2021; 14,343,587 and 13,466,603 shares issued as of June 30, 2022 and December 31, 2021, respectively; 14,316,596 and 13,439,612 shares outstanding as of June 30, 2022 and December 31, 2021, respectively	14,342	13,465
Additional paid in capital	207,012,317	205,952,729
Accumulated deficit	(186,813,066)	(182,547,265)
Accumulated other comprehensive income	253,734	253,734
Treasury stock	(5,281,180)	(5,281,180)
Total stockholders' equity	15,188,921	18,394,257
Total liabilities and stockholders' equity	$ 16,468,104	$ 19,815,360

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

XENETIC BIOSCIENCES, INC.
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS
(Unaudited)

	THREE MONTHS ENDED JUNE 30,		SIX MONTHS ENDED JUNE 30,	
	2022	**2021**	**2022**	**2021**
Revenue:				
Royalty revenue	$ 416,710	$ 287,603	$ 805,703	$ 478,819
Total revenue	416,710	287,603	805,703	478,819
Operating costs and expenses:				
Research and development	(2,077,499)	(524,550)	(3,178,898)	(1,154,279)
General and administrative	(1,026,290)	(890,704)	(1,933,599)	(1,821,282)
Total operating costs and expenses	(3,103,789)	(1,415,254)	(5,112,497)	(2,975,561)
Loss from operations	(2,687,079)	(1,127,651)	(4,306,794)	(2,496,742)
Other income (expense):				
Other income (expense)	(1,076)	238	(877)	1,122
Interest income, net	15,965	20,735	41,870	42,997
Total other income	14,889	20,973	40,993	44,119
Net loss	$ (2,672,190)	$ (1,106,678)	$ (4,265,801)	$ (2,452,623)
Basic and diluted net loss per share	$ (0.19)	$ (0.13)	$ (0.31)	$ (0.28)
Weighted-average shares of common stock outstanding, basic and diluted	14,066,573	8,746,692	13,755,046	8,746,479

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

XENETIC BIOSCIENCES, INC.
CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(Unaudited)

THREE MONTHS ENDED JUNE 30, 2022

	Preferred Stock		Common Stock						
	Number of Shares	Par Value ($0.001)	Number of Shares	Par Value ($0.001)	Additional Paid in Capital	Accumulated Deficit	Accumulated Other Comprehensive Income	Treasury Stock	Total Stockholders' Equity
Balance as of April 1, 2022	2,774,394	$ 2,774	13,468,287	$ 13,467	$ 206,072,322	$ (184,140,876)	$ 253,734	$ (5,281,180)	$ 16,920,241
Issuance of common stock in connection with purchase of in-process research and development	–	–	875,000	875	804,125	–	–	–	805,000
Share-based expense	–	–	–	–	135,870	–	–	–	135,870
Exercise of purchase warrants	–	–	300	–	–	–	–	–	–
Net loss	–	–	–	–	–	(2,672,190)	–	–	(2,672,190)
Balance as of June 30, 2022	2,774,394	$ 2,774	14,343,587	$ 14,342	$ 207,012,317	$ (186,813,066)	$ 253,734	$ (5,281,180)	$ 15,188,921

SIX MONTHS ENDED JUNE 30, 2022

	Preferred Stock		Common Stock						
	Number of Shares	Par Value ($0.001)	Number of Shares	Par Value ($0.001)	Additional Paid in Capital	Accumulated Deficit	Accumulated Other Comprehensive Income	Treasury Stock	Total Stockholders' Equity
Balance as of January 1, 2022	2,774,394	$ 2,774	13,466,603	$ 13,465	$ 205,952,729	$ (182,547,265)	$ 253,734	$ (5,281,180)	$ 18,394,257
Issuance of common stock in connection with purchase of in-process research and development	–	–	875,000	875	804,125	–	–	–	805,000
Share-based expense	–	–	–	–	255,465	–	–	–	255,465
Exercise of purchase warrants	–	–	1,984	2	(2)	–	–	–	–
Net loss	–	–	–	–	–	(4,265,801)	–	–	(4,265,801)
Balance as of June 30, 2022	2,774,394	$ 2,774	14,343,587	$ 14,342	$ 207,012,317	$ (186,813,066)	$ 253,734	$ (5,281,180)	$ 15,188,921

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

XENETIC BIOSCIENCES, INC.
CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(Unaudited)

THREE MONTHS ENDED JUNE 30, 2021

	Preferred Stock		Common Stock						
	Number of Shares	Par Value ($0.001)	Number of Shares	Par Value ($0.001)	Additional Paid in Capital	Accumulated Deficit	Accumulated Other Comprehensive Income	Treasury Stock	Total Stockholders' Equity
Balance as of April 1, 2021	2,774,394	$ 2,774	8,773,683	$ 8,772	$ 194,209,794	$ (178,248,031)	$ 253,734	$ (5,281,180)	$ 10,945,863
Share-based expense	–	–	–	–	109,922	–	–	–	109,922
Net loss	–	–	–	–	–	(1,106,678)	–	–	(1,106,678)
Balance as of June 30, 2021	2,774,394	$ 2,774	8,773,683	$ 8,772	$ 194,319,716	$ (179,354,709)	$ 253,734	$ (5,281,180)	$ 9,949,107

SIX MONTHS ENDED JUNE 30, 2021

	Preferred Stock		Common Stock						
	Number of Shares	Par Value ($0.001)	Number of Shares	Par Value ($0.001)	Additional Paid in Capital	Accumulated Deficit	Accumulated Other Comprehensive Income	Treasury Stock	Total Stockholders' Equity
Balance as of January 1, 2021	2,774,394	$ 2,774	8,772,198	$ 8,771	$ 194,133,511	$ (176,902,086)	$ 253,734	$ (5,281,180)	$ 12,215,524
Share-based expense	–	–	–	–	186,206	–	–	–	186,206
Exercise of purchase warrants	–	–	1,485	1	(1)	–	–	–	–
Net loss	–	–	–	–	–	(2,452,623)	–	–	(2,452,623)
Balance as of June 30, 2021	2,774,394	$ 2,774	8,773,683	$ 8,772	$ 194,319,716	$ (179,354,709)	$ 253,734	$ (5,281,180)	$ 9,949,107

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

XENETIC BIOSCIENCES, INC.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(Unaudited)

	Six Months Ended June 30,	
	2022	**2021**
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net loss	$ (4,265,801)	$ (2,452,623)
Adjustments to reconcile net loss to net cash used in operating activities:		
Acquired in-process research and development	1,305,000	–
Amortization of right of use asset	19,087	17,160
Share-based expense	255,465	186,206
Changes in operating assets and liabilities:		
Prepaid expenses and other assets	11,579	1,059
Accounts payable, accrued expenses and other liabilities	(141,920)	2,200
Net cash used in operating activities	(2,816,590)	(2,245,998)
CASH FLOWS FROM INVESTING ACTIVITIES:		
Net cash paid to acquire in-process research and development	(500,000)	–
Net cash used in investing activities	(500,000)	–
Net change in cash	(3,316,590)	(2,245,998)
Cash at beginning of period	18,244,030	11,527,552
Cash at end of period	$ 14,927,440	$ 9,281,554
SUPPLEMENTAL CASH FLOW INFORMATION:		
Cash paid for interest	$ –	$ –
SUPPLEMENTAL SCHEDULE OF NON-CASH INVESTING AND FINANCING ACTIVITIES:		
Issuance of common stock to acquire in-process research and development	$ 805,000	$ –
Issuance of common stock from cashless exercise of purchase warrants	$ 2	$ 1

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

1. The Company

Background

Xenetic Biosciences, Inc. ("Xenetic" or the "Company"), incorporated in the state of Nevada and based in Framingham, Massachusetts, is a biopharmaceutical company focused on advancing innovative immune-oncology technologies addressing hard to treat cancers. The Company's Deoxyribonuclease ("DNase") platform is designed to improve outcomes of existing treatments, including immunotherapies, by targeting Neutrophil Extracellular Traps ("NETs"). The Company is also developing its personalized Chimeric Antigen Receptor ("CAR") T platform technology, XCART™, to develop cell-based therapeutics targeting the unique B-cell receptor on the surface of an individual patient's malignant tumor cells, for the treatment of B-cell lymphomas. On April 26, 2022, the Company entered into exclusive license and sublicense agreements with CLS Therapeutics Ltd. ("CLS") to develop its interventional DNase based oncology platform as more fully described in Note 5. Additionally, Xenetic has partnered with biotechnology and pharmaceutical companies to develop its proprietary drug delivery platform, PolyXen®, and receives royalty payments under an exclusive license arrangement in the field of blood coagulation disorders.

As used in this Quarterly Report on Form 10-Q ("Quarterly Report"), unless otherwise indicated, all references herein to "Xenetic," the "Company," "we" or "us" refer to Xenetic Biosciences, Inc. and its wholly owned subsidiaries.

The Company, directly or indirectly, through its wholly-owned subsidiaries, Hesperix S.A. ("Hesperix") and Xenetic Biosciences (U.K.) Limited ("Xenetic UK"), and the wholly-owned subsidiaries of Xenetic UK, Lipoxen Technologies Limited ("Lipoxen"), Xenetic Bioscience, Incorporated and SymbioTec, GmbH ("SymbioTec"), own various United States ("U.S.") federal trademark registrations and applications, and unregistered trademarks and service marks, including but not limited to XCART, OncoHist™, PolyXen, ErepoXen™, and ImuXen™, which are used throughout this Quarterly Report. All other company and product names may be trademarks of the respective companies with which they are associated.

Going Concern and Management's Plan

Management evaluates whether there are conditions or events, considered in the aggregate that raise substantial doubt about the Company's ability to continue as a going concern within one year after the date that the financial statements are issued. The Company has incurred substantial losses since its inception and expects to continue to incur operating losses in the near-term. These factors raise substantial doubt about its ability to continue as a going concern. The Company believes that it has access to capital resources through possible public or private equity offerings, debt financings, corporate collaborations, related party funding, or other means to continue as a going concern. The Company believes that its existing resources will be adequate to fund the Company's operations into the third quarter of 2023. However, the Company anticipates it may need additional capital in the long-term to pursue its business initiatives. The terms, timing and extent of any future financing will depend upon several factors, including the achievement of progress in its clinical development programs, its ability to identify and enter into licensing or other strategic arrangements, its continued listing on the Nasdaq Stock Market ("Nasdaq"), and factors related to financial, economic, geo-political, industry and market conditions, many of which are beyond its control. The capital markets for the biotech industry can be highly volatile, which make the terms, timing and extent of any future financing uncertain. On June 3, 2022, the Company received a written notification (the "Notice") from the Listing Qualifications Department of Nasdaq notifying the Company that the closing bid price for its common stock had been below $1.00 for 30 consecutive business days and that the Company therefore is not in compliance with the minimum bid price requirement for continued inclusion on the Nasdaq Capital Market under Nasdaq Listing Rule 5550(a)(2) (the "Bid Price Requirement"). The Notice has no immediate effect on the listing of the Company's common stock on the Nasdaq Capital Market. Under the Nasdaq Listing Rules, the Company has a period of 180 calendar days from the date of the Notice to regain compliance with the Bid Price Requirement. Accordingly, the Company has until November 30, 2022 (the "Compliance Date"), to regain compliance with the Bid Price Requirement and may be eligible for an additional 180 calendar day compliance period if certain other criteria are met.

2. Impact of COVID-19

During March 2020, a global pandemic was declared by the World Health Organization related to the outbreak of a novel strain of coronavirus, or COVID-19. The pandemic has significantly affected economic conditions in the U.S., accelerating during the first half of March 2020 and continuing throughout 2021 and into 2022, as federal, state and local governments reacted to the public health crisis with mitigation measures, creating significant uncertainties in the U.S. economy. The Company continues to evaluate the effects of the COVID-19 pandemic on its business and while there has been no significant impact to the Company's operations to date, the Company at this time remains uncertain of the impact this event may have on the Company's future operations. The extent to which the COVID-19 pandemic affects our business, operations and financial results will depend on numerous evolving factors that we may not be able to accurately predict, and such uncertainty is expected to continue for some time.

3. Summary of Significant Accounting Policies

Preparation of Interim Financial Statements

The accompanying condensed consolidated interim financial statements were prepared by the Company pursuant to the rules and regulations of the Securities and Exchange Commission ("SEC") and, in the opinion of management, include all normal and recurring adjustments necessary to present fairly the results of the interim periods shown. Certain information and footnote disclosures normally included in financial statements prepared in accordance with U.S. generally accepted accounting principles have been condensed or omitted pursuant to such SEC rules and regulations. Management believes that the disclosures made are adequate to make the information presented not misleading. The results for the interim periods are not necessarily indicative of results for the full year. The condensed consolidated financial statements contained herein should be read in conjunction with the consolidated financial statements and notes thereto included in the Company's Annual Report on Form 10-K for the year ended December 31, 2021 filed with the SEC on March 22, 2022, and amended on April 28, 2022.

Principles of Consolidation

The condensed consolidated financial statements of the Company include the accounts of Hesperix, Xenetic UK and Xenetic UK's wholly owned subsidiaries: Lipoxen, Xenetic Bioscience, Incorporated, and SymbioTec. All intercompany balances and transactions have been eliminated in consolidation.

Basic and Diluted Net Loss per Share

The Company computes basic net loss per share by dividing net loss applicable to common stockholders by the weighted-average number of shares of the Company's common stock outstanding during the period. The Company computes diluted net loss per share after giving consideration to the dilutive effect of stock options that are outstanding during the period, except where such non-participating securities would be anti-dilutive.

For the three and six months ended June 30, 2022 and 2021, basic and diluted net loss per share are the same for each respective period due to the Company's net loss position. Potentially dilutive, non-participating securities have not been included in the calculations of diluted net loss per share, as their inclusion would be anti-dilutive.

Recent Accounting Standards

In June 2016, the Financial Accounting Standards Board issued Accounting Standards Update ("ASU") 2016-13, *Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*. The guidance modifies the measurement and recognition of credit losses for most financial assets and certain other instruments. The amendment updates the guidance for measuring and recording credit losses on financial assets measured at amortized cost by replacing the "incurred loss" model with an "expected loss" model. This may result in earlier recognition of allowance for losses. ASU 2016-13 is effective for smaller reporting public entities for fiscal years beginning after December 15, 2022 but early adoption is permitted. The Company is currently evaluating the impact of adoption, but it does not anticipate that adoption will have a material effect on the Company's consolidated financial statements.

4. Significant Strategic Collaborations

The Company has entered into various research, development, license and supply agreements with Serum Institute of India ("Serum Institute"), PJSC Pharmsynthez ("Pharmsynthez") and SynBio LLC ("SynBio"), a wholly owned subsidiary of Pharmsynthez. The Company's collaborative partners continue to engage in research and development activities with no resultant commercial products through June 30, 2022. No amounts were recognized as revenue related to the Serum Institute, Pharmsynthez or SynBio agreements during the three and six months ended June 30, 2022 and 2021, respectively.

In October 2017, the Company granted to Takeda Pharmaceuticals Co. Ltd. ("Takeda") the right to grant a non-exclusive sublicense to certain patents related to the Company's PolyXen technology that were previously exclusively licensed to Takeda in connection with products related to the treatment of blood and bleeding disorders. Royalty payments of approximately $0.4 million and $0.8 million were recorded as revenue by the Company during the three and six months ended June 30, 2022, respectively, and approximately $0.3 million and $0.5 million were recorded as revenue by the Company during the three and six months ended June 30, 2021, respectively. These payments are based on single digit royalties on net sales of certain covered products. The Company's policy is to recognize royalty payments as revenue when they are reliably measurable, which is upon receipt of reports from Takeda. The Company receives these reports in the quarter subsequent to the actual sublicensee sales. At the time the revenue was received, there were no remaining performance obligations and all other revenue recognition criteria were met.

On May 15, 2020, the Company and The Scripps Research Institute ("Scripps Research") entered into a Research Funding and Option Agreement (the "Scripps Agreement"), pursuant to which the Company had agreed to provide Scripps Research an aggregate of up to $3.0 million to fund research relating to advancing the pre-clinical development of XCART. The research funding was payable by the Company to Scripps Research on a quarterly basis in accordance with a negotiated budget, which provided for an initial payment of approximately $300,000 on the date of the Scripps Agreement and subsequent quarterly payments of approximately $300,000 over a 27-month period. Under the Scripps Agreement, Scripps Research has granted the Company a license within the Field (as defined in the Scripps Agreement) to any Patent Rights or Technology (as defined in the Scripps Agreement) under the terms of that certain license agreement with Scripps Research, dated February 25, 2019, assigned to the Company on March 1, 2019. Additionally, the Company has the option to acquire a worldwide exclusive license to Scripps Research's rights in the Technology or Patent Rights not already licensed to the Company, as well as a non-exclusive, royalty-free, non-transferrable license to make and use Scripps Research Technology (as defined in the Scripps Agreement) solely for the Company's internal research purposes during the performance of the research program contemplated by the Scripps Agreement. During the second quarter of 2022, the parties mutually agreed to terminate additional funding under the Scripps Agreement. As a result, Scripps Research agreed to continue to perform work under the agreement until funding previously advanced is expended. The Company paid $2.4 million to Scripps Research under this agreement through June 30, 2022. As of December 31, 2021, approximately $0.2 million has been recognized as an advance payment under this agreement and is included in prepaid expenses and other current assets. There were no amounts recognized as an advance payment under this agreement or accrued as of June 30, 2022.

On June 30, 2022, the Company entered into a Statement of Work (the "SOW") with Catalent Pharma Solutions, LLC ("Catalent") to outline the general scope of work, timeline, and pricing pursuant to which Catalent will provide certain services to the Company to perform cGMP manufacturing of the Company's recombinant protein, Human DNase I. The parties agreed to enter into a Master Services Agreement ("MSA") that will contain terms and conditions to govern the project contemplated by the SOW and that will supersede the addendum to the SOW containing Catalent's standard terms and conditions. In addition, in the event of any conflict between the project-specific terms and conditions set forth in the SOW and the MSA, the MSA terms and conditions shall govern. The estimated total cost of the project contemplated by the SOW is expected to be up to approximately $5 million (exclusive of certain fees and potential alternatives) for the manufacturing services over the course of the term of the project with each phase of the project invoiced separately in connection with the commencement of such phase. Unless earlier terminated, the manufacturing services contemplated by the SOW are currently expected to take approximately 17 months from the start date. The SOW is terminable by the Company at any time with 30 days' prior written notice to Catalent. The SOW also contains customary provisions related to, among other things, confidentiality, warranties, intellectual property and indemnification. No payments were made or costs incurred during the three and six months ended June 30, 2022.

5. Acquisitions

Exclusive Sublicense Agreement

On April 26, 2022, the Company entered into an Exclusive Sublicense Agreement (the "Sublicense Agreement") with CLS pursuant to which the Company received an exclusive license, under certain patent rights and know-how owned or controlled by CLS, to develop and commercialize pharmaceutical products and methods incorporating DNase enzyme for use in treatment of cancer (the "Sublicensed Products"). Under the terms of the Sublicense Agreement, the Company will have sole responsibility for, and shall use commercially reasonable efforts to, among other things, research, develop and obtain marketing approval for the Sublicensed Products in the U.S. and certain European markets, and to commercialize such Sublicensed Products in the relevant market once marketing approval is obtained.

In consideration for the license and other rights granted to the Company under the Sublicense Agreement, the Company issued to CLS 375,000 shares of the Company's common stock (the "Sublicense Agreement Shares"), of which 250,000 Sublicense Agreement Shares were issued directly to OPKO Health, Inc. ("OPKO") in lieu of transfer indirectly from CLS to EirGen Pharma Ltd. ("EirGen"), a wholly owned subsidiary of OPKO, in satisfaction of certain third-party contractual obligations between CLS and EirGen. Additionally, the Company is obligated to pay to CLS up to $13,000,000 in cash in potential milestone payments for the achievement of certain clinical and regulatory milestones, as well as issue an additional 950,000 shares of the Company's common stock to CLS based on the achievement of certain regulatory milestones. In addition, the Company is obligated to pay tiered royalties ranging from the mid-single to low-double digits on net sales of licensed products falling within the scope of the license during the Royalty Term (as defined in the Sublicense Agreement), as well as pay a percentage share in the low-to-mid teens of certain consideration received by the Company from any sublicensees.

Exclusive License Agreement

On April 26, 2022, the Company entered into an Exclusive License Agreement (the "License Agreement") with CLS, pursuant to which the Company received an exclusive license under certain patent rights and know-how owned or controlled by CLS to develop and commercialize pharmaceutical products and methods incorporating DNase in conjunction with CAR T therapies (the "Licensed Products"). Under the terms of the License Agreement, the Company will have sole responsibility for, and shall use commercially reasonable efforts to, among other things, research, develop and obtain marketing approval for the Licensed Products in the U.S. and certain European markets, and to commercialize such Licensed Products in the relevant market once marketing approval is obtained.

In consideration for the license and other rights granted to the Company under the License Agreement, the Company paid CLS a one-time fee of $500,000 in cash, issued to CLS 500,000 shares of the Company's common stock, and is obligated to pay up to $13,000,000 in cash in potential milestone payments for the achievement of certain clinical and regulatory milestones for each Licensed Product. In addition, the Company is obligated to pay tiered royalties ranging from the mid-single to low-double digits on net sales of licensed products falling within the scope of the license during the Royalty Term (as defined in the License Agreement), as well as pay a percentage share in the mid-teens to low double digits of certain consideration received by the Company from any sublicensees.

The total consideration for the Sublicense and License Agreements was approximately $1.3 million, which consists of a $0.5 million cash payment and the fair value of the 875,000 common shares issued of $0.8 million utilizing the closing market price of the Company's stock price at the closing date. As there was no future alternative use for the sublicense and license, the Company recorded an expense of $1.3 million to research and development expense for the three months ended June 30, 2022. In addition, the Company incurred approximately $0.1 million and $0.2 million related to consulting and transaction costs in connection with the Sublicense and License Agreements in the three and six months ended June 30, 2022, respectively.

6. Fair Value Measurements

Accounting Standards Codification Topic 820, *Fair Value Measurement,* defines fair value as the price that would be received to sell an asset or be paid to transfer a liability in an orderly transaction between market participants at the measurement date. The Company applies the following fair value hierarchy, which prioritizes the inputs used to measure fair value into three levels and bases the categorization within the hierarchy upon the lowest level of input that is available and significant to the fair value measurement. Level 1 inputs are quoted prices in active markets for identical assets or liabilities that the reporting entity has the ability to access at the measurement date. Level 2 utilizes quoted market prices in markets that are not active, broker or dealer quotations, or alternative pricing sources with reasonable levels of price transparency. Level 3 inputs are unobservable inputs for the asset or liability in which there is little, if any, market activity for the asset or liability at the measurement date. As of June 30, 2022 and December 31, 2021, the carrying amounts of the Company's financial instruments approximates fair value due to their short maturities. There were no financial instruments classified as Level 3 in the fair value hierarchy during the three and six months ended June 30, 2022 and 2021.

7. Stockholders' Equity

Warrants

In connection with its July 2021 private placement, the Company issued warrants to purchase an aggregate of 4,629,630 shares of the Company's common stock (the "Series A Warrants"). The Series A Warrants are immediately exercisable at a price of $3.30 per share of common stock and expire on February 23, 2025. No Series A Warrants were exercised or forfeited during the three and six months ended June 30, 2022.

In addition to the Series A Warrants, warrants to purchase approximately 29,000 and 31,000 shares of the Company's common stock were outstanding as of June 30, 2022 and December 31, 2021, respectively, as described below.

Publicly traded warrants to purchase approximately 21,000 and 23,000 shares of common stock were outstanding as of June 30, 2022 and December 31, 2021, respectively. These warrants have an exercise price of $13.00 per share and expire on July 17, 2024. The warrants trade on NASDAQ under the symbol "XBIOW." The warrants also provide that if the weighted-average price of common stock on any trading day on or after 30 days after issuance is lower than the then-applicable exercise price per share, each warrant may be exercised, at the option of the holder, on a cashless basis for one share of common stock. Warrants to purchase approximately 1,984 shares and 1,485 shares of common stock were exercised on a cashless, one-for-one basis during the six months ended June 30, 2022 and 2021, respectively. Warrants to purchase approximately 300 shares of common stock were exercised on a cashless, one-for-one basis during the three months ended June 30, 2022. No warrants were exercised during the three months ended June 30, 2021. None of these warrants were forfeited during the three and six months ended June 30, 2022 and 2021.

Warrants to purchase approximately 8,000 shares of the Company's common stock were outstanding as of June 30, 2022 and December 31, 2021. These warrants have an exercise price of $2.91 per share and expire on July 3, 2026. None of these warrants were exercised or forfeited during the three and six months ended June 30, 2022 and 2021.

8. Share-Based Expense

Total share-based expense related to stock options, restricted stock units and common stock awards was approximately $0.1 million for each of the three months ended June 30, 2022 and 2021 and approximately $0.3 million and $0.2 million for the six months ended June 30, 2022 and 2021, respectively.

Share-based compensation expense is classified in the condensed consolidated statements of operations as follows:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2022	2021	2022	2021
Research and development expenses	$ 23,128	$ 19,026	$ 42,306	$ 29,736
General and administrative expenses	112,742	90,896	213,159	156,470
	$ 135,870	$ 109,922	$ 255,465	$ 186,206

Employee Stock Options

During the six months ended June 30, 2022, the Company granted 200,000 stock option awards to purchase shares of common stock. The weighted average grant date fair value per option share was $0.99. Key assumptions used in the Black-Scholes option pricing model for options granted during the six months ending June 30, 2022 were the Company's stock price, a risk free rate of 2.38%, an expected life of 5.88 years and an expected volatility rate of 126.32%. During the six months ended June 30, 2021, the Company granted 200,000 stock option awards to purchase shares of common stock. The Company recognized a total of $0.1 million of compensation expense related to employee stock options during each of the three months ended June 30, 2022 and 2021 and $0.3 million and $0.2 million during the six months ended June 30, 2022 and 2021, respectively.

Non-Employee Stock Options

The Company did not grant any non-employee stock options during the six months ended June 30, 2022 and 2021. The Company did not recognize any expense related to non-employee stock options during the three and six months ended June 30, 2022 and 2021, respectively.

9. Income Taxes

During the three and six months ended June 30, 2022 and 2021, there was no provision for income taxes as the Company incurred losses during both periods. Deferred tax assets and liabilities reflect the net tax effect of temporary differences between the carrying amount of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. The Company records a valuation allowance against its deferred tax assets as the Company believes it is more likely than not the deferred tax assets will not be realized. The valuation allowance against deferred tax assets was approximately $32.6 million and $31.4 million as of June 30, 2022 and December 31, 2021, respectively.

As of June 30, 2022 and December 31, 2021, the Company did not record any unrecognized tax positions.

10. Commitments

Supplemental cash flow information and non-cash activity related to the Company's operating leases are as follows:

	Six Months Ended June 30, 2022	Six Months Ended June 30, 2021
Operating cash flow information:		
Cash paid for amounts included in the measurement of lease liabilities	$ 19,087	$ 17,160

Supplemental balance sheet information related to the Company's operating leases is as follows:

	Balance Sheet Classification	June 30, 2022	June 30, 2021
Right-of-use assets - ST	Prepaid expenses and other	$ 9,611	$ 37,408
Right-of-use assets - LT	Other assets	$ –	$ 7,957
Current lease liabilities	Accrued expenses and other current liabilities	$ 9,611	$ 37,408
Non-current lease liabilities	Other long-term liabilities	$ –	$ 7,957

11. Related Party Transactions

The Company has entered into various research, development, license and supply agreements with Serum Institute and Pharmsynthez each a related party whose relationship has not materially changed from that disclosed in the Company's Annual Report on Form 10-K for the year ended December 31, 2021, filed with the SEC on March 22, 2022, as amended on April 28, 2022.

During the fourth quarter of 2019, the Company entered into a loan agreement with Pharmsynthez (the "Pharmsynthez Loan"), pursuant to which the Company advanced Pharmsynthez an aggregate principal amount of up to $500,000 to be used for the development of a specific product under the Company's Co-Development Agreement with Pharmsynthez. The Pharmsynthez Loan had a term of 15-months and accrued interest at a rate of 10% per annum. The Pharmsynthez Loan is guaranteed by all of the operating subsidiaries of Pharmsynthez, including SynBio and AS Kevelt, and is secured by all of the common and preferred stock of the Company owned by Pharmsynthez and SynBio. The Company recognized approximately $12,000 of interest income related to this loan during the three months ended June 30, 2021 and approximately $9,000 and $23,000 of interest income related to this loan during the six months ended June 30, 2022 and 2021, respectively. The Company did not recognize any interest income during the three months ended June 30, 2022 as Pharmsynthez informed the Company that it could not make interest payments during the second quarter as a result of Russian sanctions imposed in response to sanctions from the U.S. and other countries, as discussed below.

Effective January 23, 2021, the Company entered into a First Amendment to Loan Agreement and Other Loan Documents with Pharmsynthez, Kevelt and SynBio (the "Pharmsynthez Loan Extension") to modify the repayment terms and maturity of the Pharmsynthez Loan to January 2022. The terms of the Pharmsynthez Loan Extension called for two (2) equal monthly principal payments of $25,000 in each of January 23, 2021 and February 28, 2021 and the payment of all outstanding accrued interest in six (6) equal monthly installments from January 31, 2021 through June 30, 2021. In addition, the Pharmsynthez Loan Extension required monthly interest payments and the repayment of the remaining principal amount in six (6) equal monthly installments from August 2021 through January 2022.

Effective August 31, 2021, the Company entered into a Second Amendment to Loan Agreement and Other Loan Documents with Pharmsynthez, Kevelt and SynBio (the "Second Pharmsynthez Loan Extension") to modify the repayment terms and maturity of the Pharmsynthez Loan to July 2022. The terms of the Second Pharmsynthez Loan Extension called for an upfront fee of $12,500 and two (2) equal monthly principal payments of $25,000 on September 30, 2021 and October 31, 2021. In addition, the Second Pharmsynthez Loan Extension required monthly interest payments and the repayment of the remaining principal amount in six (6) equal monthly installments from February 2022 through July 2022. All other terms of the Pharmsynthez Loan, as amended, remained in effect. All required payments under the Second Pharmsynthez Loan Extension had been made through January 31, 2022. In February 2022, the Company received a request from Pharmsynthez to further extend the principal repayments and the maturity of the loan. While the Company is working with Pharmsynthez to extend the maturity date of the loan, the terms of such extension are under negotiation and have not yet been finalized. As a result of this request and the ongoing economic uncertainty due to the conflict between Russia and Ukraine and associated sanctions imposed by the U.S. and other countries in response, the Company has classified the loan receivable as long-term as of June 30, 2022 and December 31, 2021. The Company assessed the collectability of the loan and determined that the U.S.-based collateral held by the Company, consisting of all of the common and preferred stock of the Company owned by Pharmsynthez and SynBio, was adequate to support the repayment of the outstanding principal balance. As of June 30, 2022 and December 31, 2021, approximately $0.4 million was included in other assets on the condensed consolidated balance sheet.

In April 2022, the Company entered into Exclusive License and Sublicense Agreements with CLS as described in Note 5. One of the Company's directors, Roger Kornberg, is a member of the scientific advisory board of CLS, however, Mr. Kornberg does not own any equity of CLS and is not receiving any economic benefit as a result of the transactions contemplated by the License Agreement and Sublicense Agreement. Mr. Adam Logal, one of our directors, is Senior Vice President, Chief Financial Officer, Chief Accounting Officer and Treasurer of OPKO.

12. Subsequent Events

The Company performed a review of events subsequent to the balance sheet date through the date the financial statements were issued and determined that there were no such events requiring recognition or disclosure in the financial statements except as described below.

Volition

On August 2, 2022, the Company announced a research and development collaboration with Belgian Volition SARL Limited to develop NETs-targeted adoptive cell therapies for the treatment of cancer. The collaboration is an early exploratory program to evaluate the potential combination of Volition's Nu.Q® NETs Test and the Company's DNase-Armored CAR T platform to develop proprietary adoptive cell therapies potentially targeting multiple types of solid cancers. Under the terms of the collaboration agreement, Volition will fund a research program and the two parties will share proceeds from commercialization or licensing of any products arising from the collaboration.

ITEM 2 – MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This report contains forward-looking statements within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and Section 27A of the Securities Act of 1933, as amended. All statements contained in this Quarterly Report other than statements of historical fact, including statements regarding our future results of operations and financial position, our business strategy and plans, future revenues, projected costs, prospects and our objectives for future operations, are forward-looking statements. These forward-looking statements include, but are not limited to, statements concerning: the anticipated effects and duration of the novel coronavirus, or COVID-19, global pandemic and the responses thereto, including the pandemic's impact on general economic and market conditions, as well as on our business, results of operations and financial condition; the uncertainty due to the conflict between Russia and Ukraine and associated sanctions imposed by the United States ("U.S.") and other countries in response; our plans to develop our proposed drug candidates; our expectations regarding the nature, timing and extent of clinical trials and proposed clinical trials; our expectations regarding the timing for proposed submissions of regulatory filings, including but not limited to, any Investigational New Drug filing or any New Drug Application; the nature, timing and extent of collaboration arrangements; the expected results pursuant to collaboration arrangements, including the receipts of future payments that may arise pursuant to collaboration arrangements; the outcome of our plans to obtain regulatory approval of our drug candidates; the outcome of our plans for the commercialization of our drug candidates; our plans to address certain markets, engage third party manufacturers, and evaluate additional drug candidates for subsequent commercial development along with the likelihood and extent of competition to our drug candidates; our plans to advance innovative immune-oncology technologies addressing hard to treat oncology indications; expectations regarding our Deoxyribonuclease ("DNase") oncology platform, such as regarding the DNase platform being in development for the treatment of solid tumors and being aimed at improving outcomes of existing treatments, including immunotherapies, by targeting Neutrophil Extracellular Traps ("NETs") and our expectations to prioritize our efforts and resources on this newly acquired technology; the development of the XCART™ Chimeric Antigen Receptor ("CAR") T cell technology and plans to develop cell-based therapeutics by targeting the unique B cell receptor on the surface of an individual patient's malignant tumor cells for the treatment of B-cell lymphomas; and our expectations regarding our PolyXen® platform, including concerning our plans to leverage the platform by partnering with biotechnology and pharmaceutical companies and its application to protein or peptide therapeutics and its application to improve the half-life and other pharmaceutical properties of next-generation biologic drugs.

In some cases, these statements may be identified by terminology such as "may," "will," "would," "could," "should," "expect," "plan," "anticipate," "believe," "estimate," "seek," "approximately," "intend," "predict," "potential," "projects," or "continue," or the negative of such terms and other comparable terminology. Although we believe that the expectations reflected in the forward-looking statements contained herein are reasonable, we cannot guarantee future results, the levels of activity, performance or achievements. These statements involve known and unknown risks and uncertainties that may cause our or our industry's results, levels of activity, performance or achievements to be materially different from those expressed or implied by forward-looking statements.

The Management's Discussion and Analysis of Financial Condition and Results of Operations (the "MD&A") should be read together with our condensed consolidated financial statements and related notes included elsewhere in this Quarterly Report. This Quarterly Report, including the MD&A, contains trend analysis and other forward-looking statements. Any statements in this Quarterly Report that are not statements of historical facts are forward-looking statements. These forward-looking statements made herein are based on our current expectations, involve a number of risks and uncertainties and should not be considered as guarantees of future performance.

Some factors that could cause actual results to differ materially include without limitation:

- unexpected costs, charges or expenses resulting from the transaction with CLS Therapeutics LTD ("CLS") and the licensing of the DNase platform;
- uncertainty of the expected financial performance of the Company following completion of the transaction with CLS and the licensing of the DNase platform;
- failure to realize the anticipated potential of the DNase, XCART or PolyXen technologies;
- our ability to implement our business strategy;
- our failure to meet the continued listing requirements of the Nasdaq Capital Market;
- our need to raise additional working capital in the future for the purpose of further developing our DNase and XCART technologies and to continue as a going concern;
- our ability to finance our business;
- our ability to successfully execute, manage and integrate key acquisitions and mergers;
- product development and commercialization risks, including our ability to successfully develop the DNase and XCART technologies;
- the impact of adverse safety outcomes and clinical trial results for our therapies;
- our ability to secure and maintain a manufacturer for our technologies;
- the impact of new therapies and new uses of existing therapies on the competitive environment;
- our ability to successfully commercialize our current and future drug candidates;
- our ability to achieve milestone and other payments associated with our current and future co-development collaborations and strategic arrangements;
- the impact of new technologies on our drug candidates and our competition;
- changes in laws or regulations of governmental agencies;
- interruptions or cancellation of existing contracts;
- impact of competitive products and pricing;
- product demand and market acceptance and risks;
- the presence of competitors with greater financial resources;
- continued availability of supplies or materials used in manufacturing at the current prices;
- the ability of management to execute plans and motivate personnel in the execution of those plans;
- our ability to attract and retain key personnel;
- adverse publicity related to our products or the Company itself;
- adverse claims relating to our intellectual property;
- the adoption of new, or changes in, accounting principles;
- the costs inherent with complying with statutes and regulations applicable to public reporting companies, such as the Sarbanes-Oxley Act of 2002;
- other new lines of business that the Company may enter in the future;
- general economic and business conditions, as well as inflationary trends;
- the impact of natural disasters or public health emergencies, such as the COVID-19 global pandemic, and geopolitical events, such as the Russian invasion of Ukraine, and related sanctions and other economic disruptions or concerns, on our financial condition and results of operations; and
- other factors set forth in the Risk Factors section of our Annual Report on Form 10-K and in subsequent filings with the Securities and Exchange Commission ("SEC").

These factors are not necessarily all of the important factors that could cause actual results to differ materially from those expressed in the forward-looking statements in this Quarterly Report. Other unknown or unpredictable factors also could have material adverse effects on our future results, including, but not limited to, those discussed in the section titled "Risk Factors." The forward-looking statements in this Quarterly Report are made only as of the date of this Quarterly Report, and we do not undertake any obligation to publicly update any forward-looking statements to reflect subsequent events or circumstances. We intend that all forward-looking statements be subject to the safe-harbor provisions of the Private Securities Litigation Reform Act of 1995.

BUSINESS OVERVIEW

We are a biopharmaceutical company focused on advancing innovative immune-oncology technologies addressing hard to treat cancers. The Company's DNase platform is designed to improve outcomes of existing treatments, including immunotherapies, by targeting NETs. The Company is also developing its personalized CAR T platform technology, XCART™, to develop cell-based therapeutics targeting the unique B-cell receptor on the surface of an individual patient's malignant tumor cells for the treatment of B-cell lymphomas. We licensed the DNase oncology platform in April 2022 and expect to prioritize our efforts and resources on the development of this newly acquired technology. Additionally, we have partnered with biotechnology and pharmaceutical companies to develop our proprietary drug delivery platform, PolyXen, and receive royalty payments under an exclusive license arrangement in the field of blood coagulation disorders.

We incorporate our patented and proprietary technologies into drug candidates currently under development with biotechnology and pharmaceutical industry collaborators to create what we believe will be the next-generation biologic drugs with improved pharmacological properties over existing therapeutics. Our drug candidates have resulted from our research activities or that of our collaborators and are in the development stage. As a result, we continue to commit a significant amount of our resources to our research and development activities and anticipate continuing to do so for the near future. To date, none of our drug candidates have received regulatory marketing authorization in the U.S. by the Food and Drug Administration ("FDA") nor in any other territories by any applicable agencies. We are receiving ongoing royalties pursuant to a license of our PolyXen technology to an industry partner. Although we hold a broad patent portfolio, the focus of our internal efforts during the three and six months ended June 30, 2022, was on advancing the development of our XCART platform technology and the acquisition of our DNase oncology platform.

Effects of the COVID-19 Pandemic

During March 2020, a global pandemic was declared by the World Health Organization related to the rapidly growing outbreak of a novel strain of coronavirus, or COVID-19. The pandemic has significantly affected economic conditions in the U.S., accelerating during the first half of March 2020 and continuing throughout 2021 and into 2022, as federal, state and local governments reacted to the public health crisis with mitigation measures, creating significant uncertainties in the U.S. economy. We continue to evaluate the effects of the COVID-19 pandemic on our business, and while there has been no significant impact to our operations to date despite social distancing and other measures taken in response to the pandemic, the ultimate impact of the COVID-19 pandemic on our results of operations and financial condition is dependent on future developments, including the duration of the pandemic and the related extent of its severity, the pace and rate at which vaccines are administered, and the continued emergence of new strains of COVID-19, such as the Delta and Omicron variants and any subvariants, as well as its impact on macroeconomic conditions, which are uncertain and cannot be predicted at this time. If the global response to contain the COVID-19 pandemic escalates further or is unsuccessful, or if governmental decisions to ease pandemic related restrictions are ineffective, premature or counterproductive, we could experience a material adverse effect on our business, financial condition, results of operations and cash flows.

RESULTS OF OPERATIONS

Comparison of Quarter Ended June 30, 2022 and 2021

The comparison of our historical results of operations for the fiscal quarter ended June 30, 2022 to the fiscal quarter ended June 30, 2021 is as follows:

Description	Quarter Ended June 30, 2022	Quarter Ended June 30, 2021	Increase (Decrease)	Percentage Change
Revenues:				
Royalty revenue	$ 416,710	$ 287,603	$ 129,107	44.9%
Operating costs and expenses:				
Research and development	(2,077,499)	(524,550)	1,552,949	296.1
General and administrative	(1,026,290)	(890,704)	135,586	15.2
Total operating costs and expenses	(3,103,789)	(1,415,254)	1,688,535	119.3
Loss from operations	(2,687,079)	(1,127,651)	1,559,428	138.3
Other income (expense):				
Other income (expense)	(1,076)	238	(1,314)	(552.1)
Interest income, net	15,965	20,735	(4,770)	(23.0)
Net loss	$ (2,672,190)	$ (1,106,678)	$ 1,565,512	141.5

Revenue

Revenue for the three months ended June 30, 2022 increased by $0.1 million, or 44.9%, to $0.4 million from approximately $0.3 million for the three months ended June 30, 2021. This increase represents an increase in royalty revenue related to our sublicense agreement with Takeda Pharmaceuticals Co. Ltd. (“Takeda”) as compared to the same period in 2021 as Takeda’s sublicensee continued its worldwide launch of the product.

Research and Development Expenses

Overall, research & development (“R&D”) expenses for the three months ended June 30, 2022 increased by $1.6 million, or 296.1% to $2.1 million from $0.5 million in the comparable quarter in 2021 primarily due to in-process research and development (“IPR&D”) expense of $1.3 million. During the three months ended June 30, 2022, the Company expensed $1.3 million of IPR&D associated with the Company’s licensing of the DNase oncology platform. There was no similar expense in 2021. Excluding the $1.3 million of IPR&D expense from total R&D expense of approximately $2.1 million, R&D expense for the three months ended June 30, 2022 increased by approximately $0.3 million, or 47.3%, to approximately $0.8 million from approximately $0.5 million in the comparable quarter in 2021. The table below sets forth the R&D costs incurred by the Company by category of expense for the quarters ended June 30, 2022 and 2021:

	Quarter Ended,	
Category of Expense	June 30, 2022	June 30, 2021
IPR&D expense	$ 1,305,000	$ –
Outside services and contract research organizations	598,399	358,389
Salaries and wages	120,373	108,747
Share-based expense	23,128	19,026
Other	30,599	38,388
Total research and development expense	$ 2,077,499	$ 524,550

The increase in outside services and contract research organizations expense was primarily due to increased spending related to our XCART platform technology and, to a lesser extent, spending related to our DNase oncology platform during the three months ended June 30, 2022 as compared to the same period in the prior year. Costs related to our XCART program were significantly higher in 2022 as compared to the same period in 2021 as we continued our U.S. pre-clinical development efforts.

General and Administrative Expenses

General and administrative expenses for the three months ended June 30, 2022 increased by approximately $0.1 million, or 15.2%, to approximately $1.0 million from approximately $0.9 million in the comparable quarter in 2021. The increase was primarily due to an increase in legal costs related to the licensing of the DNase oncology platform from CLS during the three months ended June 30, 2022 compared to the same period in 2021.

Other Income (Expense)

Other expense was approximately $1,100 for the three months ended June 30, 2022 compared to approximately $200 of other income for the same period in 2021. This increase in other expense was primarily related to changes in foreign currency exchange rates during the three months ended June 30, 2022 as compared to the same period in 2021.

Interest Income

Interest income decreased to approximately $16,000 during the three months ended June 30, 2022 as compared to approximately $21,000 for the same period in the prior year. This decrease is primarily due to no interest income being recorded on the Pharmsynthez Loan during the second quarter of 2022 compared to approximately $11,000 during the same period in 2021.

Comparison of Six Months Ended June 30, 2022 and 2021

The comparison of our historical results of operations for the six months ended June 30, 2022 to the six months ended June 30, 2021 is as follows:

Description	Six Months Ended June 30, 2022	Six Months Ended June 30, 2021	Increase (Decrease)	Percentage Change
Revenues:				
Royalty revenue	$ 805,703	$ 478,819	$ 326,884	68.3%
Operating costs and expenses:				
Research and development	(3,178,898)	(1,154,279)	2,024,619	175.4
General and administrative	(1,933,599)	(1,821,282)	112,317	6.2
Total operating costs and expenses	(5,112,497)	(2,975,561)	2,136,936	71.8
Loss from operations	(4,306,794)	(2,496,742)	1,810,052	72.5
Other income (expense):				
Other income (expense)	(877)	1,122	(1,999)	(178.2)
Interest income, net	41,870	42,997	(1,127)	(2.6)
Net loss	$ (4,265,801)	$ (2,452,623)	$ 1,813,178	73.9

Revenue

Revenue for the six months ended June 30, 2022 increased by $0.3 million, or 68.3%, to $0.8 million from approximately $0.5 million for the six months ended June 30, 2021. This increase represents an increase in royalty revenue related to our sublicense agreement with Takeda as compared to the same period in 2021, as the sublicensee continued its worldwide launch of the product.

Research and Development Expenses

Overall, R&D expenses for the six months ended June 30, 2022 increased by $2.0 million, or 175.4% to $3.2 million from $1.2 million in the comparable period in 2021 primarily due to IPR&D expense of $1.3 million. During the six months ended June 30, 2022, the Company expensed $1.3 million of IPR&D associated with the Company's licensing of the DNase oncology platform. There was no similar expense in 2021. Excluding the $1.3 million of IPR&D expense from total R&D expense of $3.2 million, R&D expenses increased approximately $0.7 million, or 62.3% to $1.9 million for the six months ended June 30, 2022, from $1.2 million for the six months ended June 30, 2021. The table below sets forth the R&D costs incurred by us, by category of expense, for the six months ended June 30, 2022 and 2021:

	Six Months Ended,	
Category of Expense	**June 30, 2022**	**June 30, 2021**
IPR&D expense	$ 1,305,000	$ –
Outside services and contract research organizations	1,426,749	811,013
Salaries and wages	232,357	238,795
Share-based expense	42,306	29,736
Other	172,486	74,735
Total research and development expense	$ 3,178,898	$ 1,154,279

The increase in outside services and contract research organizations expense was primarily due to increased spending related to our XCART platform technology and, to a lesser extent, spending related to our DNase oncology platform during the six months ended June 30, 2022 as compared to the same period in the prior year. Costs related to our XCART program were higher in 2022 as compared to the same period in 2021 as we continued our U.S. pre-clinical development efforts. The increase in other expense was due to consulting costs incurred in 2022 in connection with the licensing of our DNase oncology platform.

General and Administrative Expenses

General and administrative expenses for the six months ended June 30, 2022 was $1.9 million, increasing $0.1 million, or 6.2%, compared to the same period in the prior year. The increase was primarily due to an increase in legal costs related to the licensing of the DNase oncology platform from CLS during the six months ended June 30, 2022 compared to the same period in 2021.

Other Income (Expense)

Other expense was approximately $900 for the six months ended June 30, 2022 compared to other income of approximately $1,100 for the same period in 2021. This increase in other expense was primarily related to changes in foreign currency exchange rates during the six months ended June 30, 2022 as compared to the same period in 2021.

Interest Income

Interest income decreased to approximately $42,000 during the six months ended June 30, 2022 as compared to approximately $43,000 for the same period in the prior year. This decrease is primarily due to a decrease in interest income on the Pharmsynthez Loan substantially offset by an increase in interest income on invested funds due to a higher cash balance in the first six months of 2022 compared to the same period in 2021.

Liquidity and Capital Resources

We incurred a net loss of approximately $4.3 million for the six months ended June 30, 2022. We had an accumulated deficit of approximately $186.8 million at June 30, 2022, as compared to an accumulated deficit of approximately $182.5 million at December 31, 2021. Working capital was approximately $14.1 million at June 30, 2022, and $17.3 million at December 31, 2021, respectively. During the six months ended June 30, 2022, our working capital decreased by $3.2 million primarily due to our net loss for the six months ended June 30, 2022 and cash used of $0.5 million to obtain a license to the DNase oncology platform. Our principal source of liquidity consists of cash. At June 30, 2022, we had approximately $14.9 million in cash and $1.3 million in current liabilities. At December 31, 2021, we had approximately $18.2 million in cash and $1.4 million in current liabilities.

We evaluate whether there are conditions or events, considered in the aggregate that raise substantial doubt about our ability to continue as a going concern within one year after the date that the financial statements are issued. We have incurred substantial losses since our inception, and we expect to continue to incur operating losses in the near-term. These factors raise substantial doubt about our ability to continue as a going concern. We believe that we have access to capital resources through possible public or private equity offerings, debt financings, corporate collaborations, related party funding, or other means to continue as a going concern. We believe that our existing resources will be adequate to fund our operations into the third quarter of 2023. However, we anticipate we may need additional capital in the long-term to pursue our business initiatives. The terms, timing and extent of any future financing will depend upon several factors, including the achievement of progress in our clinical development programs, our ability to identify and enter into licensing or other strategic arrangements, our continued listing on the Nasdaq Stock Market ("Nasdaq"), and factors related to financial, economic, geo-political, industry and market conditions, many of which are beyond our control. The capital markets for the biotech industry can be highly volatile, which make the terms, timing and extent of any future financing uncertain. On June 3, 2022, we received a written notification (the "Notice") from the Listing Qualifications Department of Nasdaq notifying us that the closing bid price for our common stock had been below $1.00 for 30 consecutive business days and that we therefore are not in compliance with the minimum bid price requirement for continued inclusion on the Nasdaq Capital Market under Nasdaq Listing Rule 5550(a)(2) (the "Bid Price Requirement"). The Notice has no immediate effect on the listing of our common stock on the Nasdaq Capital Market. Under the Nasdaq Listing Rules, we have 180 calendar days from the date of the Notice to regain compliance with the Bid Price Requirement. Accordingly, we have until November 30, 2022 to regain compliance with the Bid Price Requirement and may be eligible for an additional 180 calendar day compliance period if certain other criteria are met.

Cash Flows from Operating Activities

Cash flows used in operating activities for the six months ended June 30, 2022 totaled approximately $2.8 million, which was primarily due to our net loss for the period, partially offset by non-cash charges associated with acquired IPR&D and share-based expense. In addition, current liabilities decreased during the six months ended June 30, 2022. Cash flows used in operating activities for the six months ended June 30, 2021 totaled approximately $2.2 million, which was primarily due to our net loss for the period, partially offset by non-cash charges associated with share-based expense.

Cash Flows from Investing Activities

Cash flows used in investing activities for the six months ended June 30, 2022 totaled $500,000, which represented cash paid to license the DNase oncology platform. There were no cash flows from investing activities for the six months ended June 30, 2021.

Cash Flow from Financing Activities

There were no cash flows from financing activities for the six months ended June 30, 2022 and 2021.

Contractual Obligations and Commitments

As of June 30, 2022, there were no material changes in our contractual obligations and commitments from those disclosed in our Annual Report on Form 10-K for the year ended December 31, 2021, filed with the SEC on March 22, 2022, as amended on April 28, 2022.

Off Balance Sheet Arrangements

We do not have any off-balance sheet financing arrangements that have or are reasonably likely to have a current or future material effect on our financial condition, changes in financial condition, revenues or expenses, results of operations, liquidity, capital expenditures, or capital resources.

Recent Accounting Standards

See Note 3 in our Annual Report on Form 10-K for the year ended December 31, 2021, filed with the SEC on March 22, 2022, as amended on April 28, 2022, for a discussion of recent accounting standards.

Critical Accounting Policies and Estimates

Our condensed consolidated financial statements are prepared in accordance with U.S. GAAP. The preparation of our condensed consolidated financial statements requires us to make estimates, assumptions and judgments that affect the reported amounts of assets, liabilities, revenue, costs and expenses. We base our estimates and assumptions on historical experience and other factors that we believe to be reasonable under the circumstances. We evaluate our estimates and assumptions on an ongoing basis. Our actual results may differ from these estimates. There have been no material changes in our critical accounting policies and estimates from those disclosed in our Annual Report on Form 10-K for the year ended December 31, 2021, filed with the SEC on March 22, 2022, as amended on April 28, 2022.

ITEM 3 – QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are not required to provide the information required by this Item because we are a "smaller reporting company" (as defined in Rule 12b-2 of the Exchange Act).

ITEM 4 – CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer (principal executive officer) and Chief Financial Officer (principal financial officer), evaluated the effectiveness of our disclosure controls and procedures as defined in Rules 13a-15(e) or 15d-15(e) under the Exchange Act, as of the end of the period covered by this Quarterly Report.

Based on this evaluation, our management, including our Chief Executive Officer and Chief Financial Officer, concluded that as of the end of the period covered by this Quarterly Report, our disclosure controls and procedures are designed at a reasonable assurance level and are effective to provide reasonable assurance that information we are required to disclose in reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting that occurred during the period covered by this Quarterly Report that would have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II – OTHER INFORMATION

ITEM 1 – LEGAL PROCEEDINGS

We are not currently subject to any material legal proceedings, nor, to our knowledge, is any material legal proceeding threatened against us. From time to time, we may be a party to certain legal proceedings, incidental to the normal course of our business. While the outcome of these legal proceedings cannot be predicted with certainty, we do not expect that these proceedings will have a material effect upon our financial condition or results of operations.

ITEM 1A – RISK FACTORS

There have been no material changes to the risk factors previously disclosed in our Annual Report on Form 10-K for the year ended December 31, 2021 filed with the SEC on March 22, 2022, as amended on April 28, 2022 other than as set forth below.

Risks Related to Our Financial Condition and Capital Requirements

We have never been profitable and may never achieve or sustain profitability. If we are unable to generate sufficient revenue from our operations to pay expenses or we are unable to obtain additional financing on commercially reasonable terms, our business, financial condition and results of operations may be materially and adversely affected.

We are a clinical-stage biopharmaceutical company with a limited operating history. Pharmaceutical product and technology development is a highly speculative undertaking and involves a substantial degree of risk. To date, we have focused primarily on developing XCART and researching additional drug candidates. We have no products approved for commercial sale and have generated only limited revenue to date. Due to capital constraints in 2021, we focused solely on pre-clinical development efforts associated with our XCART technology. With the licensing of the DNase oncology platform from CLS in April 2022, our primary focus will be on advancing that technology through regulatory approval and commercialization, and we will continue to incur significant research and development and other expenses related to our ongoing operations. As a result, we have never been profitable and we may not achieve profitability in the foreseeable future, if at all. Our ability to generate profits in the future will depend on a number of factors, including:

- Funding the costs relating to the research and development, regulatory approval, commercialization and sale and marketing of our drug candidates and technologies;
- Market acceptance of our drug candidates and technologies;
- Costs of acquiring and developing new drug candidates and technologies;
- Ability to bring our drug candidates to market;
- General and administrative costs relating to our operations;
- Increases in our research and development costs;
- Charges related to purchases of technology or other assets;
- Establishing, maintaining and protecting our intellectual property rights;
- Attracting, hiring and retaining qualified personnel; and
- Our ability to raise additional capital.

As of June 30, 2022, we had an accumulated deficit of approximately $186.8 million. We expect to incur additional significant operating losses as we expand our research and development activities and our commercialization, marketing and sales efforts. We may also encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business. In addition, because of the numerous risks and uncertainties associated with pharmaceutical product development, including that our current drug candidates may not achieve the clinical endpoints of applicable trials, we are unable to predict the timing or amount of increased expenses and if or when we will achieve or maintain profitability. If we are unable to generate sufficient revenue from our operations to pay expenses or we are unable to obtain additional financing on commercially reasonable terms, our business, financial condition and results of operations may be materially and adversely affected.

Risks Related to the Discovery and Development of our Pharmaceutical Products

Our business is substantially dependent on the success of the DNase oncology platform.

Our business will substantially depend on the successful clinical development, regulatory approval and commercialization of the DNase oncology platform. It will require substantial clinical development and regulatory approval efforts before we are permitted to commence its commercialization, if ever. We have, and plan to continue to pursue our clinical development strategy through academic and strategic collaborations. If we have difficulty maintaining, obtaining, or are unable to obtain these collaborations and additional academic collaborations as planned, we may need to delay, limit or terminate any ongoing or planned clinical development, which would have an adverse effect on our business. The clinical trials and manufacturing and marketing of DNase and any other product candidates will be subject to extensive and rigorous review and regulation by numerous government authorities in the U.S., the European Union and other jurisdictions where we intend to test and, if approved, market our product candidates. Before obtaining regulatory approvals for the commercial sale of any product candidate, we must demonstrate through preclinical testing and clinical trials that the product candidate is safe and effective for use in each target indication and potentially in specific patient populations. This process can take many years and may include post-marketing studies and surveillance, which would require the expenditure of substantial resources beyond the proceeds we have currently raised. Of the large number of drugs in development for approval in the U.S. and the European Union, only a small percentage successfully complete the FDA or European Medicines Agency regulatory-approval processes, as applicable, and are commercialized. Accordingly, even if we are able to obtain the requisite financing or identify an academic or strategic collaboration partner to continue to fund our research, development and clinical programs, we cannot assure you that DNase or any of our other product candidates will be successfully developed or commercialized.

Risks Related to Our Reliance on Third-Parties

We may seek to establish additional collaborations and, if we are not able to establish them on commercially reasonable terms, we may have to alter our development and commercialization plans.

Our drug candidate development programs and the potential commercialization of our drug candidates will require substantial additional cash to fund expenses. For some of our drug candidates, we may decide to collaborate with additional pharmaceutical and biotechnology companies for the development and potential commercialization of those drug candidates.

We face significant competition in seeking appropriate collaborators. Whether we reach a definitive agreement for any additional collaborations will depend, among other things, upon our assessment of the collaborator's resources and expertise, the terms and conditions of the proposed collaboration and the proposed collaborator's evaluation of a number of factors. Those factors may include the design or results of clinical trials, the likelihood of approval by FDA or similar regulatory authorities outside the U.S., the potential market for the subject drug candidate, the costs and complexities of manufacturing and delivering such drug candidate to patients, the potential of competing drugs, the existence of uncertainty with respect to our ownership of technology (which can exist if there is a challenge to such ownership without regard to the merits of the challenge) and industry and market conditions generally. The collaborator may also consider alternative drug candidates or technologies for similar indications that may be available to collaborate on and whether such a collaboration could be more attractive than the one with us for our drug candidate. The terms of any additional collaborations or other arrangements that we may establish may not be favorable to us.

We may also be restricted under existing collaboration agreements from entering into future agreements on certain terms with potential collaborators. Collaborations are complex and time-consuming to negotiate and document. In addition, there have been a significant number of recent business combinations among large pharmaceutical companies that have resulted in a reduced number of potential future collaborators.

We may not be able to negotiate additional collaborations on a timely basis on acceptable terms, or at all. If we are unable to do so, we may have to curtail the development of the drug candidate for which we are seeking to collaborate, reduce or delay its development program or one or more of our other development programs, delay its potential commercialization or reduce the scope of any sales or marketing activities or increase our expenditures and undertake development or commercialization activities at our own expense. If we elect to increase our expenditures to fund development or commercialization activities on our own, we may need to obtain additional capital, which may not be available to us on acceptable terms, or at all. If we do not have sufficient funds, we may not be able to further develop our drug candidates or bring them to market and generate product revenue.

Risks Related to Our Common Stock

Our failure to meet the continued listing requirements of The Nasdaq Capital Market could result in a de-listing of our common stock. Failure to regain compliance with Nasdaq listing rules could affect the market price of our Common Stock and liquidity and reduce our ability to raise capital.

Currently, our Common Stock trades on the Nasdaq Capital Market. On June 3, 2022, the Company received a written notification (the "Notice") from the Listing Qualifications Department of the NASDAQ Stock Market LLC ("Nasdaq") notifying the Company that the closing bid price for its common stock had been below $1.00 for 30 consecutive business days and that the Company therefore is not in compliance with the minimum bid price requirement for continued inclusion on The Nasdaq Capital Market under Nasdaq Listing Rule 5550(a)(2) (the "Bid Price Requirement"). The Notice has no immediate effect on the listing of the Company's common stock on the Nasdaq Capital Market.

Under the Nasdaq Listing Rules, the Company has a period of 180 calendar days from the date of the Notice to regain compliance with the Bid Price Requirement. Accordingly, the Company has until November 30, 2022 (the "Compliance Date"), to regain compliance with the Bid Price Requirement. To regain compliance, the closing bid price of the Company's common stock must be at least $1.00 for a minimum of ten consecutive business days prior to the Compliance Date. In the event the Company does not regain compliance by the Compliance Date, the Company may be eligible for an additional 180 calendar day compliance period. To qualify for this second compliance period, the Company will be required to meet the continued listing requirement for market value of publicly held shares and all other initial listing standards for The Nasdaq Capital Market, with the exception of the Bid Price Requirement, and will need to provide written notice of its intention to cure the deficiency during the second compliance period, by effecting a reverse stock split, if necessary.

The Company intends to monitor the closing bid price of its common stock and may, if appropriate, consider available options to regain compliance with the Bid Price Requirement. However, there can be no assurance that the Company will be able to regain compliance with the Bid Price Requirement, or will otherwise be in compliance with other Nasdaq Listing Rules. If we fail to regain compliance with the Nasdaq Listing Rules, including the Bid Price Requirement, we could be delisted and our stock would be considered a penny stock under regulations of the SEC, and would therefore be subject to rules that impose additional sales practice requirements on broker-dealers who sell our securities. The additional burdens imposed upon broker-dealers by these requirements could discourage broker-dealers from effecting transactions in our common stock, which could severely limit the market liquidity of our common stock and stockholder's ability to sell our securities in the secondary market. If our common stock were to be delisted from the NASDAQ Capital Market, the liquidity of our common stock would be materially affected, which would decrease the attractiveness of our common stock to investors and result in a decline in the market price of our common stock. Also, it may be difficult for us to raise additional capital if we are not listed on a major exchange.

ITEM 2 – UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS

None.

ITEM 3 – DEFAULTS UPON SENIOR SECURITIES

None.

ITEM 4 – MINE SAFETY DISCLOSURES

Not applicable.

ITEM 5 – OTHER INFORMATION

None.

ITEM 6 – EXHIBITS

The following exhibits are incorporated herein by reference or filed as part of this report.

EXHIBIT NUMBER	DESCRIPTION
10.1*#	Exclusive Sublicense Agreement, dated April 26, 2022, between Xenetic Biosciences, Inc. and CLS Therapeutics LTD
10.2*#	Exclusive License Agreement, dated April 26, 2022, between Xenetic Biosciences, Inc. and CLS Therapeutics LTD
10.3*	Form of Subscription Agreement, dated April 26, 2022, between Xenetic Biosciences, Inc. and CLS Therapeutics LTD
10.4*#	Statement of Work, dated June 30, 2022, between Xenetic Biosciences, Inc. and Catalent Pharma Solutions, LLC
31.1*	Certification of Jeffrey F. Eisenberg, Principal Executive Officer, pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2*	Certification of James Parslow, Principal Financial Officer, pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1**	Certifications of Jeffrey F. Eisenberg, Principal Executive Officer, and James Parslow, Principal Financial Officer, pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101*	The following financial statements from the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2022, formatted in inline XBRL, include: (i) Condensed Consolidated Balance Sheets, (ii) Condensed Consolidated Statements of Operations, (iii) Condensed Consolidated Statements of Stockholders' Equity, (iv) Condensed Consolidated Statements of Cash Flows and (v) the Notes to the Condensed Consolidated Financial Statements
104*	Cover Page Interactive Data File (formatted in inline XBRL and included in Exhibit 101)
*	Filed herewith.
**	Exhibit 32.1 is being furnished and shall not be deemed to be "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to the liability of that section, nor shall such exhibits be deemed to be incorporated by reference in any registration statement or other document filed under the Securities Act of 1933, as amended or the Securities Exchange Act of 1934, as amended, except as otherwise stated in such filing.
#	Portions of this exhibit, marked by brackets and asterisks, have been omitted pursuant to Item 601(b)(10) of Regulation S-K under the Securities Act of 1933, as amended, because they are both (i) not material and (ii) would likely cause competitive harm to the registrant if publicly disclosed. The registrant undertakes to promptly provide an unredacted copy of the exhibit on a supplemental basis, if requested by the Commission or its staff.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

XENETIC BIOSCIENCES, INC.

August 11, 2022

By: /S/ JEFFREY F. EISENBERG
Jeffrey F. Eisenberg
Chief Executive Officer
(Principal Executive Officer)

By: /S/ JAMES PARSLOW
James Parslow
Chief Financial Officer
(Principal Financial Officer and Principal Accounting Officer)

Exhibit 10.1

CERTAIN INFORMATION IDENTIFIED IN THIS DOCUMENT, MARKED BY BRACKETS AND ASTERISKS ("[***]"), HAS BEEN EXCLUDED PURSUANT TO ITEM 601(B)(10) OF REGULATION S-K UNDER THE SECURITIES ACT OF 1933, AS AMENDED, BECAUSE IT IS (I) NOT MATERIAL AND (II) WOULD LIKELY CAUSE COMPETITIVE HARM TO THE REGISTRANT IF PUBLICLY DISCLOSED.

EXECUTION VERSION

EXCLUSIVE SUBLICENSE AGREEMENT

BY AND BETWEEN

CLS Therapeutics Ltd

AND

Xenetic Biosciences, Inc.

EXCLUSIVE SUBLICENSE AGREEMENT

This Exclusive Sublicense Agreement, made this 26th day of April, 2022 (the "Effective Date"), is by and between CLS Therapeutics LTD, a company organized under the laws of Guernsey with principal offices located at of PO Box 175, Frances House, Sir William Place, St Peter Port, Guernsey, GY1 4HQ, UK ("CLS") and Xenetic Biosciences, Inc., a Nevada corporation, with offices located at 40 Speen St. Ste 102, Framingham, MA 01701 ("XBIO"). Each of XBIO and CLS may be referred to, individually, as a "Party", and, collectively, as the "Parties".

RECITALS

WHEREAS, CLS owns or controls certain patent rights and know-how related to the use of Deoxyribonuclease enzyme for treatment of cancer;

WHEREAS, XBIO is interested in obtaining an exclusive sublicense under such patent rights and to such know-how to develop and commercialize pharmaceutical products and methods incorporating Deoxyribonuclease enzyme, and CLS is willing to grant XBIO such a sublicense, in each case on the terms and conditions set forth in this Agreement.

NOW, THEREFORE, in consideration of the foregoing and the mutual covenants contained in this Agreement, CLS and XBIO, intending to be legally bound, hereby agree as follows:

ARTICLE I
DEFINITIONS

When used in this Agreement, each of the following capitalized terms, whether used in the singular or plural, shall have the meaning set forth in this Article I.

1.1. "Affiliate" of an entity means any person or entity which, directly or indirectly, controls, is controlled by or is under common control with such entity. For the purposes of this definition, "control" refers to any of the following: (i) direct or indirect ownership of fifty percent (50%) or more of the voting securities entitled to vote for the election of directors in the case of a corporation, or of fifty percent (50%) or more of the equity interest with the power to direct management in the case of any other type of legal entity; (ii) status as a general partner in any partnership; or (iii) any other arrangement where a person or entity possesses, directly or indirectly, the power to direct the management or policies of an entity, whether through ownership of voting securities, by contract or otherwise.

1.2. "Agreement" means this Exclusive Sublicense Agreement, including any and all exhibits, schedules, appendices and other addenda to it and as it may be amended from time to time in accordance with the provisions of this document.

1.3. "Business Day" means Monday through Friday, except the legal public holidays specified in 5 U.S.C. 6103, any day declared to be a holiday by federal statute or executive order, or any day with respect to which the U.S. Office of Personnel Management has announced that Federal agencies in the Washington, DC, area are closed.

1.4. "Calendar Day" means the period of elapsed time, using Coordinated Universal Time or local time that begins at midnight and ends 24 hours later at the next midnight.

1.5. "CLS Improvement" means an Improvement made by CLS or its Affiliates.

1.6. "Combination Product" means any pharmaceutical product containing both a Licensed Product component and one or more other active pharmaceutical ingredients.

1.7. "Commercially Reasonable Efforts" means the level of efforts and resources, including financial resources, at least equal to those normally used by a company in the pharmaceutical or biotechnology industry to conduct the relevant activity, including, in the case of research, development or commercialization, the level of effort and resources at least equal to those normally used by such a company to research, develop, manufacture or commercialize, as the case may be, a product owned by such company or to which it has rights, which product is at a similar stage in its development or product life and is of a similar market and profitability potential to Licensed Product, taking into account all relevant factors including the patent and other proprietary position of the product, product labeling or anticipated labeling, market potential, financial return, medical and clinical considerations, regulatory environment and competitive market conditions, and other technical, legal, scientific, medical or commercial factors that such a company would deem to be relevant.

1.8. "Compound" means a human recombinant Deoxyribonuclease I.

1.9. "Confidential Information" shall mean any and all confidential and proprietary information, including chemical or biological materials, chemical structures, sequence information, commercialization plans, correspondence, customer lists, data, development plans, formulae, improvements, Know-How, processes, regulatory filings, clinical trial designs, clinical trial protocols, data read-outs from clinical trials, reports, strategies, techniques, or other information, in each case that are disclosed by or on behalf of a Party or its Affiliates (the "Disclosing Party") to the other Party or its Affiliates (the "Receiving Party") pursuant to this Agreement, regardless of whether any of the foregoing are marked "confidential" or "proprietary" or communicated to the other Party by or on behalf of the Disclosing Party in oral, written, visual, graphic, or electronic form. Confidential Information shall not include any information that: (w) is already known to the Receiving Party at the time of disclosure (as evidenced by written records or other competent evidence) without any obligation to keep it confidential or any restriction on its use, prior to disclosure by the Disclosing Party; or (x) is generally available to the public or becomes publicly known through no wrongful act of the Receiving Party or its representatives; or (y) is subsequently received by the Receiving Party from a Third-Party lawfully in possession thereof and without any obligation to keep it confidential or any restriction on its use; or (z) is developed independently by the Receiving Party without reference or reliance upon the Disclosing Party's Confidential Information (as evidenced by written records or other competent evidence). Any combination of features or disclosures shall not be deemed to fall within the foregoing exclusions merely because individual features are published or available to the general public or in the rightful possession of the Receiving Party unless the combination itself and principle of operation are published or available to the general public or in the rightful possession of the Receiving Party.

1.10. "Control" or "Controlled", other than for purposes of Section 1.1, means the possession of the right to grant licenses or sublicenses or to disclose proprietary or trade secret information without violating the terms of any agreement or other arrangement with a Third Party and without misappropriating or infringing the proprietary or trade secret information of a Third Party.

1.11. "Cover", "Covering" or "Covered" means, with respect to a Licensed Patent and invention, that, in the absence of ownership of, or a license under, such Licensed Patent, the practice of such invention would infringe a Valid Claim of such Licensed Patent (including in the case of a Licensed Patent that is a patent application, a Valid Claim of such patent application as if such patent application were an issued patent).

1.12. "EIRGEN Agreement" means that certain Exclusive Sublicense Agreement between CLS and EirGen Pharma Ltd. ("EirGen") dated as of February 22, 2022, under which EirGen sublicensed its rights to certain of the Licensed Technology and Licensed Know-how to CLS for use of the Compound for treatment of cancer, neurodegenerative disease and stroke.

1.13. "EMA" means the European Medicines Agency or any successor agency thereto.

1.14. "EU" means the countries of the European Union, as it is constituted as of the Effective Date and as it may be expanded from time to time.

1.15. "FDA" means the United States Food and Drug Administration or any successor agency thereto.

1.16. "Field" means therapeutic, prophylactic or palliative, uses in humans for treating a cancer.

1.17. "First Commercial Sale", as to a particular country, means the first arms-length commercial sale of a Licensed Product by XBIO, its Affiliates or Sublicensees to a Third Party in such country after approval of the NDA, or if approval of an NDA is not required in such country, then following receipt of Marketing Approval required to market such Licensed Product in such country.

1.18. "GAAP" means U.S. generally accepted accounting principles applied on a consistent basis, or any other accounting principles generally accepted for public companies, such as International Financial Reporting Standards. Unless otherwise defined or stated, financial terms shall be calculated under GAAP.

1.19. "Improvements" means any development, modification or improvement arising out of or relating to the technology described in the Licensed Technology, including the Compound and uses thereof, that enhances the usability, functionality, efficiency, performance or another characteristic of the Licensed Technology.

1.20. "Know-how" means all present and future technical information, methods, knowledge, data information and know-how, patentable or otherwise, in written or electronic form.

1.21. "Licensed Know-how" means any Know-how listed on Exhibit B attached hereto and any CLS Know-how developed following the Effective Date that relate to or incorporate any information and/or know-how necessary to research, develop, make, use, offer to sell, sell or export a Licensed Product.

1.22. "Licensed Patents" means:

(a) The patents and patent applications listed on Exhibit A attached hereto and incorporated herein by reference;

(b) the patents and patent applications included in the CLS Improvements and listed on Exhibit A attached hereto;

(c) any patents and patent applications that Cover any CLS Improvements developed by CLS following the Effective Date that are necessary or useful to research, develop, make, use, offer to sell, sell or export a Licensed Product and that are necessary to practice the inventions disclosed or claimed by the patents and patent applications listed on Exhibit A; and

(d) all continuations, continuations-in-part, patents of addition, divisions, renewals, reexaminations, reissues and extensions (including any patent term extension under 35 USC §156) of any of the foregoing patents and patent applications; and any Supplementary Protection Certificate (within the meaning of such term under Council Regulation (EU) No. 1768/92) or any other similar statutory protection in relation to the relevant Licensed Product before or after the Effective Date.

1.23. "Licensed Product" means any product comprising, incorporating or containing the Compound, including, but not limited to, a pharmaceutically acceptable salt, polymorph, crystal form, prodrug, or solvate of the Compound, all to the extent such product or its use, manufacture or importation is Covered by a Licensed Patent or relies upon, references or incorporates the Licensed Know-How or CLS Improvements.

1.24. "Licensed Technology" means the Licensed Patents and CLS Improvements.

1.25. "Major EU Markets" means the United Kingdom, France, Italy, Spain and Germany.

1.26. "Marketing Approval" means any approval, including price approval, registration, license or authorization from any Regulatory Authority required to market and sell a Licensed Product in a jurisdiction and shall include an approval, registration, license or authorization granted in connection with an NDA.

1.27. "Material Adverse Effect" means any change in or effect on the business of XBIO that is, or could reasonably be expected to be, materially adverse to the business, assets (including intangible assets), liabilities (contingent or otherwise), condition (financial or otherwise) or results of operations of XBIO.

1.28. "NDA" means a New Drug Application, Biologics License Application or equivalent submission filed with the FDA in connection with seeking Marketing Approval of a Licensed Product, or an equivalent application filed with any equivalent regulatory agency or governmental authority in any jurisdiction other than the United States.

1.29. "Net Sales" means the gross amount invoiced on sales of Licensed Product in the Territory by XBIO, its Affiliates or, for the purposes of Section 1.38, Sublicensees, less the following deductions with respect to the sale of such Licensed Product:

(i) customary trade, cash and quantity discounts and other customary discounts actually given to customers in the ordinary course of business;

(ii) rebates, credits and allowances given by reason of rejections, returns, damaged or defective product or recalls;

(iii) government-mandated rebates and any other compulsory payments, credits, adjustments and rebates actually paid or deducted;

(iv) price adjustments, allowances, credits, chargeback payments, discounts, rebates, fees, reimbursements or similar payments granted to managed care organizations, group purchasing organizations or other buying groups, pharmacy benefit management companies, health maintenance organizations and any other providers of health insurance coverage, health care organizations or other health care institutions (including hospitals), health care administrators or patient assistance or other similar programs, or to federal, state/provincial, local and other governments, including their agencies, or to wholesalers, distributors or other trade customers;

(v) reasonable and customary freight, shipping, insurance and other transportation expenses, if actually borne by XBIO, its Affiliates or, for the purposes of Section 1.38, Sublicensees without reimbursement from any Third Party;

(vi) sales, value-added, excise taxes, tariffs and duties, and other taxes and government charges directly related to the sale, delivery or use of Licensed Product (but not including taxes assessed directly against the income derived from such sale) net of any credits or allowances received by XBIO, its Affiliates or, for the purposes of Section 1.38, Sublicensees with respect to such taxes or charges;

(vii) amounts previously included in Net Sales of Licensed Product that are written off as uncollectible after reasonable collection efforts, in accordance with standard practices of the applicable party; and

(viii) any item, substantially similar in character or substance to any of the foregoing, calculated in accordance with GAAP consistently applied and customary in the pharmaceutical industry to be deducted in the definition of net sales in a license agreement of this type.

Net Sales will be determined from books and records maintained in accordance with GAAP, consistently applied throughout the organization and across all products of the entity whose sales of Licensed Product are giving rise to Net Sales.

Disposition of Licensed Product for, or use of the Licensed Product in, clinical trials or other scientific testing, as free samples, or under compassionate use, patient assistance, or test marketing programs or other similar programs or studies where a Licensed Product is supplied without charge shall not result in any Net Sales, however if XBIO, its Affiliates or, for the purposes of Section 1.38, Sublicensees charges for such Licensed Product, the amount billed will be included in the calculation of Net Sales.

In the event a Licensed Product is sold in the form of a Combination Product, then the Net Sales for any such Combination Product shall be determined by multiplying the Net Sales of the Combination Product during the applicable royalty Reporting Period, by the fraction, A/(A+B), where A is the weighted (by sales volume) average sale price of the Licensed Product when sold separately in finished form in the country in which the Combination Product is sold, and B is the weighted (by sales volume) average sale price of the other active pharmaceutical ingredients included in the Combination Product when sold separately in finished form in the country in which the Combination Product is sold, in each case during the applicable royalty Reporting Period or, if sales of both the Licensed Product and the other active pharmaceutical ingredients did not occur in such period, then in the most recent royalty Reporting Period during the preceding twelve (12) months in which sales of both occurred, if any. In the event that such average sale price cannot be determined for both the Licensed Product and all other active pharmaceutical ingredients included in the Combination Product, then the Parties will in good faith discuss and agree on a pro-rata allocation of the Net Sales that reflects the Licensed Product's contribution to the Combination Product on an equitable basis. XBIO covenants that neither it nor any of its Affiliates or, for the purposes of Section 1.38, Sublicensees will intentionally manipulate the fraction A/(A+B) to avoid or reduce royalty payments or obligations that would otherwise be due for sales of Licensed Product in combination form or otherwise.

1.30. "Regulatory Authority" means any federal, national, multinational, state, county, city, provincial, or local regulatory agency, department, bureau or other governmental entity with authority over the marketing, commercialization, manufacture or sale of a pharmaceutical product in the Territory, including the FDA in the United States and the EMA in the EU.

1.31. "Reporting Period" shall mean each three month period ending March 31, June 30, September 30 and December 31.

1.32. "Royalty Term" has the meaning set forth in Section 3.5.

1.33. "Royalty Sublicense Income" shall mean royalties received from a Sublicensee.

1.34. "SciVac Agreement" means that certain exclusive Sublicense Agreement between OPKO Ireland Global Holdings Ltd., and SciVac Ltd. (now VBI Vaccines Inc. and hereinafter, "SciVac") dated as of May 5, 2016, under which SciVac Ltd. sublicensed its rights to certain of the Licensed Technology and Licensed Know-how to OPKO Ireland Global Holdings Ltd. for use of the Compound for all indications, uses and treatments.

1.35. "SciVac Improvement" means an Improvement made by SciVac or its Affiliates.

1.36. "Sublicensee" means a Third Party to whom XBIO or any of its Affiliates or Sublicensee(s) grants an express sublicense under the Licensed Patents, CLS Improvements and/or Licensed Know-how to develop, manufacture, commercialize or use Licensed Product in the Field in the Territory; provided that the term "Sublicensee" excludes any Third Party who acts solely as a promoter, agent, marketer and/or distributor for and on behalf of XBIO or any of its Affiliates or Sublicensees for the distribution and/or marketing of Licensed Product.

1.37. "Sublicense Income" means consideration received by XBIO or any of its Affiliates from a Sublicensee in connection with or otherwise attributable to a grant to such Sublicensee of an express sublicense under the Licensed Patents, CLS Improvements and/or Licensed Know-how to develop, manufacture, commercialize or use Licensed Product in the Field in the Territory, including without limitation, (a) lump sum license fees; (b) proceeds of sale of the Licensed Technology, CLS Improvements and/or Licensed Know-how; (c) signing fees; and (d) milestone payments relating to the Milestones or other milestones; provided, however, that Sublicense Income shall not include Royalty Sublicense Income.

1.38. "Sublicensee Net Sales" shall mean any Net Sales generated by a Sublicensee.

1.39. "Sublicense Percentage" shall equal [***].

1.40. "Tax" or "Taxes" means any present or future taxes, levies, imposts, duties, charges, assessments or fees of any nature (including interest, penalties and additions thereto) that are imposed by a government authority, but not including a Party's income taxes.

1.41. "Term" means the term of this Agreement determined in accordance with Section 9.1.

1.42. "Territory" means worldwide.

1.43. "Third Party" means any person other than a Party or any of its Affiliates or their respective employees.

1.44. "Third Party Payments" means all royalties, upfront fees, milestones and other payments paid by XBIO or its Affiliates to Third Parties under licenses to intellectual property or to acquire intellectual property that is necessary for the development, manufacture, import, sale or use of Licensed Product in the Field in the Territory. For purposes of this definition, the term "necessary" shall mean that, in the reasonable determination of XBIO or its Affiliates, the intellectual property of the Third Party were reasonably necessary or useful to the manufacture, use or sale of Licensed Product in the Territory.

1.45. "United States" or "U.S." means the United States of America and its territories and possessions.

1.46. "Valid Claim" means (i) a claim of an issued and unexpired patent that has not been revoked or held unenforceable or invalid by a decision of a court or other governmental agency of competent jurisdiction from which no appeal can be taken or with respect to which an appeal is not taken within the time allowed for appeal, and that has not been disclaimed or admitted to be invalid or unenforceable through reissue, disclaimer or otherwise or been dedicated to the public, and (ii) a claim in a pending patent application that is being prosecuted and that has not been abandoned, disclaimed, allowed to lapse or finally determined to be unallowable by the applicable governmental authority in a decision from which no appeal can be taken or from which no appeal is taken within the time allowed for appeal.

ARTICLE II
LICENSE GRANT

2.1. License Grant. Effective as of the Effective Date hereof, and subject to the terms and conditions of this Agreement, CLS grants to XBIO: (a) an exclusive, royalty-bearing, fully transferrable (in accordance with Section 11.5) license under the Licensed Technology (the "Patent License"), and (b) an exclusive, royalty-bearing, fully transferable (in accordance with Section 11.5) license under the Licensed Know-how (the "Know-how License"), in each case with the right to grant sublicenses, to the extent provided in Section 2.2, to research, develop, make, have made, use, import, export, market, offer for sale, sell and have sold, Licensed Product in the Territory within the Field.

2.2. Sublicenses.

(a) Sublicensing. XBIO shall have the right to grant subsequent sublicenses under the Patent License and Know-how License only with the prior written consent of CLS, not to be unreasonably withheld. Any subsequent sublicenses shall be in writing and include substantially the same non-financial terms and be in substantially the same form as this Agreement. In the event of termination of the Patent License (except for the passage of time), any existing agreements that contain a subsequent sublicense of, or other grant of right with respect to, Licensed Technology shall terminate to the extent of such subsequent sublicense or other grant of right; provided, however, that, for each Sublicensee, upon termination of the subsequent sublicense agreement with such Sublicensee, if such Sublicensee is not then in material breach of such sublicense agreement such that XBIO would not have the right to terminate such subsequent sublicense, CLS shall be obligated, at the request of such Sublicensee, to preserve the effectiveness, scope and validity of such subsequent sublicense or other grant of right for up to ninety (90) days while CLS enters into a new agreement with such Sublicensee on substantially the same terms as those contained in such sublicense agreement, and provided further that such terms shall be amended, if necessary, to the extent required to ensure that such sublicense agreement does not impose any obligations or liabilities on CLS which are not included in this Agreement or adversely affect the consideration due to CLS hereunder. In the event that CLS and such Sublicensee are unable to enter into a new sublicense agreement within the ninety (90) day period mentioned above following a good faith negotiation by both CLS and Sublicensee, then XBIO's agreement with such Sublicensee shall terminate upon expiration of such ninety (90) day period.

(b) Performance by Sublicensees. XBIO shall be fully responsible for performance of each Sublicensee of its obligations under this Agreement. Each sublicense granted by XBIO pursuant to this Section 2.2 will contain terms and conditions not inconsistent with those sections of this Agreement applicable to Sublicensees. Each sublicense agreement will contain the following provisions: (i) a requirement that any Sublicensee selling Licensed Product submit applicable sales or other reports to XBIO to the extent necessary or relevant to the reports required to be made or records required to be maintained under this Agreement; (ii) an audit requirement as to those Sublicensees selling Licensed Product consistent with that set forth in Section 4.3; and (iii) a requirement that such Sublicensee comply with the confidentiality provisions and restrictions on use of Confidential Information consistent with Article VI with respect to Confidential Information of CLS. If XBIO becomes aware of a material breach by a Sublicensee of the rights granted to XBIO under Section 2.1, XBIO will promptly notify CLS of the particulars of the same, and will use Commercially Reasonable Efforts to enforce the terms of such sublicense.

2.3. Responsibility; Decision-making. During the Term, XBIO will, including through its Affiliates and Sublicensees and their respective contractors, have sole responsibility for and sole decision-making authority with respect to, the research, development, manufacture, marketing, sale and use of Licensed Product in the Field in the Territory and will be responsible for all of the costs and expenses associated with such activities during the Term. XBIO shall keep CLS reasonably informed as to XBIO's progress in these efforts and XBIO will use good faith efforts to confer with CLS, on at least a quarterly basis, with respect to the development of the Licensed Product. Without limiting the foregoing, XBIO will use good faith efforts to confer with CLS on significant product development decisions (such as design and conduct of clinical trials, entering into research and development collaborations, and entering into license or sublicense agreements) in advance of making such decisions.

2.4. Diligence. XBIO will, including through its Affiliates and Sublicensees, use Commercially Reasonable Efforts during the Term to develop and obtain Marketing Approval for a Licensed Product in the United States and in each Major EU Market, and to commercialize such Licensed Product in the United States and each Major EU Market if the relevant Marketing Approval is obtained. In addition, XBIO will, including through its Affiliates and Sublicensees, use Commercially Reasonable Efforts to secure any data and market exclusivity for a Licensed Product for which Marketing Approval is obtained, to the extent available from the applicable Regulatory Authorities. XBIO agrees to register this Agreement with any foreign governmental agency, which requires such registration and where the failure to so register would have a material adverse impact on commercialization of Licensed Product in a Major EU Market, and XBIO shall pay all costs and legal fees in connection therewith. XBIO shall not be relieved of any of its obligations under this Agreement by any failure to register this Agreement in any country, and, specifically, shall not be relieved of its obligation to make any payment due to CLS where such payment is blocked due to any failure to register this Agreement. CLS shall cooperate with XBIO in the preparation of each submission for Marketing Approvals for the Licensed Product(s) in the Territory and in obtaining and maintaining Marketing Approvals within the Territory.

(a) Ownership of Clinical Trial Data. All data (including all pre-clinical, clinical and/or marketing data) developed by XBIO during the Term and relating to a Licensed Product and the Field shall be and remain the property of XBIO; provided, however, that XBIO hereby grants to CLS and its Affiliates a perpetual non-exclusive license and right of reference to, and a right to copy, access and otherwise use, all such data solely to support CLS' and its Affiliates' seeking marketing approval of one or more products outside the Field. All data (including all pre-clinical, clinical and/or marketing data) developed by CLS during the Term relating to a Compound outside the Field shall be and remain the property of CLS; provided, however, that CLS hereby grants to XBIO, its Affiliates and Sublicensees a perpetual non-exclusive license and right of reference to, and a right to copy, access and otherwise use, all such data solely to support XBIO's, its Affiliates' and Sublicensees' seeking Marketing Approval of one or more products within the Field.

(b) Clinical Studies. XBIO shall have the exclusive right to conduct any clinical trials or studies, prior to or after relevant Marketing Approval, with respect to the Licensed Product in the Territory and in the Field.

ARTICLE III
FINANCIAL PROVISIONS

3.1. Consideration Given by XBIO. Subject to the terms and conditions of that certain Subscription Agreement to be entered into by the Parties concurrently herewith, XBIO will grant to CLS on the date hereof 375,000 (three hundred seventy-five thousand) shares of Common Stock of XBIO (the "Shares"). Of the Shares, 250,000 (two hundred fifty thousand) shall be issued directly by XBIO to EirGen in satisfaction of the requirements of Section 3.2 of the EIRGEN Agreement, and XBIO shall promptly deliver to CLS written evidence of such issuance. EirGen is an intended third-party beneficiary of this Section 3.1 only and shall not be considered an intended third-party beneficiary of any other portion or provision of this Exclusive Sublicense Agreement.

3.2. Milestone Payments. As additional consideration for the licenses granted to XBIO under Section 2.1 above, XBIO will pay non-refundable and non-creditable milestone payments to CLS in the amounts and upon the occurrence of the events set forth below (each a "Milestone"), irrespective of whether such Milestone was achieved by XBIO or its Affiliates. Each such payment shall be made within forty-five (45) Calendar Days after a Milestone has occurred. Each milestone payment will be payable only one time and shall not be subject to any royalty provisions set forth in Section 3.3(a). Notwithstanding the terms of this Section 3.2, if XBIO enters into a sublicense with a Sublicensee, then the sole payments due by XBIO to CLS with respect to any Milestone shall be pursuant to Section 3.4(b) and XBIO shall be under no obligation to make any further milestone payments pursuant to this Section 3.2.

Milestone	**Milestone Payment**
[***]	950,000 shares of Common Stock of XBIO [***]
[***]	$[***]
[***]	$[***]
[***]	$[***]

[***]

3.3. Royalty.

(a) As partial consideration for the licenses granted to XBIO under Section 2.1 above, XBIO will pay to CLS an amount equal to Net Sales for a Licensed Product within the Territory multiplied by the Applicable Percentage, as set forth below by each Licensed Product.

Annual Net Sales of Licensed Products	**Applicable Percentage**
Up to and including [***] per calendar year	[***]
Over [***] per calendar year	[***]
Over [***] per calendar year	[***]

(b) The Parties agree that the applicable royalty upon Net Sales payable under Section 3.3(a) above, shall apply to Net Sales during the Royalty Term (as defined below). At the end of the applicable Royalty Term no royalties shall be paid under the Patent License.

(c) To the extent that that a Licensed Product is sublicensed to a Sublicensee, no further royalties will be due under this Section 3.3 and all payments due to CLS shall be made pursuant to Section 3.4.

3.4. Sublicense Income.

(a) As additional consideration for the licenses granted to XBIO under Section 2.1 above, XBIO will pay to CLS an amount equal to the Sublicense Percentage multiplied by the Royalty Sublicense Income (the "Sublicense Royalty Payment"); [***].

(b) As additional consideration for the licenses granted to XBIO under Section 2.1 above, XBIO will also pay to CLS an amount equal to the Sublicense Percentage multiplied by the Sublicense Income.

3.5. Patent License Royalty Term. Royalties payable for the Patent License under Section 3.3 shall be payable on a country-by-country and Licensed Product-by-Licensed Product basis during the period commencing on the First Commercial Sale of such Licensed Product in the Field in such country, and ending on a country-by-country basis upon (i) the expiration of the last Valid Claim Covering such Licensed Product in such country, or (ii) five (5) years from the date of First Commercial Sale in such country, whichever is later (the "Royalty Term").

3.6. Third Party Payments. XBIO will have the right to deduct from the royalty otherwise payable under Sections 3.3, fifty percent (50%) of Third Party Payments, provided that in no event will the royalty payment be reduced as a result of application of this paragraph, to less than fifty percent (50%) of the amount otherwise payable under Section 3.3. Third Party Payments available for offset under this Section 3.6 and not used as a credit against the royalty payable hereunder in a given calendar quarter may be carried over to future calendar quarters until fully utilized.

3.7. Payments; Reports. Following the First Commercial Sale in any country in the Territory, XBIO will pay royalties due on Net Sales in a calendar quarter within sixty (60) days of the end of such calendar quarter and shall be accompanied by a report as set forth in Article 4 below.

3.8. Taxes. All payments shall be made by XBIO under this Agreement without deduction or withholding of taxes owed by CLS except to the extent that any such deduction or withholding is required by applicable law to be made on account of Taxes, as determined by XBIO in good faith. To the extent that amounts are so withheld, such withheld amounts shall be treated for all purposes of this Agreement has having been delivered and paid to CLS. The Parties will cooperate with respect to all documentation required by any relevant government taxing authority or reasonably requested by either Party to secure a reduction in the rate of applicable withholding Taxes. XBIO shall not be liable for any excess Taxes withheld, and in the event of an overwithholding, CLS's sole recourse shall be to apply for a refund from the appropriate taxing authority.

3.9. United States Dollars. All dollar ($) amounts specified in this Agreement are United States dollar amounts.

3.10. Currency Conversion. All payments to be made hereunder will be made in U.S. Dollars, to a bank account designated by CLS. In the case of sales outside the United States, payments received by XBIO, its Affiliates or Sublicensees will be expressed in the U.S. Dollar equivalent calculated on a quarterly basis in the currency of the country of sale and converted to their U.S. Dollar equivalent using the average of the rate of exchange as quoted in the Wall Street Journal (WSJ) for the relevant quarter. If the WSJ does not publish such rate, a comparable rate publication shall be agreed from time to time by the Parties, and with respect to any country for which such rate is not published by the WSJ or a comparable publication, the Parties will use the prevailing rate for bank cable transfers for such date, as quoted by the leading United States banks in New York City dealing in the foreign exchange market.

3.11. Late Payments. The payments due under this Agreement shall, if overdue, bear interest at a rate per annum equal to two percent (2%) above the prime rate in effect on the due date as reported by The Wall Street Journal, such interest rate being compounded on the last day of each Reporting Period, not to exceed the maximum permitted by law. Any such overdue payments when made shall be accompanied by all interest so accrued. Said interest and the payment and acceptance thereof shall not preclude CLS from exercising any other rights it may have as a consequence of the lateness of any payment. This Section 3.11 shall not apply to any payments that are disputed in good faith by either Party until thirty (30) Calendar Days after the resolution of any such dispute.

ARTICLE IV
MAINTENANCE OF BOOKS AND RECORDS

4.1. Reporting.

(a) XBIO shall report to CLS the date on which it achieves a Milestone within forty (40) Calendar Days of each such occurrence.

(b) XBIO shall report to CLS the date on which it achieves the First Commercial Sale in each country of the Territory within thirty (30) Calendar Days of each such occurrence. For each country in the Territory, following the First Commercial Sale of Licensed Product, XBIO shall deliver reports to CLS within sixty (60) Calendar Days after the end of each Reporting Period. Each report under this Section 4.1(b) shall be certified as correct by an officer of XBIO and shall contain at least the following information as may be pertinent to a royalty accounting hereunder for the immediately preceding Reporting Period:

(i) the total number of units of Licensed Products sold by XBIO, its Affiliates and Sublicensees in each country;

(ii) the amounts billed, invoiced and received by XBIO, its Affiliates and Sublicensees for each Licensed Product, in each country, and total billings or payments due or made for all Licensed Products;

(iii) calculation of Net Sales for the applicable Reporting Period in each country, including an itemized listing of permitted offsets and deductions; and

(iv) total royalties payable on Net Sales in U.S. dollars, together with the exchange rates used for conversion.

4.2. If no amounts are due to CLS for any Reporting Period, the report shall so state.

4.3. XBIO shall maintain and shall cause each of its Affiliates and Sublicensees to maintain, complete and accurate records relating to the rights and obligations under this Agreement and any royalties payable to CLS in relation to this Agreement, which records shall contain sufficient information to permit CLS and its representatives to confirm the accuracy of such royalties and reports delivered to CLS and compliance in all other respects with this Agreement. XBIO shall maintain, and shall cause each of its Affiliates and Sublicensees to maintain, accurate records regarding Licensed Products, including Net Sales thereof, and shall retain such records over a period of at least six (6) years. CLS will have the right, once annually at its own expense, to have a nationally recognized, independent, certified public accounting firm, which shall be mutually agreed upon by the Parties, review any such records of XBIO and its Affiliates and Sublicensees (the "Audited Party") in the location(s) where such records are maintained by the Audited Party upon reasonable written notice (which shall be no less than fifteen (15) Business Days' prior written notice) and during regular business hours and under obligations of strict confidence, for the sole purpose of verifying the basis and accuracy of payments made under Section 3.2. If any examination conducted by CLS or its representatives pursuant to the provisions of this Section show an underreporting or underpayment of five percent (5%) or more in any payment due to CLS hereunder in a Reporting Period, the Audited Party shall bear the full cost of such audit and shall remit any amounts due to CLS (including interest due in accordance with Section 3.10) within thirty (30) days of receiving notice thereof from CLS.

ARTICLE V
INTELLECTUAL PROPERTY OWNERSHIP, PROTECTION AND RELATED MATTERS

5.1. Prosecution and Maintenance of Licensed Patents. XBIO shall have responsibility for filing, prosecuting and maintaining all Licensed Patents and shall be responsible for all related expenses and costs. XBIO shall also be responsible, at its cost, for defending all such Licensed Patents, including the defense of any oppositions or reexaminations or similar proceedings, and shall use Commercially Reasonable Efforts in the conduct of such activities. XBIO will provide to CLS copies of all prosecution filings and material submissions related to such Licensed Patents and will use reasonable efforts to provide CLS with a draft of each such filing or material submission in advance of such submission and will consider in good faith any comments that CLS may timely provide. If XBIO decides not to file, prosecute or maintain patent applications or patents within the Licensed Patents that Cover the Licensed Product and/or its use, CLS shall have the right, but not the obligation, to file, prosecute and maintain such invention at its cost and expense.

5.2. Ownership of Improvements. Should XBIO its Affiliates or Sublicensees develop any Improvements to the Licensed Patents or Licensed Know-how, XBIO shall be the sole and exclusive owner of such Improvements (the "XBIO Improvements"). To the extent XBIO decides at its sole discretion to file for patent protection of an XBIO Improvement, XBIO shall have the responsibility for filing, prosecuting and maintaining all such patent applications and any patents that issue therefrom (the "XBIO Patents") at its sole expense and cost. XBIO shall also be responsible, at its cost, for defending all such XBIO Patents, including the defense of any oppositions or reexaminations or similar proceedings.

5.3. Third Party Infringement.

(a) Notices. Each Party will promptly report in writing to the other Party any (i) known or suspected infringement of any Licensed Patents, or (ii) unauthorized use or misappropriation of any Licensed Know-how by a Third Party, of which such Party becomes aware, in each case only to the extent relevant to Licensed Product or the development, manufacture, commercialization or use of Licensed Product in the Field in the Territory, and will provide the other Party with all available information evidencing such infringement, or unauthorized use or misappropriation.

(b) XBIO First Right to Enforce Certain Licensed Patents. XBIO or, as applicable its Affiliate or Sublicensee will have the first right, but not the obligation, to initiate a suit or take other appropriate action that it believes is reasonably required to prevent or abate actual or threatened infringement or misappropriation of, or otherwise protect or enforce, the Licensed Patents against a Third Party who is researching, developing, making, using or selling a product in the Field in a country within the Territory. CLS and its Affiliates will join such suit if the relevant court would lack jurisdiction if CLS or such Affiliate were absent from such suit and CLS and such Affiliates will execute such legal papers and cooperate in the prosecution of such suit as may be reasonably requested by XBIO; provided, that XBIO will promptly reimburse all out-of-pocket expenses (including reasonable attorneys' fees and expenses) incurred by CLS and such Affiliates in connection with such requested cooperation.

(c) CLS Rights if XBIO Elects Not to Proceed. If XBIO does not initiate a suit or take other appropriate action pursuant to Section 5.3(b) within one hundred twenty (120) days after having received or sending notice written notice of such infringement or misappropriation or, in the case of receipt of a notice letter sent by a Third Party pursuant to the requirements of 21 U.S.C. § 355(b)(2)(A)(iv) or 355(j)(2)(A)(vii)(IV) or under any analogous provisions, within ten (10) days before any statutory or regulatory deadline for filing such suit, then CLS will have the immediate right to initiate a suit or take other appropriate action that it believes is reasonably required to prevent or abate actual or threatened infringement or misappropriation of, or otherwise to protect or enforce the relevant Licensed Patent. XBIO and, as applicable its Affiliates will join such suit if the relevant court would lack jurisdiction if XBIO or such Affiliates were absent from such suit and XBIO and such Affiliates will execute such legal papers and cooperate in the prosecution of such suit as may be reasonably requested by CLS; provided, that CLS will promptly reimburse all out-of-pocket expenses (including reasonable attorneys' fees and expenses) incurred by XBIO and such Affiliates in connection with such requested cooperation.

(d) Enforcement Against Other Infringement of Licensed Patents. Except as provided in Section 5.3(b), as between the Parties CLS will have the sole right, but not the obligation, to initiate a suit or take other appropriate action that it believes is reasonably required to prevent or abate actual or threatened infringement or misappropriation of, or otherwise to protect or enforce, the Licensed Patents outside of the Field during the Term.

(e) Right to Enforce Licensed Know-how. Responsibility for preventing or abating actual or threatened infringement or misappropriation of, or otherwise protecting or enforcing Licensed Know-how will be determined in the same manner as the right to enforce Licensed Patents under paragraphs (b) and (c). XBIO shall keep CLS informed of the status of all enforcement activities, and shall consider in good faith all CLS's comments regarding any aspect of such enforcement.

(f) Conduct of Certain Actions; Costs. XBIO will have the sole and exclusive right to select counsel for any suit initiated by it pursuant to this Section. XBIO will assume and pay all of its own out-of-pocket costs incurred in connection with any litigation or proceedings initiated by it pursuant to this Section, including the fees and expenses of the legal counsel selected by it.

(g) Recoveries.

(i) If XBIO initiates suit as permitted in accordance with Sections 5.3(b) with respect to Licensed Patents and/or Licensed Know-how, any damages, settlements, accounts of profits, or other financial compensation actually paid to XBIO by a Third Party based upon such suit, after deducting and reimbursing XBIO and CLS's actual out of pocket expenses (including reasonable attorneys' fees and expenses) incurred in pursuing such suit (such net amount, the "Recovery"), will be treated as Net Sales, and will be subject to the royalty payment obligations under Section 3.2, with XBIO retaining the balance after such payment.

(ii) If CLS initiates suit pursuant to Section 5.2(c) with respect to Licensed Patents or Licensed Know-how, any damages, settlements, accounts of profits, or other financial compensation actually paid to CLS by a Third Party based upon such suit, after deducting and reimbursing CLS's and XBIO's actual out of pocket expenses (including reasonable attorneys' fees and expenses) incurred in pursuing such suit, will be shared equally by the Parties.

5.4. Patent Invalidity Claim. Each of the Parties will promptly notify the other Party in the event of any legal or administrative action by any Third Party against a Licensed Patent, or any certification filed pursuant to 21 U.S.C. § 355(b)(2)(A)(iv) or 355(G)(2)(A)(vii)(IV) or any notice under any analogous provisions, with respect to such Licensed Patents, of which it becomes aware, including any nullity, revocation, reexamination or compulsory license proceeding. Responsibility for defending against any such action shall be determined in the same manner as enforcement of the relevant Licensed Patents pursuant to Section 5.2.

5.5. Patent Marking. XBIO agrees to comply with the patent marking statutes in each country in which the Licensed Product is sold by XBIO or its Affiliates or Sublicensees.

5.6. Title to and Ownership of Marketing Approvals. XBIO or its designee shall be the owner of all Marketing Approvals for the Licensed Product(s) in the Territory and in the Field; provided, however, that XBIO hereby grants to CLS and its Affiliates a perpetual non-exclusive license and right of reference to, and a right to copy, access and otherwise use, all such Marketing Approvals solely to support CLS' and its Affiliates' seeking marketing approval of one or more products outside the Field. CLS agrees to have transferred any Licensed Product Marketing Approvals in the Field that are owned by CLS or its Affiliates to XBIO or its designees.

ARTICLE VI
CONFIDENTIALITY

6.1. Confidential Information. During the Term and for a period of seven (7) years after any termination or expiration of this Agreement, the Receiving Party agrees (i) to keep in confidence and not to disclose the Disclosing Party's Confidential Information to any Third Party without the prior written consent of the Disclosing Party except for disclosures expressly permitted pursuant to this Section 6.1, and (ii) not to use the Disclosing Party's Confidential Information for any purpose, except pursuant to, and in order to carry out, the terms and objectives of this Agreement (which includes activities contemplated by the licenses granted in Section 2.1) or as otherwise specifically permitted under this Agreement. The terms of this Agreement will be considered Confidential Information of both Parties, subject to permitted disclosures as set forth in this Article VI. In addition, if the Receiving Party is required to disclose Confidential Information of the Disclosing Party by regulation, law or legal process, including by the rules or regulations of the United States Securities and Exchange Commission ("SEC"), United Kingdom Financial Services Authority ("FSA") or similar regulatory agency in a country other than the United States, United Kingdom or of any stock exchange, the Receiving Party shall provide prior written notice and a copy of such intended disclosure to the Disclosing Party and agrees to consult with the Disclosing Party with respect to the preparation and submission of a confidential treatment request for this Agreement and will disclose only such Confidential Information of the Disclosing Party as is required to be disclosed by the rules or regulations of the United States Securities and Exchange Commission ("SEC"), United Kingdom Financial Services Authority ("FSA") or similar regulatory agency in a country other than the United States, United Kingdom or of any stock exchange and will cooperate in the disclosing Party's efforts to obtain a protective order or to limit the scope of the required disclosures.

6.2. Permitted Disclosures. The Receiving Party agrees that it and its Affiliates will provide or permit access to the Disclosing Party's Confidential Information only to the Receiving Party's employees, consultants, advisors and bona fide potential acquirors, and to service providers, investigators, Third Party contractors, potential and existing Sublicensees and distributors, in each case who, in such Party's reasonable judgment, have a need to know such Confidential Information to assist the Receiving Party with the activities contemplated by this Agreement or in connection with a potential business relationship or investment that would encompass Licensed Product, and who are subject to obligations of confidentiality and non-use with respect to such Confidential Information similar to the obligations of confidentiality and non-use of the Receiving Party under Section 6.1 CLS and XBIO shall each remain responsible for any failure by its Affiliates, and its and its Affiliates' respective employees, consultants, advisors and permitted contractors, Sublicensees and distributors, to treat such Confidential Information as required under Section 6.1 (as if such Affiliates, employees, consultants, advisors, contractors, sublicensees and distributors were Parties directly bound to the requirements of Section 6.1). XBIO and CLS may also disclose Confidential Information of the other Party to Regulatory Authorities and other governmental authorities, but solely in connection with the activities contemplated by this Agreement.

6.3. Publicity. Neither Party will issue a press release or public announcement relating to the terms of this Agreement without the prior written approval of the other Party, which approval shall not be unreasonably withheld or delayed, except that a Party may issue such a press release or public announcement if required by applicable law, including by the rules or regulations of the United States Securities and Exchange Commission (SEC), United Kingdom Financial Services Agency or similar regulatory agency in a country other than the United States or of any stock exchange; provided that such Party complies with the notice and review provisions set forth in this Section.

6.4. Publications. XBIO and its Affiliates and Sublicensees shall have the right to publish the results of development, manufacture, commercialization and use of Licensed Product in the Field during the Term, provided that it provides CLS with a copy of the publication at least sixty (60) days prior to the intended publication date and agrees to delay publication up to an additional thirty (30) days if requested by CLS in order to protect confidential information and/or intellectual property rights.

6.5. Return of Confidential Information. Upon termination of this Agreement prior to the end of the Term, the Receiving Party shall, at the request of, and as directed by, the Disclosing Party, return or destroy Confidential Information of the Disclosing Party in the Receiving Party's possession, and shall destroy any reports or notes in Receiving Party's possession to the extent containing the Disclosing Party's Confidential Information, and any electronic copies of any of the foregoing, provided that (i) the Receiving Party may retain one copy of Confidential Information of the Disclosing Party for archival purposes, and (ii) neither Party shall be required to return or destroy copies of the other Party's Confidential Information stored on automatically created system back-up media.

ARTICLE VII
REPRESENTATIONS AND WARRANTIES; CERTAIN COVENANTS

7.1. Mutual Representations. Each Party hereby represents and warrants to the other Party, as of the Effective Date, as follows:

(a) It is duly organized and validly existing under the laws of its jurisdiction of incorporation and has the corporate power and authority to execute and deliver this Agreement and to perform its obligations hereunder.

(b) The execution, delivery and performance of this Agreement by such Party has been duly and validly authorized and approved by proper corporate action on the part of such Party. Such Party has taken all other action required by applicable law, its certificate of incorporation or by-laws or any agreement to which it is a party or by which it or its assets are bound, to authorize such execution, delivery and performance. Assuming due authorization, execution and delivery on the part of the other Party, this Agreement constitutes a legal, valid and binding obligation of such Party.

(c) The execution and delivery of this Agreement, and the performance as contemplated hereunder, by such Party will not violate any applicable law.

(d) Neither the execution and delivery of this Agreement nor the performance hereof by such Party requires such Party to obtain any permit, authorization or consent from any governmental authority (except for any Marketing Approvals, pricing or reimbursement approvals, manufacturing-related approvals or similar approvals necessary for development, manufacture or commercialization of Licensed Products), or from any other person, and such execution, delivery and performance by such Party, including the granting of the licenses granted under this Agreement, will not result in the breach of or give rise to any conflict, termination of, rescission, renegotiation or acceleration under or trigger any other rights under any agreement or contract to which such Party may be a party existing as of the Effective Date.

(e) Neither Party nor any of its Affiliates has been debarred or is subject to debarment, and CLS has not used in any capacity in connection with the development or manufacture of Licensed Product prior to the Effective Date, any person or entity who has been debarred pursuant to Section 306 of the United States Federal Food, Drug, and Cosmetic Act, or who is the subject of a conviction described in such section.

7.2. CLS's Representations and Warranties. CLS hereby makes the following representations and warranties to XBIO as of the Effective Date:

(a) CLS has the right to grant to XBIO the rights and licenses described in this Agreement.

(b) Exhibit A contains a complete and correct list of all existing patents and patent applications Controlled by CLS and its Affiliates that are necessary or useful to research, develop, make, use, import, export, market, offer for sale, sell and have sold Licensed Product in the Territory in the Field.

(c) To CLS's knowledge, no Third Party is infringing any of the Licensed Patents identified on Exhibit A.

(d) To CLS's knowledge, the making, using or selling of a Licensed Product in the Field will not infringe any Third Party patent rights.

(e) CLS has not received any written notice of (i) any claim that any patent or trade secret right owned or controlled by a Third Party would be infringed or misappropriated by the manufacture, use, sale, offer for sale or importation of Licensed Products in the Field in the Territory, or (ii) any threatened claims or litigation seeking to invalidate or otherwise challenge the Licensed Patents or CLS's rights therein.

(f) CLS is the exclusive owner or licensee of the Licensed Patents and the Licensed Know-how listed in Exhibit B. CLS's rights to the Licensed Patents and Licensed Know-how are held free and clear of any liens, security interests and similar encumbrances.

(g) To CLS' knowledge, the SciVac Agreement is in full force and effect and is binding and enforceable against the parties thereto in accordance with its terms. To CLS's knowledge, neither party to the SciVac Agreement has received or sent any notice of breach or default thereunder. The EIRGEN Agreement is in full force and effect and is binding and enforceable against the parties thereto in accordance with its terms. Neither CLS nor, to CLS's knowledge has any party to the EIRGEN Agreement received or sent any notice of such breach or default thereunder.

(h) To CLS's knowledge, there have been no inventorship or ownership challenges with respect to any of the Licensed Patents.

(i) Neither CLS nor its Affiliates has received written notice from any Regulatory Authority threatening any proceedings with respect to the research, development or manufacture of any Licensed Product in the Field in the Territory.

(j) CLS represents that it has such knowledge and experience in business or financial matters that it is capable of evaluating the merits and risks of an investment in the Shares.

7.3. XBIO Representations and Warranties.

(a) Neither XBIO nor any of its Affiliates or subsidiaries is in violation or default of any provision of its or their certificate of incorporation or bylaws (or equivalent organization documents), or in breach of or default with respect to any provision of any agreement, judgment, decree, order, lease, franchise, license, permit or other instrument to which it or they are a party or by which it or they or any of its or their properties are bound except for any violation or default that would not reasonably be expected to have a Material Adverse Effect.

(b) There are no legal or governmental actions, suits or proceedings pending and there are no inquiries or investigations pending, or, to XBIO's knowledge, any legal or governmental actions, suits, or proceedings threatened, against XBIO or any of its Affiliates or subsidiaries or of which property owned or leased by the XBIO or any of its Affiliates or subsidiaries is or may be the subject, which actions, suits or proceedings, individually or in the aggregate, would reasonably be expected to have a Material Adverse Effect. Neither XBIO nor any of its Affiliates or subsidiaries is party to or subject to the provisions of any injunction, judgment, decree or order of any court, regulatory body, administrative agency or other governmental body specifically naming XBIO or any of its Affiliates or subsidiaries that would reasonably be expected to have a Material Adverse Effect.

7.4. No Warranty. EXCEPT AS OTHERWISE EXPRESSLY SET FORTH IN THIS AGREEMENT, NEITHER PARTY HERETO MAKES ANY REPRESENTATIONS AND NEITHER PARTY EXTENDS ANY WARRANTIES OF ANY KIND, EITHER EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, WITH RESPECT TO THE SUBJECT MATTER OF THIS AGREEMENT (INCLUDING ANY LICENSED PRODUCT), INCLUDING ANY WARRANTY OF MERCHANTABILITY, NONINFRINGEMENT, OR FITNESS FOR A PARTICULAR PURPOSE. EXCEPT AS EXPRESSLY PROVIDED IN THIS AGREEMENT, CLS MAKES NO WARRANTY OR REPRESENTATION AS TO THE VALIDITY OR SCOPE OF THE LICENSED PATENTS OR LICENSED KNOW HOW, OR THAT ANY LICENSED PRODUCT WILL BE FREE FROM AN INFRINGEMENT ON PATENTS OR OTHER INTELLECTUAL PROPERTY RIGHTS OF THIRD PARTIES. XBIO AND CLS DISCLAIM ANY REPRESENTATION OR WARRANTY THAT THE DEVELOPMENT, MANUFACTURE AND COMMERCIALIZATION OF LICENSED PRODUCT PURSUANT TO THIS AGREEMENT WILL BE SUCCESSFUL OR THAT, IF COMMERCIALIZED, ANY PARTICULAR SALES LEVEL WILL BE ACHIEVED.

ARTICLE VIII
INDEMNIFICATION

8.1. Indemnification by XBIO. XBIO will indemnify, hold harmless, and defend CLS, its Affiliates, and their respective directors, officers, employees and agents (the "CLS Indemnitees") from and against any and all damages, liabilities, costs, expenses and amounts paid in settlement (collectively, "Losses") incurred in connection with any Third Party claim arising out of or resulting from, directly or indirectly; (i) any breach of, or inaccuracy in, any representation or warranty made by XBIO in this Agreement, or any breach or violation of any term of this Agreement by XBIO; (ii) the negligence or willful misconduct of XBIO, its Affiliates and their respective Sublicensees, and their respective directors, officers, employees and agents; and (iii) the research, development, manufacture, commercialization, or use of Licensed Product by XBIO and its Affiliates and Sublicensees in the Territory under this Agreement. Notwithstanding the foregoing or anything in this Agreement to the contrary, XBIO will have no obligation to indemnify the CLS Indemnitees for any other Losses as to which CLS is obligated to indemnify XBIO under Section 8.2.

8.2. Indemnification by CLS. CLS will indemnify, hold harmless, and defend XBIO, its Affiliates and their respective directors, officers, employees and agents (the "XBIO Indemnitees") from and against any and all Losses incurred in connection with any Third Party Claim arising out of or resulting from, directly or indirectly, (i) any breach of, or inaccuracy in, any representation or warranty made by CLS in this Agreement, or any breach or violation of any term of this Agreement or the EIRGEN Agreement by CLS; (ii) the negligence or willful misconduct of any CLS Indemnitee; or (iii) the research, development, manufacture, commercialization, or use of Licensed Product by CLS or any of its Affiliates or licensees (other than XBIO) outside the Field. Notwithstanding the foregoing, or anything in this Agreement to the contrary, CLS will have no obligation to indemnify XBIO Indemnitees for any Losses as to which XBIO is obligated to indemnify CLS under Section 8.1.

8.3. Indemnification Procedure. In the event of any such claim against any XBIO Indemnitee or CLS Indemnitee (individually, an "Indemnitee"), the indemnified Party shall promptly notify the other Party in writing of the claim and the indemnifying Party shall manage and control, at its sole expense, the defense of the claim and its settlement. The indemnified Party will cooperate with the indemnifying Party and assist in good-faith the defense of the claim and its settlement and may, at the indemnifying Party's option and expense, be represented in any such action or proceeding. The indemnifying Party will not be liable for any settlements, litigation costs or expenses incurred by any Indemnitee without the indemnifying Party's prior written authorization. Notwithstanding the foregoing, if the indemnifying Party believes that any exceptions to its obligation of indemnification of the Indemnitees may apply, the indemnifying Party will promptly notify the Indemnitees, who shall then have the right to be represented in any such action or proceeding by separate counsel at their expense; provided that the indemnifying Party will be responsible for payment of such expenses if the Indemnitees are ultimately determined to be entitled to indemnification from the indemnifying Party.

8.4. Limitation of Liability. NEITHER PARTY HERETO WILL BE LIABLE FOR SPECIAL, INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES ARISING OUT OF THIS AGREEMENT OR THE EXERCISE OF ITS RIGHTS HEREUNDER, INCLUDING LOST PROFITS ARISING FROM OR RELATING TO ANY BREACH OF THIS AGREEMENT, REGARDLESS OF ANY NOTICE OF SUCH DAMAGES, EXCEPT AS A RESULT OF A PARTY'S WILLFUL MISCONDUCT. NOTHING IN THIS SECTION 8.4 IS INTENDED TO LIMIT OR RESTRICT THE INDEMNIFICATION RIGHTS OR OBLIGATIONS OF EITHER PARTY.

8.5. Insurance. During the Term and for a period of at least two (2) years after the last commercial sale of a Licensed Product in the Territory under this Agreement, XBIO will maintain insurance, with a reputable, insurer rated at least "A" by AmBest in an amount appropriate for its business and products of the type that are the subject of this Agreement, and for its obligations under this Agreement, including, commencing immediately prior to the first human clinical trial, product and clinical trial liability insurance of at least $2,000,000 per occurrence and $2,000,000 in the aggregate on a worldwide basis.

ARTICLE IX
TERM AND TERMINATION

9.1. Term. This Agreement will become effective as of the Effective Date and will continue in full force and effect on a country-by-country and Licensed Product-by-Licensed Product basis until terminated in accordance with this Article IX ("Term"). Upon expiration of the Royalty Term in a country of the Territory (but not earlier termination of this Agreement) the Patent License granted to XBIO under Section 2.1(a) will convert to perpetual, fully paid-up, royalty-free licenses on a country-by-country and Licensed Product-by-Licensed Product basis with the same scope as set forth in such Section.

9.2. Termination for Convenience. XBIO will have the right to terminate this Agreement at any time and for any reason upon at least three (3) months' prior written notice to CLS.

9.3. Termination for Cause. This Agreement may be terminated at any time during the Term upon written notice by either Party if the other Party is in material breach of its obligations hereunder, and has not cured such material breach within sixty (60) days after written notice describing the nature of such material breach is provided to the breaching Party. Additionally, if XBIO ceases all development activities for a period of twelve (12) consecutive months, and does not cure such failure or cessation within sixty (60) days of receiving written notice thereof from CLS, then CLS will have the right to terminate this Agreement in its entirety by providing written notice of termination to XBIO.

9.4. CLS Termination. To the extent permitted by applicable law, CLS may terminate this Agreement upon written notice of termination to XBIO upon or after the filing of bankruptcy of XBIO or the making by XBIO of any assignment for the benefit of creditors.

9.5. Patent Challenge. CLS has the right to terminate this Agreement upon written notice to XBIO in the event that XBIO or any of its Affiliates or Sublicensees directly or indirectly challenges in a legal or administrative proceeding the patentability, enforceability or validity of any Licensed Patent or the scope or construction of any Valid Claim (each, a "Patent Challenge"); provided that this Section 9.5 will not apply to any such Patent Challenge that is first made by XBIO or any of its Affiliates or Sublicensees in defense of a claim of patent infringement brought by CLS or its Affiliates under the applicable Licensed Patent.

9.6. Effect of Termination.

(a) Pre-Termination Obligations; Transfer of Information and Filings. Upon the termination of this Agreement for any reason, nothing herein shall be construed to release either Party from any obligation that matured prior to the effective date of such termination. XBIO shall remain obligated to provide an accounting for and to pay royalties earned. Subject to Section 9.1, in the event of termination, (i) the licenses granted hereunder shall terminate; (ii) XBIO shall have no further right under Licensed Patents or Licensed Know-how to develop, manufacture or market the Licensed Product or any product containing Licensed Product, or otherwise to use the Licensed Patents or Licensed Know How; (iii) all XBIO sublicenses shall be subject to CLS's obligation in Section 2.2(a); and (iv) except as otherwise set forth in Section 2.4(a), all rights granted to XBIO hereunder shall revert to CLS for the benefit of CLS. Notwithstanding the foregoing, XBIO shall be entitled to sell any completed inventory of Licensed Product which remain on hand as of the date of the termination to the extent necessary to satisfy its contractual and legal obligations, so long as XBIO pays to CLS the royalties applicable to said subsequent sales in accordance with the terms and conditions as set forth in this Agreement; provided that no sales shall be permitted after the expiration of six (6) months after the date of termination. XBIO will execute all documents and take all such further actions, as may be reasonably requested by CLS in order to give effect to the preceding sentences as soon as practicable.

(b) Post-Termination Royalty by CLS. If this Agreement is terminated by CLS for cause in accordance with Section 9.3, or by XBIO for convenience in accordance with Section 9.2, then XBIO shall, at CLS's request, grant to CLS or CLS's designee a perpetual, non-exclusive license to use solely in the Field: (a) all governmental or regulatory correspondence, conversation logs, filings and approvals (including all Marketing Approvals and pricing and reimbursement approvals) owned or otherwise Controlled by XBIO and relating to the development, manufacture or commercialization of the Licensed Product in the Territory and all product trademarks then being used in connection with Licensed Product, other than XBIO corporate trademarks; and (b) all safety data and other adverse event data owned or otherwise Controlled by XBIO; with all rights granted subject to the terms of any subsequent sublicense XBIO entered into providing a Sublicensee rights to the property set forth in both (a) and (b) above. For purposes of clarity, if the Sublicensee has exclusive rights to the property set forth in (a) and (b) above, then CLS shall have not right to sublicense those rights to a third-party, nor shall CLS have a right to use such property set forth in (a) and (b) above for its own development or commercial purposes. In exchange for the license set forth in this section 9.6(b), CLS shall pay to XBIO on a quarterly basis an amount equal to [***] of all proceeds received by CLS or any of its Affiliates, successors, or assigns arising from or relating to any Licensed Product, Licensed Patent, or Licensed Know-how.

9.7. Survival. Any expiration or termination of this Agreement will be without prejudice to the rights of either Party against the other accrued or accruing under this Agreement prior to expiration or termination, including payment obligations arising prior to such expiration or termination. The provisions of Sections 2.4(a) and 5.6, and Articles V, VI, VII, VIII and IX will survive any expiration or termination of this Agreement and all other provisions contained in this Agreement that by their explicit terms survive expiration or termination of this Agreement, will survive. Except as set forth in this Article IX, upon termination or expiration of this Agreement all other rights and obligations of the Parties under this Agreement terminate.

ARTICLE X
DISPUTE RESOLUTION

10.1. Continuance of Rights and Obligations During Pendency of Dispute Resolution. If there are any disputes in connection with this Agreement, including disputes related to termination of this Agreement under Article IX, all rights and obligations of the Parties shall continue until such time as any dispute has been resolved in accordance with the provisions of this Article X.

10.2. Referral of Unresolved Matters to Senior Executives. In the event that the Parties are unable to resolve a dispute within twenty-five (25) days from the date such dispute is first brought to the other Party's attention, the matter shall be referred to a senior executive of each Party to be resolved by negotiation in good faith as soon as is practicable but in no event later than thirty (30) days after referral.

10.3. Arbitration. Any dispute, controversy or claim arising out of or relating to this Agreement during the preclinical and clinical trial development of a Licensed Product which the Parties have not resolved under Section 10.2, will be decided by arbitration in accordance with the Rules of the Conflict Prevention and Resolution Institute ("CPR") in effect at the time the dispute arises, unless the Parties hereto mutually agree otherwise. To the extent such rules are inconsistent with this provision, this provision will control. The following rules will apply to any such arbitration:

(a) Any demand for arbitration must be made in writing to the other Party.

(b) There will be three arbitrators, one of whom shall be appointed by each party and a third of whom shall be the chairman of the panel and be appointed by mutual agreement of the two arbitrators appointed by the Parties, and with the mutual written consent of the Parties, with such consent not to be unreasonably withheld. If the two arbitrators cannot agree on the appointment of the third arbitrator within thirty (30) days, then the CPR shall select the arbitrator, who shall be approved following the mutual written consent of the Parties, with such consent not to be unreasonably withheld. Any arbitration involving patent rights, other intellectual property rights or intellectual property will be heard by arbitrators who are expert in such areas.

(c) The arbitration will be held in the State of Delaware, or such other place as the Parties agree. The arbitrators will apply the substantive law of the Delaware.

(d) Neither Party will have the right independently to seek recourse from a court of law or other authorities in lieu of arbitration, but each Party has the right before or during the arbitration to seek and obtain from the appropriate court provisional remedies to avoid irreparable harm, maintain the status quo or preserve the subject matter of the arbitration. There shall be a stenographic record of the proceedings. The decision of the arbitrators will be final and binding upon both Parties. The arbitrators will render a written opinion setting forth findings of fact and conclusions of law.

(e) The expenses of the arbitration will be borne by the Parties in proportion as to which each Party prevails or is defeated in arbitration. Each Party will bear the expenses of its counsel and other experts.

10.4. Litigation. Any dispute, controversy or claim arising out of or relating to this Agreement following approval of a Licensed Product, which the Parties have not resolved under Section 10.2, will be decided by a court of the appropriate jurisdiction in the State of Delaware.

10.5. Equitable Relief. Notwithstanding anything to the contrary, each of the Parties hereby acknowledges that a breach of their respective obligations under this Agreement may cause irreparable harm and that the remedy or remedies at law for any such breach may be inadequate. Each of the Parties hereby agrees that, in the event of any such breach, in addition to all other available remedies hereunder, the non-breaching Party shall have the right, through the arbitration process described in Section 10.3, to seek equitable relief to enforce the provisions of this Agreement.

ARTICLE XI
MISCELLANEOUS

11.1. Governing Law and Jurisdiction. The validity, construction and performance of this Agreement will be governed by and construed in accordance with the substantive laws of the State of Delaware excluding any conflicts or choice of law rule or principle that might otherwise refer construction or interpretation of this Agreement to the substantive law of another jurisdiction.

11.2. Force Majeure. Except for each Party's confidentiality and indemnity obligations, the obligations of either Party under this Agreement shall be excused during each period of delay caused by matters such as acts of God, pandemics, epidemics, strikes, supplier delays, failure of utilities or common carriers, shortages of raw materials, government orders, sufferance of or voluntary compliance with acts of government or governmental regulation, or acts of war or terrorism, which are reasonably beyond the control of the Party obligated to perform. Force majeure shall not include a lack of funds, bankruptcy or other financial cause or disadvantage, and force majeure shall not excuse or delay any Party's payment obligations under this Agreement. Nothing contained in this Agreement shall affect either Party's ability or discretion regarding any strike or other employee dispute or disturbance and all such strikes, disputes or disturbances shall be deemed to be beyond the control of such Party. A condition of force majeure shall be deemed to continue only so long as the affected Party shall be taking all reasonable actions necessary to overcome such condition. If either Party shall be affected by a condition of force majeure, such Party shall give the other Party prompt notice thereof, which notice shall contain the affected Party's estimate of the duration of such condition and a description of the steps being taken or proposed to be taken to overcome such condition of force majeure. Any delay occasioned by any such cause shall not constitute a default, breach or failure under this Agreement, and the obligations of the Parties shall be suspended during the period of delay so occasioned. During any period of force majeure, the Party that is not directly affected by such condition of force majeure may take any reasonable action necessary to mitigate the effects of such condition of force majeure.

11.3. Further Assurances. Each Party hereto agrees to perform such acts, execute such further instruments, documents or certificates, and provide such cooperation in proceedings and actions as may be reasonably requested by the other Party in order to carry out the intent and purpose of this Agreement.

11.4. Notices. Any notice required or permitted to be given under this Agreement will be in writing and will be deemed to have been properly given if delivered in person by an internationally recognized overnight courier, or by fax (and promptly confirmed by overnight courier), to the addresses given below or such other addresses as may be designated in writing by the Parties from time to time during the Term.

In the case of CLS:

CLS Therapeutic Limited
PO Box 175, Frances House,
Sir William Place, St Peter Port
Guernsey, Channel Islands
GY1 4HQ
Attention: Mrs. Anne Le Cheminant
Facsimile: +44 (0) 1481 722674
Email: AnneLeCheminant@equiomgroup.com

With a copy to:

CLS Therapeutics, Inc.
Attn: Chief Executive Officer
101 6th Avenue, Floor 3
New York, NY 10013, U.S.A.

In the case of XBIO:

Xenetic Biosciences, Inc.
40 Speen Street, Suite 102
Framingham, Massachusetts 01701
Attn: Chief Executive Officer
Email: j.eisenberg@xeneticbio.com

With a copy to:

Holland & Knight LLP
701 Brickell Avenue, Suite 3300
Miami, FL 33131
Attention: Danielle Price, Esq.
Email: danielle.price@hklaw.com

11.5. Assignment. This Agreement may not be assigned or otherwise transferred by either Party, without the written consent of the other Party such consent not to be unreasonably withheld, conditioned or delayed; provided, however, that either Party may, without such consent, assign this Agreement, in whole or in part, (i) to any of its Affiliates, and (ii) to a Third Party successor or purchaser of all or substantially all of its business or assets to which this Agreement relates, whether in a merger, sale of stock, sale of assets or other similar transaction, provided that, the Third Party successor or purchaser provides written notice to the other Party that such Third Party agrees to be bound by the terms of this Agreement. Any purported assignment in violation of this Section 11.5 will be void. Any permitted assignee shall assume all obligations of its assignor under this Agreement.

11.6. Affiliate Performance. Any obligation of XBIO or CLS under or pursuant to this Agreement may be satisfied, met or fulfilled, in whole or in part, either by XBIO or CLS directly or by any Affiliate or Sublicensee of either party.

11.7. Amendment. The Parties hereto may amend, modify or alter any of the provisions of this Agreement, but only by a written instrument duly executed by both Parties hereto.

11.8. Entire Agreement. This Agreement, along with all schedules and exhibits attached hereto, contains the entire understanding of the Parties with respect to the subject matter hereof and supersedes all prior agreements, whether written or oral. Each Party confirms that it is not relying on any representations, warranties or covenants of the other Party except as specifically set out in this Agreement.

11.9. No Benefit to Third Parties. The provisions of this Agreement are for the sole benefit of the Parties and their successors and permitted assigns, and they shall not be construed as conferring any rights in any other person or entity.

11.10. Waiver. The failure of a Party to enforce at any time for any period any of the provisions of this Agreement will not be construed as a waiver of such provisions or of the rights of such Party thereafter to enforce each such provision.

11.11. No Implied Licenses. Except as expressly and specifically provided under this Agreement, the Parties agree that neither Party is granted any implied rights to or under any of the other Party's current or future patents, trade secrets, copyrights, moral rights, trade or service marks, trade dress, or any other intellectual property rights.

11.12. Relationship of the Parties. The Parties agree that their relationship established by this Agreement is that of independent contractors. Furthermore, the Parties agree that this Agreement does not, is not intended to, and shall not be construed to, establish a partnership or joint venture, and nor shall this Agreement create or establish an employment, agency or any other relationship. Except as may be specifically provided in this Agreement, neither Party shall have any right, power or authority, nor shall they represent themselves as having any authority to assume, create or incur any expense, liability or obligation, express or implied, on behalf of the other Party, or otherwise act as an agent for the other Party for any purpose.

11.13. Severability. If any provision of this Agreement is held unenforceable by a court or tribunal of competent jurisdiction in a final unappealable order because it is invalid or conflicts with any law of any relevant jurisdiction, then such provision will be inoperative in such jurisdiction and the remainder of this Agreement shall remain binding upon the Parties hereto.

11.14. Interpretation.

(a) General. Unless the context of this Agreement otherwise requires, (a) words of one gender include the other gender; and (b) words using the singular or plural number also include the plural or singular number, respectively. Whenever this Agreement refers to a number of days, unless otherwise specified, such number shall refer to Calendar Days.

(b) Other Definitional and Agreement References. References to any agreement, contract, statute, act, or regulation are to that agreement, contract, statute, act, or regulation as amended, modified or supplemented from time to time in accordance with the terms hereof and thereof.

(c) Capitalization. Any capitalized terms used in any Exhibit or Schedule but not otherwise defined therein, shall have the meaning as defined in this Agreement.

(d) Date References. References from or through any date mean, unless otherwise specified, from and including or through and including, respectively.

(e) Schedules and Exhibits. All Schedules and Exhibits annexed hereto or referred to herein are hereby incorporated in and made a part of this Agreement as if set forth in full herein.

(f) Person References. References to any Person include the successors and permitted assigns of that Person.

(g) References to Parts of this Agreement. References to Articles, Sections, Schedules, and Exhibits are to Articles, Sections, Schedules, and Exhibits of this Agreement unless otherwise specified.

(h) Other Definitional and Interpretative Provisions. The words “hereof”, “herein” and “hereunder” and words of like import used in this Agreement shall refer to this Agreement as a whole and not to any particular provision of this Agreement. Whenever the words “include”, “includes” or “including” are used in this Agreement, they shall be deemed to be followed by the words “without limitation”, whether or not they are in fact followed by those words or words of like import. The word “or” is used in the inclusive sense (and/or). “Writing”, “written” and comparable terms refer to printing, typing and other means of reproducing words (including electronic media) in a visible form.

(i) Headings. The Article and Section headings contained in this Agreement are for reference purposes only and shall not affect in any way the meaning or interpretation of this Agreement.

(j) Expenses. Except as otherwise expressly provided in this Agreement, each Party shall pay the fees and expenses of its respective lawyers and other experts and all other expenses and costs incurred by such Party incidental to the negotiation, preparation, execution and delivery of this Agreement.

11.15. Further Assurances. Each Party agrees to execute, acknowledge and deliver such further documents and instruments and do any other acts, from time to time, as may be reasonably necessary, to effectuate the purposes of this Agreement.

11.16. Counterparts. This Agreement may be executed in any number of counterparts (including by facsimile or electronic signature, including DocuSign), each of which shall be deemed an original, but all of which together shall constitute one and the same document.

[Signature Page Follows]

IN WITNESS WHEREOF, XBIO and CLS have caused this Agreement to be duly executed by their authorized representatives under seal, in duplicate on the Effective Date.

CLS Therapeutics Ltd.

By: /s/ Jodi Langlois
Name: Virtus Directors Limited
Title: Director

Xenetic Biosciences, Inc.

By: /s/ Jeffrey Eisenberg

Name: Jeffrey Eisenberg

Title: Chief Executive Officer

Exhibit A
Licensed Patents

[***]

Exhibit B
Licensed Know-how

[***]

Exhibit C

[***]

Exhibit 10.2

CERTAIN INFORMATION IDENTIFIED IN THIS DOCUMENT, MARKED BY BRACKETS AND ASTERISKS ("[***]"), HAS BEEN EXCLUDED PURSUANT TO ITEM 601(B)(10) OF REGULATION S-K UNDER THE SECURITIES ACT OF 1933, AS AMENDED, BECAUSE IT IS (I) NOT MATERIAL AND (II) WOULD LIKELY CAUSE COMPETITIVE HARM TO THE REGISTRANT IF PUBLICLY DISCLOSED.

EXECUTION VERSION

EXCLUSIVE LICENSE AGREEMENT

BY AND BETWEEN

CLS Therapeutics Ltd

AND

Xenetic Biosciences, Inc.

EXCLUSIVE LICENSE AGREEMENT

This Exclusive License Agreement, made this 26th day of April, 2022 (the "Effective Date"), is by and between CLS Therapeutics LTD, a company organized under the laws of Guernsey with principal offices located at of PO Box 175, Frances House, Sir William Place, St Peter Port, Guernsey, GY1 4HQ , UK ("CLS") and Xenetic Biosciences, Inc., a Nevada corporation, with offices located at 40 Speen St., Ste 102, Framingham, MA 01701 ("XBIO"). Each of XBIO and CLS may be referred to, individually, as a "Party", and, collectively, as the "Parties".

RECITALS

WHEREAS, CLS owns or controls certain patent rights and know-how related to the use of DNase in combination with CAR T therapy for treatment of cancer; and

WHEREAS, XBIO is interested in obtaining an exclusive license under such patent rights and to such know-how to develop and commercialize pharmaceutical products and methods incorporating DNase, and CLS is willing to grant XBIO such an exclusive license, in each case on the terms and conditions set forth in this Agreement.

NOW, THEREFORE, in consideration of the foregoing and the mutual covenants contained in this Agreement, CLS and XBIO, intending to be legally bound, hereby agree as follows:

ARTICLE I
DEFINITIONS

When used in this Agreement, each of the following capitalized terms, whether used in the singular or plural, shall have the meaning set forth in this Article I.

1.1. "Affiliate" of an entity means any person or entity which, directly or indirectly, controls, is controlled by or is under common control with such entity. For the purposes of this definition, "control" refers to any of the following: (i) direct or indirect ownership of fifty percent (50%) or more of the voting securities entitled to vote for the election of directors in the case of a corporation, or of fifty percent (50%) or more of the equity interest with the power to direct management in the case of any other type of legal entity; (ii) status as a general partner in any partnership; or (iii) any other arrangement where a person or entity possesses, directly or indirectly, the power to direct the management or policies of an entity, whether through ownership of voting securities, by contract or otherwise.

1.2. "Agreement" means this Exclusive License Agreement, including any and all exhibits, schedules, appendices and other addenda to it and as it may be amended from time to time in accordance with the provisions of this document.

1.3. "Business Day" means Monday through Friday, except the legal public holidays specified in 5 U.S.C. 6103, any day declared to be a holiday by federal statute or executive order, or any day with respect to which the U.S. Office of Personnel Management has announced that Federal agencies in the Washington, DC, area are closed.

1.4. "Calendar Day" means the period of elapsed time, using Coordinated Universal Time or local time that begins at midnight and ends 24 hours later at the next midnight.

1.5. "CLS Improvement" means an Improvement made by CLS or its Affiliates.

1.6. "Combination Product" means any pharmaceutical product containing both a Licensed Product component and one or more other active pharmaceutical ingredients.

1.7. "Commercially Reasonable Efforts" means the level of efforts and resources, including financial resources, at least equal to those normally used by a company in the pharmaceutical or biotechnology industry to conduct the relevant activity, including, in the case of research, development or commercialization, the level of effort and resources at least equal to those normally used by such a company to research, develop, manufacture or commercialize, as the case may be, a product owned by such company or to which it has rights, which product is at a similar stage in its development or product life and is of a similar market and profitability potential to Licensed Product, taking into account all relevant factors including the patent and other proprietary position of the product, product labeling or anticipated labeling, market potential, financial return, medical and clinical considerations, regulatory environment and competitive market conditions, and other technical, legal, scientific, medical or commercial factors that such a company would deem to be relevant.

1.8. "Compound" means a deoxyribonulease enzyme, including, but not limited to those selected from DNase I, DNase X, DNase γ , DNase 1L1, DNase 1L2, DNase 1L3, DNase II, DNase IIα, DNase II β, Caspase-activated DNase ("CAD"), Endonuclease G ("ENDOG"), Granzyme B ("GZMB"), phosphodiesterase I, lactoferrin, acetyl-cholinesterase, and mutants or derivatives thereof, including, but not limited to one or more mutations in the actin binding site thereof.

1.9. "Confidential Information" shall mean any and all confidential and proprietary information, including chemical or biological materials, chemical structures, sequence information, commercialization plans, correspondence, customer lists, data, development plans, formulae, improvements, Know-How, processes, regulatory filings, clinical trial designs, clinical trial protocols, data read-outs from clinical trials, reports, strategies, techniques, or other information, in each case that are disclosed by or on behalf of a Party or its Affiliates (the "Disclosing Party") to the other Party or its Affiliates (the "Receiving Party") pursuant to this Agreement, regardless of whether any of the foregoing are marked "confidential" or "proprietary" or communicated to the other Party by or on behalf of the Disclosing Party in oral, written, visual, graphic, or electronic form. Confidential Information shall not include any information that: (w) is already known to the Receiving Party at the time of disclosure (as evidenced by written records or other competent evidence) without any obligation to keep it confidential or any restriction on its use, prior to disclosure by the Disclosing Party; or (x) is generally available to the public or becomes publicly known through no wrongful act of the Receiving Party or its representatives; or (y) is subsequently received by the Receiving Party from a Third-Party lawfully in possession thereof and without any obligation to keep it confidential or any restriction on its use; or (z) is developed independently by the Receiving Party without reference or reliance upon the Disclosing Party's Confidential Information (as evidenced by written records or other competent evidence). Any combination of features or disclosures shall not be deemed to fall within the foregoing exclusions merely because individual features are published or available to the general public or in the rightful possession of the Receiving Party unless the combination itself and principle of operation are published or available to the general public or in the rightful possession of the Receiving Party.

1.10. "Control" or "Controlled", other than for purposes of Section 1.1, means the possession of the right to grant licenses or sublicenses or to disclose proprietary or trade secret information without violating the terms of any agreement or other arrangement with a Third Party and without misappropriating or infringing the proprietary or trade secret information of a Third Party.

1.11. "Cover", "Covering" or "Covered" means, with respect to a Licensed Patent and invention, that, in the absence of ownership of, or a license under, such Licensed Patent, the practice of such invention would infringe a Valid Claim of such Licensed Patent (including in the case of a Licensed Patent that is a patent application, a Valid Claim of such patent application as if such patent application were an issued patent).

1.12. "D14" means a Vector that incorporates the genetic sequence of the Compound and other necessary genetic regulatory elements for the expression of the Compound by transformed cells in a subject and a method of providing the vector to the subject for expression of the Compound by the transformed cells for the treatment of a disease in the Field.

1.13. "D20" means administration of a Compound to a subject either (i) by co-administering the Compound in conjunction with an adoptive cell therapy ("ACT") or (ii) by transforming the adoptive cells used as part of the ACT with the genetic sequence of the Compound and other necessary genetic regulatory elements for the expression and/or secretion of the Compound by the adoptive cells, for the treatment of a disease in the Field.

1.14. "D20 Product" means a Compound that is administered to a subject pursuant to Section 1.13.

1.15. "EMA" means the European Medicines Agency or any successor agency thereto.

1.16. "EU" means the countries of the European Union, as it is constituted as of the Effective Date and as it may be expanded from time to time.

1.17. "FDA" means the United States Food and Drug Administration or any successor agency thereto.

1.18. "Field" means therapeutic, prophylactic or palliative, uses in treating a cancer.

1.19. "First Commercial Sale", as to a particular country, means the first arms-length commercial sale of a Licensed Product by XBIO, its Affiliates or Sublicensees to a Third Party in such country after approval of the NDA, or if approval of an NDA is not required in such country, then following receipt of Marketing Approval required to market such Licensed Product in such country.

1.20. "GAAP" means U.S. generally accepted accounting principles applied on a consistent basis, or any other accounting principles generally accepted for public companies, such as International Financial Reporting Standards. Unless otherwise defined or stated, financial terms shall be calculated under GAAP.

1.21. "Improvements" means any development, modification or improvement arising out of or relating to the technology described in the Licensed Technology, including the Compound and uses thereof, that enhances the usability, functionality, efficiency, performance or another characteristic of the Licensed Technology.

1.22. "Know-how" means all present and future technical information, methods, knowledge, data information and know-how, patentable or otherwise, in written or electronic form.

1.23. "Licensed Know-how" means any Know-how listed on Exhibit B attached hereto and any CLS Know-how developed following the Effective Date that relate to or incorporate any information and/or know-how necessary to research, develop, make, use, offer to sell, sell or export a Licensed Product.

1.24. "Licensed Patents" means:

(a) The patents and patent applications listed on Exhibit A attached hereto and incorporated herein by reference;

(b) the patents and patent applications included in the CLS Improvements and listed on Exhibit A attached hereto;

(c) any patents and patent applications that Cover any CLS Improvements developed by CLS following the Effective Date that are necessary or useful to research, develop, make, use, offer to sell, sell or export a Licensed Product and that are necessary to practice the inventions disclosed or claimed by the patents and patent applications listed on Exhibit A; and

(d) all continuations, continuations-in-part, patents of addition, divisions, renewals, reexaminations, reissues and extensions (including any patent term extension under 35 USC §156) of any of the foregoing patents and patent applications; and any Supplementary Protection Certificate (within the meaning of such term under Council Regulation (EU) No. 1768/92) or any other similar statutory protection in relation to the relevant Licensed Product before or after the Effective Date.

1.25. "Licensed Product" means any product comprising, incorporating or containing the D20 Product, including, but not limited to, a pharmaceutically acceptable salt, polymorph, crystal form, prodrug, or solvate of the D20 Product, all to the extent such product or its use, manufacture or importation is Covered by a Licensed Patent or relies upon, references or incorporates the Licensed Know-How or CLS Improvements.

1.26. "Licensed Technology" means the Licensed Patents and CLS Improvements.

1.27. "Major EU Markets" means the United Kingdom, France, Italy, Spain and Germany.

1.28. "Marketing Approval" means any approval, including price approval, registration, license or authorization from any Regulatory Authority required to market and sell a Licensed Product in a jurisdiction and shall include an approval, registration, license or authorization granted in connection with an NDA.

1.29. "Material Adverse Effect" means any change in or effect on the business of XBIO that is, or could reasonably be expected to be, materially adverse to the business, assets (including intangible assets), liabilities (contingent or otherwise), condition (financial or otherwise) or results of operations of XBIO.

1.30. "NDA" means a New Drug Application, Biologics License Application or equivalent submission filed with the FDA in connection with seeking Marketing Approval of a Licensed Product, or an equivalent application filed with any equivalent regulatory agency or governmental authority in any jurisdiction other than the United States.

1.31. "Net Sales" means the gross amount invoiced on sales of Licensed Product in the Territory by XBIO or its Affiliates, less the following deductions with respect to the sale of such Licensed Product:

(i) customary trade, cash and quantity discounts and other customary discounts actually given to customers in the ordinary course of business;

(ii) rebates, credits and allowances given by reason of rejections, returns, damaged or defective product or recalls;

(iii) government-mandated rebates and any other compulsory payments, credits, adjustments and rebates actually paid or deducted;

(iv) price adjustments, allowances, credits, chargeback payments, discounts, rebates, fees, reimbursements or similar payments granted to managed care organizations, group purchasing organizations or other buying groups, pharmacy benefit management companies, health maintenance organizations and any other providers of health insurance coverage, health care organizations or other health care institutions (including hospitals), health care administrators or patient assistance or other similar programs, or to federal, state/provincial, local and other governments, including their agencies, or to wholesalers, distributors or other trade customers;

(v) reasonable and customary freight, shipping, insurance and other transportation expenses, if actually borne by XBIO or its Affiliates without reimbursement from any Third Party;

(vi) sales, value-added, excise taxes, tariffs and duties, and other taxes and government charges directly related to the sale, delivery or use of Licensed Product (but not including taxes assessed directly against the income derived from such sale) net of any credits or allowances received by XBIO or its Affiliates with respect to such taxes or charges;

(vii) amounts previously included in Net Sales of Licensed Product that are written off as uncollectible after reasonable collection efforts, in accordance with standard practices of the applicable party; and

(viii) any item, substantially similar in character or substance to any of the foregoing, calculated in accordance with GAAP consistently applied and customary in the pharmaceutical industry to be deducted in the definition of net sales in a license agreement of this type.

Net Sales will be determined from books and records maintained in accordance with GAAP, consistently applied throughout the organization and across all products of the entity whose sales of Licensed Product are giving rise to Net Sales.

Disposition of Licensed Product for, or use of the Licensed Product in, clinical trials or other scientific testing, as free samples, or under compassionate use, patient assistance, or test marketing programs or other similar programs or studies where a Licensed Product is supplied without charge shall not result in any Net Sales, however if XBIO or its Affiliates charges for such Licensed Product, the amount billed will be included in the calculation of Net Sales.

In the event a Licensed Product is sold in the form of a Combination Product, then the Net Sales for any such Combination Product shall be determined by multiplying the Net Sales of the Combination Product during the applicable royalty Reporting Period, by the fraction, A/(A+B), where A is the weighted (by sales volume) average sale price of the Licensed Product when sold separately in finished form in the country in which the Combination Product is sold, and B is the weighted (by sales volume) average sale price of the other active pharmaceutical ingredients included in the Combination Product when sold separately in finished form in the country in which the Combination Product is sold, in each case during the applicable royalty Reporting Period or, if sales of both the Licensed Product and the other active pharmaceutical ingredients did not occur in such period, then in the most recent royalty Reporting Period during the preceding twelve (12) months in which sales of both occurred, if any. In the event that such average sale price cannot be determined for both the Licensed Product and all other active pharmaceutical ingredients included in the Combination Product, then the Parties will in good faith discuss and agree on a pro-rata allocation of the Net Sales that reflects the Licensed Product's contribution to the Combination Product on an equitable basis. XBIO covenants that neither it nor any of its Affiliates will intentionally manipulate the fraction A/(A+B) to avoid or reduce royalty payments or obligations that would otherwise be due for sales of Licensed Product in combination form or otherwise.

1.32. "Regulatory Authority" means any federal, national, multinational, state, county, city, provincial, or local regulatory agency, department, bureau or other governmental entity with authority over the marketing, commercialization, manufacture or sale of a pharmaceutical product in the Territory, including the FDA in the United States and the EMA in the EU.

1.33. "Reporting Period" shall mean each three month period ending March 31, June 30, September 30 and December 31.

1.34. "Royalty Term" has the meaning set forth in Section 3.5.

1.35. "Sublicensee" means a Third Party to whom XBIO or any of its Affiliates or Sublicensee(s) grants an express sublicense under the Licensed Patents, CLS Improvements and/or Licensed Know-how to develop, manufacture, commercialize or use Licensed Product in the Field in the Territory; provided that the term "Sublicensee" excludes any Third Party who acts solely as a promoter, agent, marketer and/or distributor for and on behalf of XBIO or any of its Affiliates or Sublicensees for the distribution and/or marketing of Licensed Product.

1.36. "Sublicense Income" means consideration received by XBIO or any of its Affiliates from a Sublicensee in connection with or otherwise attributable to a grant to such Sublicensee of an express sublicense under the Licensed Patents, CLS Improvements and/or Licensed Know-how to develop, manufacture, commercialize or use Licensed Product in the Field in the Territory, including without limitation, (a) royalties received from a Sublicensee; (b) lump sum license fees; (c) proceeds of sale of the Licensed Technology, CLS Improvements and/or Licensed Know-how; (d) signing fees; and (e) milestone payments relating to the Milestones or other milestones

1.37. "Tax" or "Taxes" means any present or future taxes, levies, imposts, duties, charges, assessments or fees of any nature (including interest, penalties and additions thereto) that are imposed by a government authority, but not including a Party's income taxes.

1.38. "Term" means the term of this Agreement determined in accordance with Section 10.1.

1.39. "Territory" means worldwide.

1.40. "Third Party" means any person other than a Party or any of its Affiliates or their respective employees.

1.41. "Third Party Payments" means all royalties, upfront fees, milestones and other payments paid by XBIO or its Affiliates to Third Parties under licenses to intellectual property or to acquire intellectual property that is necessary for the development, manufacture, import, sale or use of Licensed Product in the Field in the Territory. For purposes of this definition, the term "necessary" shall mean that, in the reasonable determination of XBIO or its Affiliates, the intellectual property of the Third Party were reasonably necessary or useful to the manufacture, use or sale of Licensed Product in the Territory.

1.42. "United States" or "U.S." means the United States of America and its territories and possessions.

1.43. "Valid Claim" means (i) a claim of an issued and unexpired patent that has not been revoked or held unenforceable or invalid by a decision of a court or other governmental agency of competent jurisdiction from which no appeal can be taken or with respect to which an appeal is not taken within the time allowed for appeal, and that has not been disclaimed or admitted to be invalid or unenforceable through reissue, disclaimer or otherwise or been dedicated to the public, and (ii) a claim in a pending patent application that is being prosecuted and that has not been abandoned, disclaimed, allowed to lapse or finally determined to be unallowable by the applicable governmental authority in a decision from which no appeal can be taken or from which no appeal is taken within the time allowed for appeal.

1.44. "Vector" means any particle used as a vehicle to carry any genetic material.

ARTICLE II
LICENSE GRANT

2.1. License Grant. Effective as of the Effective Date hereof, and subject to the terms and conditions of this Agreement, CLS grants to XBIO: (a) an exclusive, royalty-bearing, fully transferrable (in accordance with Section 12.5) license under the Licensed Technology (the "Patent License"), and (b) an exclusive, royalty-bearing, fully transferable (in accordance with Section 12.5) license under the Licensed Know-how (the "Know-how License"), in each case with the right to grant sublicenses, to the extent provided in Section 2.2, to research, develop, make, have made, use, import, export, market, offer for sale, sell and have sold, Licensed Product in the Territory within the Field.

2.2. Sublicenses.

(a) Sublicensing. XBIO shall have the right to grant subsequent sublicenses under the Patent License and Know-how License so long as such subsequent sublicenses are given as part of an arms-length transaction, absent which such subsequent sublicense shall require the prior written consent of CLS, not to be unreasonably withheld. Any subsequent sublicenses shall be in writing and include substantially the same non-financial terms and be in substantially the same form as this Agreement. In the event of termination of the Patent License (except for the passage of time), any existing agreements that contain a subsequent sublicense of, or other grant of right with respect to, Licensed Technology shall terminate to the extent of such subsequent sublicense or other grant of right; provided, however, that, for each Sublicensee, upon termination of the subsequent sublicense agreement with such Sublicensee, if such Sublicensee is not then in material breach of such sublicense agreement such that XBIO would not have the right to terminate such subsequent sublicense, CLS shall be obligated, at the request of such Sublicensee, to preserve the effectiveness, scope and validity of such subsequent sublicense or other grant of right for up to ninety (90) days while CLS enters into a new agreement with such Sublicensee on substantially the same terms as those contained in such sublicense agreement, and provided further that such terms shall be amended, if necessary, to the extent required to ensure that such sublicense agreement does not impose any obligations or liabilities on CLS which are not included in this Agreement or adversely affect the consideration due to CLS hereunder. In the event that CLS and such Sublicensee are unable to enter into a new sublicense agreement within the ninety (90) day period mentioned above following a good faith negotiation by both CLS and Sublicensee, then XBIO's agreement with such Sublicensee shall terminate upon expiration of such ninety (90) day period.

(b) Performance by Sublicensees. XBIO shall be fully responsible for performance of each Sublicensee of its obligations under this Agreement. Each sublicense granted by XBIO pursuant to this Section 2.2 will contain terms and conditions not inconsistent with those sections of this Agreement applicable to Sublicensees. Each sublicense agreement will contain the following provisions: (i) a requirement that any Sublicensee selling Licensed Product submit applicable sales or other reports to XBIO to the extent necessary or relevant to the reports required to be made or records required to be maintained under this Agreement; (ii) an audit requirement as to those Sublicensees selling Licensed Product consistent with that set forth in Section 4.3; and (iii) a requirement that such Sublicensee comply with the confidentiality provisions and restrictions on use of Confidential Information consistent with Article VII with respect to Confidential Information of CLS. If XBIO becomes aware of a material breach by a Sublicensee of the rights granted to XBIO under Section 2.1, XBIO will promptly notify CLS of the particulars of the same, and will use Commercially Reasonable Efforts to enforce the terms of such sublicense.

2.3. Responsibility; Decision-making. During the Term, XBIO will, including through its Affiliates and Sublicensees and their respective contractors, have sole responsibility for and sole decision-making authority with respect to, the research, development, manufacture, marketing, sale and use of Licensed Product in the Field in the Territory and will be responsible for all of the costs and expenses associated with such activities during the Term. XBIO shall keep CLS reasonably informed as to XBIO's progress in these efforts and XBIO will use good faith efforts to confer with CLS, on at least a quarterly basis, with respect to the development of the Licensed Product. Without limiting the foregoing, XBIO will use good faith efforts to confer with CLS on significant product development decisions (such as design and conduct of clinical trials, entering into research and development collaborations, and entering into license or sublicense agreements) in advance of making such decisions. During the Term, CLS shall be entitled to one seat on the Scientific Advisory Board of XBIO and may fill that seat with a nominee of its choosing that is reasonably acceptable to XBIO.

2.4. Diligence. XBIO will, including through its Affiliates and Sublicensees, use Commercially Reasonable Efforts during the Term to develop and obtain Marketing Approval for a Licensed Product in the United States and in each Major EU Market, and to commercialize such Licensed Product in the United States and each Major EU Market if the relevant Marketing Approval is obtained. In addition, XBIO will, including through its Affiliates and Sublicensees, use Commercially Reasonable Efforts to secure any data and market exclusivity for a Licensed Product for which Marketing Approval is obtained, to the extent available from the applicable Regulatory Authorities. XBIO agrees to register this Agreement with any foreign governmental agency, which requires such registration and where the failure to so register would have a material adverse impact on commercialization of Licensed Product in a Major EU Market, and XBIO shall pay all costs and legal fees in connection therewith. XBIO shall not be relieved of any of its obligations under this Agreement by any failure to register this Agreement in any country, and, specifically, shall not be relieved of its obligation to make any payment due to CLS where such payment is blocked due to any failure to register this Agreement. CLS shall cooperate with XBIO in the preparation of each submission for Marketing Approvals for the Licensed Product(s) in the Territory and in obtaining and maintaining Marketing Approvals within the Territory.

(a) Ownership of Clinical Trial Data. All data (including all pre-clinical, clinical and/or marketing data) developed by XBIO during the Term and relating to a Licensed Product and the Field shall be and remain the property of XBIO; provided, however, that XBIO hereby grants to CLS and its Affiliates a perpetual non-exclusive license and right of reference to, and a right to copy, access and otherwise use, all such data solely to support CLS' and its Affiliates' seeking marketing approval of one or more products outside the Field. All data (including all pre-clinical, clinical and/or marketing data) developed by CLS during the Term relating to a Compound outside the Field shall be and remain the property of CLS; provided, however, that CLS hereby grants to XBIO, its Affiliates and Sublicensees a perpetual non-exclusive license and right of reference to, and a right to copy, access and otherwise use, all such data solely to support XBIO's, its Affiliates' and Sublicensees' seeking Marketing Approval of one or more products within the Field.

(b) Clinical Studies. XBIO shall have the exclusive right to conduct any clinical trials or studies, prior to or after relevant Marketing Approval, with respect to the Licensed Product in the Territory and in the Field.

ARTICLE III
FINANCIAL PROVISIONS

3.1. Consideration Given by XBIO. Subject to the terms and conditions of that certain Subscription Agreement to be entered into by the Parties concurrently herewith, XBIO will grant to CLS on the date hereof 500,000 (five hundred thousand) shares of Common Stock of XBIO (the "Shares") together with Five Hundred Thousand and 00/100 Dollars ($500,000.00) (the "Payment"). The amount of the Payment shall be offset by the amount of Sixty Thousand and 00/100 Dollars ($60,000.00) which was previously paid by XBIO to CLS pursuant to that certain Letter Agreement dated February 28, 2022 (the "Letter Agreement") such that on the Effective Date XBIO shall pay to CLS the amount of Four Hundred Forty and 00/100 Dollars ($440,000.00). CLS hereby acknowledges previous receipt of the Sixty Thousand and 00/100 Dollars ($60,000.00) made by XBIO to CLS pursuant to the Letter Agreement.

3.2. Milestone Payments. As additional consideration for the licenses granted to XBIO under Section 2.1 above, XBIO will pay non-refundable and non-creditable milestone payments to CLS in the amounts and upon the occurrence of the events set forth below for each unique Licensed Product (each a "Milestone"), irrespective of whether such Milestone was achieved by XBIO or its Affiliate. Each such payment shall be made within forty-five (45) Calendar Days after a Milestone has occurred. Each milestone payment will be payable only one time for each unique Licensed Product and shall not be subject to any royalty provisions set forth in Section 3.3(a). Notwithstanding the terms of this Section 3.2, if XBIO enters into a sublicense with a Sublicensee, then the sole payments due by XBIO to CLS with respect to any Milestone shall be pursuant to Section 3.4 and XBIO shall be under no obligation to make any further milestone payments pursuant to this Section 3.2.

Milestone	**Milestone Payment**
[***]	[***]
[***]	[***]
[***]	[***]

3.3. Royalty.

(a) As additional consideration for the licenses granted to XBIO under Section 2.1 above, XBIO will pay to CLS an amount equal to Net Sales for a Licensed Product within the Territory multiplied by the Applicable Percentage, as set forth below by each Licensed Product.
D20 Products:

Annual Net Sales of Licensed Products	**Applicable Percentage**
Up to and including [***] per calendar year	[***]
Over [***] per calendar year	[***]
Over [***] per calendar year	[***]

(b) The Parties agree that the applicable royalty upon Net Sales payable under Section 3.3(a) above, shall apply to Net Sales during the Royalty Term (as defined below). At the end of the applicable Royalty Term no royalties shall be paid under the Patent License.

(c) To the extent that that a Licensed Product is sublicensed to a Sublicensee, no further royalties will be due under this Section 3.3 and all payments due to CLS shall be made pursuant to Section 3.4.

3.4. Sublicense Income. As additional consideration for the licenses granted to XBIO under Section 2.1 above, XBIO will pay to CLS an amount equal to [***] of Sublicense Income. Notwithstanding the immediately preceding sentence, in the event XBIO grants an exclusive sublicense for the entire right held by XBIO under the Licensed Patents and Licensed Technologies, such that the sublicensee could prohibit XBIO from practicing the Licensed Patents and Licensed Technologies, then XBIO will pay to CLS an amount equal to [***] of Sublicense Income.

3.5. Patent License Royalty Term. Royalties payable for the Patent License under Section 3.3 shall be payable on a country-by-country and Licensed Product-by-Licensed Product basis during the period commencing on the First Commercial Sale of such Licensed Product in the Field in such country, and ending on a country-by-country basis upon (i) the expiration of the last Valid Claim Covering such Licensed Product in such country, or (ii) five (5) years from the date of First Commercial Sale in such country, whichever is later (the "Royalty Term").

3.6. Third Party Payments. XBIO will have the right to deduct from the royalty otherwise payable under Section 3.3, fifty percent (50%) of Third Party Payments, provided that in no event will the royalty payment be reduced as a result of application of this paragraph, to less than fifty percent (50%) of the amount otherwise payable under Section 3.3. Third Party Payments available for offset under this Section 3.6 and not used as a credit against the royalty payable hereunder in a given calendar quarter may be carried over to future calendar quarters until fully utilized.

3.7. Payments; Reports. Following the First Commercial Sale in any country in the Territory, XBIO will pay royalties due on Net Sales in a calendar quarter within ninety (90) days of the end of such calendar quarter and shall be accompanied by a report as set forth in Article IV below.

3.8. Taxes. All payments shall be made by XBIO under this Agreement without deduction or withholding of taxes owed by CLS except to the extent that any such deduction or withholding is required by applicable law to be made on account of Taxes, as determined by XBIO in good faith. To the extent that amounts are so withheld, such withheld amounts shall be treated for all purposes of this Agreement as having been delivered and paid to CLS. The Parties will cooperate with respect to all documentation required by any relevant government taxing authority or reasonably requested by either Party to secure a reduction in the rate of applicable withholding Taxes. XBIO shall not be liable for any excess Taxes withheld, and in the event of an overwithholding, CLS's sole recourse shall be to apply for a refund from the appropriate taxing authority.

3.9. United States Dollars. All dollar ($) amounts specified in this Agreement are United States dollar amounts.

3.10. Currency Conversion. All payments to be made hereunder will be made in U.S. Dollars, to a bank account designated by CLS. In the case of sales outside the United States, payments received by XBIO, its Affiliates or Sublicensees will be expressed in the U.S. Dollar equivalent calculated on a quarterly basis in the currency of the country of sale and converted to their U.S. Dollar equivalent using the average of the rate of exchange as quoted in the Wall Street Journal (WSJ) for the relevant quarter. If the WSJ does not publish such rate, a comparable rate publication shall be agreed from time to time by the Parties, and with respect to any country for which such rate is not published by the WSJ or a comparable publication, the Parties will use the prevailing rate for bank cable transfers for such date, as quoted by the leading United States banks in New York City dealing in the foreign exchange market.

3.11. Late Payments. The payments due under this Agreement shall, if overdue, bear interest at a rate per annum equal to two percent (2%) above the prime rate in effect on the due date as reported by The Wall Street Journal, such interest rate being compounded on the last day of each Reporting Period, not to exceed the maximum permitted by law. Any such overdue payments when made shall be accompanied by all interest so accrued. Said interest and the payment and acceptance thereof shall not preclude CLS from exercising any other rights it may have as a consequence of the lateness of any payment. This Section 3.11 shall not apply to any payments that are disputed in good faith by either Party until thirty (30) Calendar Days after the resolution of any such dispute.

ARTICLE IV
MAINTENANCE OF BOOKS AND RECORDS

4.1. Reporting.

(a) XBIO shall report to CLS the date on which it achieves a Milestone within forty (40) Calendar Days of each such occurrence.

(b) XBIO shall report to CLS the date on which it achieves the First Commercial Sale in each country of the Territory within forty (40) Calendar Days of each such occurrence. For each country in the Territory, following the First Commercial Sale of Licensed Product, XBIO shall deliver reports to CLS within seventy five (75) Calendar Days after the end of each Reporting Period. Each report under this Section 4.1(b) shall be certified as correct by an officer of XBIO and shall contain at least the following information as may be pertinent to a royalty accounting hereunder for the immediately preceding Reporting Period:

(i) the total number of units of Licensed Products sold by XBIO, its Affiliates and Sublicensees in each country;

(ii) the amounts billed, invoiced and received by XBIO, its Affiliates and Sublicensees for each Licensed Product, in each country, and total billings or payments due or made for all Licensed Products;

(iii) calculation of Net Sales for the applicable Reporting Period in each country, including an itemized listing of permitted offsets and deductions; and

(iv) total royalties payable on Net Sales in U.S. dollars, together with the exchange rates used for conversion.

4.2. If no amounts are due to CLS for any Reporting Period, the report shall so state.

4.3. XBIO shall maintain, and shall cause each of its Affiliates and Sublicensees to maintain, complete and accurate records relating to the rights and obligations under this Agreement and any royalties payable to CLS in relation to this Agreement, which records shall contain sufficient information to permit CLS and its representatives to confirm the accuracy of such royalties and reports delivered to CLS and compliance in all other respects with this Agreement. XBIO shall maintain, and shall cause each of its Affiliates and Sublicensees to maintain, accurate records regarding Licensed Products, including Net Sales thereof, and shall retain such records over a period of at least six (6) years. CLS will have the right, once annually at its own expense, to have a nationally recognized, independent, certified public accounting firm, which shall be mutually agreed upon by the Parties, review any such records of XBIO and its Affiliates and Sublicensees (the "Audited Party") in the location(s) where such records are maintained by the Audited Party upon reasonable written notice (which shall be no less than fifteen (15) Business Days' prior written notice) and during regular business hours and under obligations of strict confidence, for the sole purpose of verifying the basis and accuracy of payments made under Section 3.2. If any examination conducted by CLS or its representatives pursuant to the provisions of this Section show an underreporting or underpayment of five percent (5%) or more in any payment due to CLS hereunder in a Reporting Period, the Audited Party shall bear the full cost of such audit and shall remit any amounts due to CLS (including interest due in accordance with Section 3.10) within thirty (30) days of receiving notice thereof from CLS.

ARTICLE V
INTELLECTUAL PROPERTY OWNERSHIP, PROTECTION AND RELATED MATTERS

5.1. Prosecution and Maintenance of Licensed Patents. XBIO shall have responsibility for filing, prosecuting and maintaining all Licensed Patents and shall be responsible for all related expenses and costs. XBIO shall also be responsible, at its cost, for defending all such Licensed Patents, including the defense of any oppositions or reexaminations or similar proceedings, and shall use Commercially Reasonable Efforts in the conduct of such activities. XBIO will provide to CLS copies of all prosecution filings and material submissions related to such Licensed Patents and will use reasonable efforts to provide CLS with a draft of each such filing or material submission in advance of such submission and will consider in good faith any comments that CLS may timely provide. If XBIO decides not to file, prosecute or maintain patent applications or patents within the Licensed Patents that Cover the Licensed Product and/or its use, CLS shall have the right, but not the obligation, to file, prosecute and maintain such invention at its cost and expense.

5.2. Ownership of Improvements. Should XBIO its Affiliates or Sublicensees develop any Improvements to the Licensed Patents or Licensed Know-how, XBIO shall be the sole and exclusive owner of such Improvements (the "XBIO Improvements"). To the extent XBIO decides at its sole discretion to file for patent protection of an XBIO Improvement, XBIO shall have the responsibility for filing, prosecuting and maintaining all such patent applications and any patents that issue therefrom (the "XBIO Patents") at its sole expense and cost. XBIO shall also be responsible, at its cost, for defending all such XBIO Patents, including the defense of any oppositions or reexaminations or similar proceedings.

5.3. Third Party Infringement.

(a) Notices. Each Party will promptly report in writing to the other Party any (i) known or suspected infringement of any Licensed Patents, or (ii) unauthorized use or misappropriation of any Licensed Know-how by a Third Party, of which such Party becomes aware, in each case only to the extent relevant to Licensed Product or the development, manufacture, commercialization or use of Licensed Product in the Field in the Territory, and will provide the other Party with all available information evidencing such infringement, or unauthorized use or misappropriation.

(b) XBIO First Right to Enforce Certain Licensed Patents. XBIO or, as applicable its Affiliate or Sublicensee will have the first right, but not the obligation, to initiate a suit or take other appropriate action that it believes is reasonably required to prevent or abate actual or threatened infringement or misappropriation of, or otherwise protect or enforce, the Licensed Patents against a Third Party who is researching, developing, making, using or selling a product in the Field in a country within the Territory. CLS and its Affiliates will join such suit if the relevant court would lack jurisdiction if CLS or such Affiliate were absent from such suit and CLS and such Affiliates will execute such legal papers and cooperate in the prosecution of such suit as may be reasonably requested by XBIO; provided, that XBIO will promptly reimburse all out-of-pocket expenses (including reasonable attorneys' fees and expenses) incurred by CLS and such Affiliates in connection with such requested cooperation.

(c) CLS Rights if XBIO Elects Not to Proceed. If XBIO does not initiate a suit or take other appropriate action pursuant to Section 5.3(b) within one hundred twenty (120) days after having received or sending notice written notice of such infringement or misappropriation or, in the case of receipt of a notice letter sent by a Third Party pursuant to the requirements of 21 U.S.C. § 355(b)(2)(A)(iv) or 355(j)(2)(A)(vii)(IV) or under any analogous provisions, within ten (10) days before any statutory or regulatory deadline for filing such suit, then CLS will have the immediate right to initiate a suit or take other appropriate action that it believes is reasonably required to prevent or abate actual or threatened infringement or misappropriation of, or otherwise to protect or enforce the relevant Licensed Patent. XBIO and, as applicable its Affiliates will join such suit if the relevant court would lack jurisdiction if XBIO or such Affiliates were absent from such suit and XBIO and such Affiliates will execute such legal papers and cooperate in the prosecution of such suit as may be reasonably requested by CLS; provided, that CLS will promptly reimburse all out-of-pocket expenses (including reasonable attorneys' fees and expenses) incurred by XBIO and such Affiliates in connection with such requested cooperation.

(d) Enforcement Against Other Infringement of Licensed Patents. Except as provided in Section 5.3(b), as between the Parties CLS will have the sole right, but not the obligation, to initiate a suit or take other appropriate action that it believes is reasonably required to prevent or abate actual or threatened infringement or misappropriation of, or otherwise to protect or enforce, the Licensed Patents outside of the Field during the Term.

(e) Right to Enforce Licensed Know-how. Responsibility for preventing or abating actual or threatened infringement or misappropriation of, or otherwise protecting or enforcing Licensed Know-how will be determined in the same manner as the right to enforce Licensed Patents under paragraphs (b) and (c). XBIO shall keep CLS informed of the status of all enforcement activities, and shall consider in good faith all CLS's comments regarding any aspect of such enforcement.

(f) Conduct of Certain Actions; Costs. XBIO will have the sole and exclusive right to select counsel for any suit initiated by it pursuant to this Section. XBIO will assume and pay all of its own out-of-pocket costs incurred in connection with any litigation or proceedings initiated by it pursuant to this Section, including the fees and expenses of the legal counsel selected by it.

(g) Recoveries.

(i) If XBIO initiates suit as permitted in accordance with Sections 5.3(b) with respect to Licensed Patents and/or Licensed Know-how, any damages, settlements, accounts of profits, or other financial compensation actually paid to XBIO by a Third Party based upon such suit, after deducting and reimbursing XBIO and CLS's actual out of pocket expenses (including reasonable attorneys' fees and expenses) incurred in pursuing such suit (such net amount, the "Recovery"), will be treated as Net Sales, and will be subject to the royalty payment obligations under Section 3.2, with XBIO retaining the balance after such payment.

(ii) If CLS initiates suit pursuant to Section 5.2(c) with respect to Licensed Patents or Licensed Know-how, any damages, settlements, accounts of profits, or other financial compensation actually paid to CLS by a Third Party based upon such suit, after deducting and reimbursing CLS's and XBIO's actual out of pocket expenses (including reasonable attorneys' fees and expenses) incurred in pursuing such suit, will be shared equally by the Parties.

5.4. Patent Invalidity Claim. Each of the Parties will promptly notify the other Party in the event of any legal or administrative action by any Third Party against a Licensed Patent, or any certification filed pursuant to 21 U.S.C. § 355(b)(2)(A)(iv) or 355(G)(2)(A)(vii)(IV) or any notice under any analogous provisions, with respect to such Licensed Patents, of which it becomes aware, including any nullity, revocation, reexamination or compulsory license proceeding. Responsibility for defending against any such action shall be determined in the same manner as enforcement of the relevant Licensed Patents pursuant to Section 5.2.

5.5. Patent Marking. XBIO agrees to comply with the patent marking statutes in each country in which the Licensed Product is sold by XBIO or its Affiliates or Sublicensees.

5.6. Title to and Ownership of Marketing Approvals. XBIO or its designee shall be the owner of all Marketing Approvals for the Licensed Product(s) in the Territory and in the Field; provided, however, that XBIO hereby grants to CLS and its Affiliates a perpetual non-exclusive license and right of reference to, and a right to copy, access and otherwise use, all such Marketing Approvals solely to support CLS' and its Affiliates' seeking marketing approval of one or more products outside the Field. CLS agrees to have transferred any Licensed Product Marketing Approvals in the Field that are owned by CLS or its Affiliates to XBIO or its designees.

5.7. Assignment of Interest in Joint Patent Application. CLS and its Affiliates and XBIO propose to enter into a collaboration agreement with Belgian Volition SRL (the "Collaboration Agreement"), and on the Transfer Date (as such term is defined in the Collaboration Agreement), CLS and its Affiliates shall promptly assign to XBIO, all of CLS's and its Affiliates' right, title and interest in and to United Kingdom Patent Application Number 2202842.7, filed March 1, 2022, and entitled "Chimeric Antigen Receptor T-Cell Treatments Targeted to Chromatin Fragments and Extracellular Traps" (the "Joint Patent"), pursuant to a form of assignment reasonably acceptable to XBIO.

ARTICLE VI
ROFR GRANT

6.1 Right of First Refusal. If CLS or any of its Affiliates desire to sell, license, research or develop any product incorporating or utilizing D14, or enter into any other arrangement with respect to D14, then CLS must give XBIO written notice of such desire, including the proposed terms thereof and copies of any offer letters or term sheets relating thereto, and XBIO will have a right of first refusal (the "ROFR") to enter into an agreement with CLS or its Affiliate on terms no less favorable in any material respect than those on which CLS or its Affiliate was willing to enter into an agreement with the Third Party for the Territory. If XBIO desires to enter into such an agreement with CLS or its Affiliate, XBIO shall provide CLS written notice of its desire to exercise its ROFR (the "ROFR Notice") within thirty (30) days following XBIO's receipt of such written notice from CLS. Within thirty (30) days after the date of the ROFR Notice, the Parties will begin to negotiate in good faith the final terms of a commercially reasonable agreement on the proposed terms. If the Parties cannot reach agreement during the ninety (90) days following the date of the ROFR Notice, which may be extended on a month to month basis following the written consent of both Parties, then CLS shall be free for a period of one hundred eighty (180) days from end of such negotiation period to enter into an agreement with a Third Party with respect to D14 on financial terms, taken as a whole, that are no less favorable to CLS than those that were presented to XBIO in CLS's initial notice and those last proposed by XBIO to CLS in writing during the Parties' good faith negotiation. If at the end of such one hundred eighty (180) day period, CLS has not entered into such an agreement with a Third Party or if the agreement with the Third Party is terminated, then the right of CLS or is Affiliates in the future to enter into a licensing or other agreement with a Third Party with respect to D14 shall again subject to the right of first refusal set forth in this Agreement.

ARTICLE VII
CONFIDENTIALITY

7.1. Confidential Information. During the Term and for a period of seven (7) years after any termination or expiration of this Agreement, the Receiving Party agrees (i) to keep in confidence and not to disclose the Disclosing Party's Confidential Information to any Third Party without the prior written consent of the Disclosing Party except for disclosures expressly permitted pursuant to this Section 7.1, and (ii) not to use the Disclosing Party's Confidential Information for any purpose, except pursuant to, and in order to carry out, the terms and objectives of this Agreement (which includes activities contemplated by the licenses granted in Section 2.1) or as otherwise specifically permitted under this Agreement. The terms of this Agreement will be considered Confidential Information of both Parties, subject to permitted disclosures as set forth in this Article VII. In addition, if the Receiving Party is required to disclose Confidential Information of the Disclosing Party by regulation, law or legal process, including by the rules or regulations of the United States Securities and Exchange Commission ("SEC"), United Kingdom Financial Services Authority ("FSA") or similar regulatory agency in a country other than the United States, United Kingdom or of any stock exchange, the Receiving Party shall provide prior written notice and a copy of such intended disclosure to the Disclosing Party and agrees to consult with the Disclosing Party with respect to the preparation and submission of a confidential treatment request for this Agreement and will disclose only such Confidential Information of the Disclosing Party as is required to be disclosed by the rules or regulations of the United States Securities and Exchange Commission ("SEC"), United Kingdom Financial Services Authority ("FSA") or similar regulatory agency in a country other than the United States, United Kingdom or of any stock exchange and will cooperate in the disclosing Party's efforts to obtain a protective order or to limit the scope of the required disclosures.

7.2. Permitted Disclosures. The Receiving Party agrees that it and its Affiliates will provide or permit access to the Disclosing Party's Confidential Information only to the Receiving Party's employees, consultants, advisors and bona fide potential acquirors, and to service providers, investigators, Third Party contractors, potential and existing Sublicensees and distributors, in each case who, in such Party's reasonable judgment, have a need to know such Confidential Information to assist the Receiving Party with the activities contemplated by this Agreement or in connection with a potential business relationship or investment that would encompass Licensed Product, and who are subject to obligations of confidentiality and non-use with respect to such Confidential Information similar to the obligations of confidentiality and non-use of the Receiving Party under Section 7.1 CLS and XBIO shall each remain responsible for any failure by its Affiliates, and its and its Affiliates' respective employees, consultants, advisors and permitted contractors, Sublicensees and distributors, to treat such Confidential Information as required under Section 7.1 (as if such Affiliates, employees, consultants, advisors, contractors, sublicensees and distributors were Parties directly bound to the requirements of Section 7.1). XBIO and CLS may also disclose Confidential Information of the other Party to Regulatory Authorities and other governmental authorities, but solely in connection with the activities contemplated by this Agreement.

7.3. Publicity. Neither Party will issue a press release or public announcement relating to the terms of this Agreement without the prior written approval of the other Party, which approval shall not be unreasonably withheld or delayed, except that a Party may issue such a press release or public announcement if required by applicable law, including by the rules or regulations of the United States Securities and Exchange Commission (SEC), United Kingdom Financial Services Agency or similar regulatory agency in a country other than the United States or of any stock exchange; provided that such Party complies with the notice and review provisions set forth in this Section.

7.4. Publications. XBIO and its Affiliates and Sublicensees shall have the right to publish the results of development, manufacture, commercialization and use of Licensed Product in the Field during the Term, provided that it provides CLS with a copy of the publication at least sixty (60) days prior to the intended publication date and agrees to delay publication up to an additional thirty (30) days if requested by CLS in order to protect confidential information and/or intellectual property rights.

7.5. Return of Confidential Information. Upon termination of this Agreement prior to the end of the Term, the Receiving Party shall, at the request of, and as directed by, the Disclosing Party, return or destroy Confidential Information of the Disclosing Party in the Receiving Party's possession, and shall destroy any reports or notes in Receiving Party's possession to the extent containing the Disclosing Party's Confidential Information, and any electronic copies of any of the foregoing, provided that (i) the Receiving Party may retain one copy of Confidential Information of the Disclosing Party for archival purposes, and (ii) neither Party shall be required to return or destroy copies of the other Party's Confidential Information stored on automatically created system back-up media.

ARTICLE VIII
REPRESENTATIONS AND WARRANTIES; CERTAIN COVENANTS

8.1. Mutual Representations. Each Party hereby represents and warrants to the other Party, as of the Effective Date, as follows:

(a) It is duly organized and validly existing under the laws of its jurisdiction of incorporation and has the corporate power and authority to execute and deliver this Agreement and to perform its obligations hereunder.

(b) The execution, delivery and performance of this Agreement by such Party has been duly and validly authorized and approved by proper corporate action on the part of such Party. Such Party has taken all other action required by applicable law, its certificate of incorporation or by-laws or any agreement to which it is a party or by which it or its assets are bound, to authorize such execution, delivery and performance. Assuming due authorization, execution and delivery on the part of the other Party, this Agreement constitutes a legal, valid and binding obligation of such Party.

(c) The execution and delivery of this Agreement, and the performance as contemplated hereunder, by such Party will not violate any applicable law.

(d) Neither the execution and delivery of this Agreement nor the performance hereof by such Party requires such Party to obtain any permit, authorization or consent from any governmental authority (except for any Marketing Approvals, pricing or reimbursement approvals, manufacturing-related approvals or similar approvals necessary for development, manufacture or commercialization of Licensed Products), or from any other person, and such execution, delivery and performance by such Party, including the granting of the licenses granted under this Agreement, will not result in the breach of or give rise to any conflict, termination of, rescission, renegotiation or acceleration under or trigger any other rights under any agreement or contract to which such Party may be a party existing as of the Effective Date.

(e) Neither Party nor any of its Affiliates has been debarred or is subject to debarment, and CLS has not used in any capacity in connection with the development or manufacture of Licensed Product prior to the Effective Date, any person or entity who has been debarred pursuant to Section 306 of the United States Federal Food, Drug, and Cosmetic Act, or who is the subject of a conviction described in such section.

8.2. CLS's Representations and Warranties. CLS hereby makes the following representations and warranties to XBIO as of the Effective Date:

(a) CLS has the right to grant to XBIO the rights and licenses described in this Agreement.

(b) Exhibit A contains a complete and correct list of all existing patents and patent applications Controlled by CLS and its Affiliates that are necessary or useful to research, develop, make, use, import, export, market, offer for sale, sell and have sold Licensed Product in the Territory in the Field.

(c) To CLS's knowledge, no Third Party is infringing any of the Licensed Patents identified on Exhibit A.

(d) To CLS's knowledge, the making, using or selling of a Licensed Product in the Field will not infringe any Third Party patent rights.

(e) CLS has not received any written notice of (i) any claim that any patent or trade secret right owned or controlled by a Third Party would be infringed or misappropriated by the manufacture, use, sale, offer for sale or importation of Licensed Products in the Field in the Territory, or (ii) any threatened claims or litigation seeking to invalidate or otherwise challenge the Licensed Patents or CLS's rights therein.

(f) CLS is the exclusive owner or licensee of the Licensed Patents and the Licensed Know-how listed in Exhibit B. CLS's rights to the Licensed Patents and Licensed Know-how are held free and clear of any liens, security interests and similar encumbrances.

(g) To CLS's knowledge, there have been no inventorship or ownership challenges with respect to any of the Licensed Patents.

(h) Neither CLS nor its Affiliates has received written notice from any Regulatory Authority threatening any proceedings with respect to the research, development or manufacture of any Licensed Product in the Field in the Territory.

(i) CLS represents that it has such knowledge and experience in business or financial matters that it is capable of evaluating the merits and risks of an investment in the Shares.

8.3. XBIO Representations and Warranties.

(a) Neither XBIO nor any of its Affiliates or subsidiaries is in violation or default of any provision of its or their certificate of incorporation or bylaws (or equivalent organization documents), or in breach of or default with respect to any provision of any agreement, judgment, decree, order, lease, franchise, license, permit or other instrument to which it or they are a party or by which it or they or any of its or their properties are bound except for any violation or default that would not reasonably be expected to have a Material Adverse Effect.

(b) There are no legal or governmental actions, suits or proceedings pending and there are no inquiries or investigations pending, or, to XBIO's knowledge, any legal or governmental actions, suits, or proceedings threatened, against XBIO or any of its Affiliates or subsidiaries or of which property owned or leased by the XBIO or any of its Affiliates or subsidiaries is or may be the subject, which actions, suits or proceedings, individually or in the aggregate, would reasonably be expected to have a Material Adverse Effect. Neither XBIO nor any of its Affiliates or subsidiaries is party to or subject to the provisions of any injunction, judgment, decree or order of any court, regulatory body, administrative agency or other governmental body specifically naming XBIO or any of its Affiliates or subsidiaries that would reasonably be expected to have a Material Adverse Effect.

8.4. No Warranty. EXCEPT AS OTHERWISE EXPRESSLY SET FORTH IN THIS AGREEMENT, NEITHER PARTY HERETO MAKES ANY REPRESENTATIONS AND NEITHER PARTY EXTENDS ANY WARRANTIES OF ANY KIND, EITHER EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, WITH RESPECT TO THE SUBJECT MATTER OF THIS AGREEMENT (INCLUDING ANY LICENSED PRODUCT), INCLUDING ANY WARRANTY OF MERCHANTABILITY, NONINFRINGEMENT, OR FITNESS FOR A PARTICULAR PURPOSE. EXCEPT AS EXPRESSLY PROVIDED IN THIS AGREEMENT, CLS MAKES NO WARRANTY OR REPRESENTATION AS TO THE VALIDITY OR SCOPE OF THE LICENSED PATENTS OR LICENSED KNOW HOW, OR THAT ANY LICENSED PRODUCT WILL BE FREE FROM AN INFRINGEMENT ON PATENTS OR OTHER INTELLECTUAL PROPERTY RIGHTS OF THIRD PARTIES. XBIO AND CLS DISCLAIM ANY REPRESENTATION OR WARRANTY THAT THE DEVELOPMENT, MANUFACTURE AND COMMERCIALIZATION OF LICENSED PRODUCT PURSUANT TO THIS AGREEMENT WILL BE SUCCESSFUL OR THAT, IF COMMERCIALIZED, ANY PARTICULAR SALES LEVEL WILL BE ACHIEVED.

ARTICLE IX
INDEMNIFICATION

9.1. Indemnification by XBIO. XBIO will indemnify, hold harmless, and defend CLS, its Affiliates, and their respective directors, officers, employees and agents (the "CLS Indemnitees") from and against any and all damages, liabilities, costs, expenses and amounts paid in settlement (collectively, "Losses") incurred in connection with any Third Party claim arising out of or resulting from, directly or indirectly; (i) any breach of, or inaccuracy in, any representation or warranty made by XBIO in this Agreement, or any breach or violation of any term of this Agreement by XBIO; (ii) the gross negligence or willful misconduct of XBIO, its Affiliates and their respective Sublicensees, and their respective directors, officers, employees and agents; and (iii) the research, development, manufacture, commercialization, or use of Licensed Product by XBIO and its Affiliates and Sublicensees in the Territory under this Agreement. Notwithstanding the foregoing or anything in this Agreement to the contrary, XBIO will have no obligation to indemnify the CLS Indemnitees for any other Losses as to which CLS is obligated to indemnify XBIO under Section 9.2.

9.2. Indemnification by CLS. CLS will indemnify, hold harmless, and defend XBIO, its Affiliates and their respective directors, officers, employees and agents (the "XBIO Indemnitees") from and against any and all Losses incurred in connection with any Third Party Claim arising out of or resulting from, directly or indirectly, (i) any breach of, or inaccuracy in, any representation or warranty made by CLS in this Agreement, or any breach or violation of any term of this Agreement or the EIRGEN Agreement by CLS; (ii) the gross negligence or willful misconduct of any CLS Indemnitee; or (iii) the research, development, manufacture, commercialization, or use of Licensed Product by CLS or any of its Affiliates or licensees (other than XBIO) outside the Field. Notwithstanding the foregoing, or anything in this Agreement to the contrary, CLS will have no obligation to indemnify XBIO Indemnitees for any Losses as to which XBIO is obligated to indemnify CLS under Section 9.1.

9.3. Indemnification Procedure. In the event of any such claim against any XBIO Indemnitee or CLS Indemnitee (individually, an "Indemnitee"), the indemnified Party shall promptly notify the other Party in writing of the claim and the indemnifying Party shall manage and control, at its sole expense, the defense of the claim and its settlement. The indemnified Party will cooperate with the indemnifying Party and assist in good-faith the defense of the claim and its settlement and may, at the indemnifying Party's option and expense, be represented in any such action or proceeding. The indemnifying Party will not be liable for any settlements, litigation costs or expenses incurred by any Indemnitee without the indemnifying Party's prior written authorization. Notwithstanding the foregoing, if the indemnifying Party believes that any exceptions to its obligation of indemnification of the Indemnitees may apply, the indemnifying Party will promptly notify the Indemnitees, who shall then have the right to be represented in any such action or proceeding by separate counsel at their expense; provided that the indemnifying Party will be responsible for payment of such expenses if the Indemnitees are ultimately determined to be entitled to indemnification from the indemnifying Party.

9.4. Limitation of Liability. NEITHER PARTY HERETO WILL BE LIABLE FOR SPECIAL, INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES ARISING OUT OF THIS AGREEMENT OR THE EXERCISE OF ITS RIGHTS HEREUNDER, INCLUDING LOST PROFITS ARISING FROM OR RELATING TO ANY BREACH OF THIS AGREEMENT, REGARDLESS OF ANY NOTICE OF SUCH DAMAGES, EXCEPT AS A RESULT OF A PARTY'S WILLFUL MISCONDUCT. NOTHING IN THIS SECTION 9.4 IS INTENDED TO LIMIT OR RESTRICT THE INDEMNIFICATION RIGHTS OR OBLIGATIONS OF EITHER PARTY.

9.5. Insurance. During the Term and for a period of at least two (2) years after the last commercial sale of a Licensed Product in the Territory under this Agreement, XBIO will maintain insurance, with a reputable, insurer rated at least "A" by AmBest in an amount appropriate for its business and products of the type that are the subject of this Agreement, and for its obligations under this Agreement, including, commencing immediately prior to the first human clinical trial, product and clinical trial liability insurance of at least $2,000,000 per occurrence and $2,000,000 in the aggregate on a worldwide basis.

ARTICLE X
TERM AND TERMINATION

10.1. Term. This Agreement will become effective as of the Effective Date, and will continue in full force and effect on a country-by-country and Licensed Product-by-Licensed Product basis until terminated in accordance with this Article X ("Term"). Upon expiration of the Royalty Term in a country of the Territory (but not earlier termination of this Agreement) the Patent License granted to XBIO under Section 2.1(a) will convert to perpetual, fully paid-up, royalty-free licenses on a country-by-country and Licensed Product-by-Licensed Product basis with the same scope as set forth in such Section.

10.2. Termination for Convenience. XBIO will have the right to terminate this Agreement at any time and for any reason upon at least three (3) months' prior written notice to CLS.

10.3. Termination for Cause. This Agreement may be terminated at any time during the Term upon written notice by either Party if the other Party is in material breach of its obligations hereunder, and has not cured such material breach within sixty (60) days after written notice describing the nature of such material breach is provided to the breaching Party. Additionally, if XBIO ceases all development activities for a period of twelve (12) consecutive months, and does not cure such failure or cessation within sixty (60) days of receiving written notice thereof from CLS, then CLS will have the right to terminate this Agreement in its entirety by providing written notice of termination to XBIO.

10.4. CLS Termination. To the extent permitted by applicable law, CLS may terminate this Agreement upon written notice of termination to XBIO upon or after the filing of bankruptcy of XBIO or the making by XBIO of any assignment for the benefit of creditors.

10.5. Patent Challenge. CLS has the right to terminate this Agreement upon written notice to XBIO in the event that XBIO or any of its Affiliates or Sublicensees directly or indirectly challenges in a legal or administrative proceeding the patentability, enforceability or validity of any Licensed Patent or the scope or construction of any Valid Claim (each, a "Patent Challenge"); provided that this Section 10.5 will not apply to any such Patent Challenge that is first made by XBIO or any of its Affiliates or Sublicensees in defense of a claim of patent infringement brought by CLS or its Affiliates under the applicable Licensed Patent.

10.6. Effect of Termination.

(a) Pre-Termination Obligations; Transfer of Information and Filings. Upon the termination of this Agreement for any reason, nothing herein shall be construed to release either Party from any obligation that matured prior to the effective date of such termination. XBIO shall remain obligated to provide an accounting for and to pay royalties earned. Subject to Section10.1, in the event of termination, (i) the licenses granted hereunder shall terminate, and XBIO shall promptly assign to CLS all of XBIO's and its Affiliates' right, title and interest in and to the Joint Patent and any patent applications claiming priority thereto and/or any patents issuing thereon; (ii) XBIO shall have no further right under Licensed Patents or Licensed Know-how to develop, manufacture or market the Licensed Product or any product containing Licensed Product, or otherwise to use the Licensed Patents or Licensed Know How; (iii) all XBIO sublicenses shall be subject to CLS's obligation in Section 2.2(a); and (iv) all rights granted to XBIO hereunder shall revert to CLS for the benefit of CLS. Notwithstanding the foregoing, XBIO shall be entitled to sell any completed inventory of Licensed Product which remain on hand as of the date of the termination to the extent necessary to satisfy its contractual and legal obligations, so long as XBIO pays to CLS the royalties applicable to said subsequent sales in accordance with the terms and conditions as set forth in this Agreement; provided that no sales shall be permitted after the expiration of six (6) months after the date of termination. XBIO will execute all documents and take all such further actions, as may be reasonably requested by CLS in order to give effect to the preceding sentences as soon as practicable.

(b) Post-Termination Royalty by CLS. If this Agreement is terminated by CLS for cause in accordance with Section 10.3, or by XBIO for convenience in accordance with Section 10.2, then XBIO shall, at CLS's request, grant to CLS or CLS's designee a perpetual, non-exclusive license to use solely in the Field: (a) all governmental or regulatory correspondence, conversation logs, filings and approvals (including all Marketing Approvals and pricing and reimbursement approvals) owned or otherwise Controlled by XBIO and relating to the development, manufacture or commercialization of the Licensed Product in the Territory and all product trademarks then being used in connection with Licensed Product, other than XBIO corporate trademarks; and (b) all safety data and other adverse event data owned or otherwise Controlled by XBIO; with all rights granted subject to the terms of any subsequent sublicense XBIO entered into providing a Sublicensee rights to the property set forth in both (a) and (b) above. For purposes of clarity, if the Sublicensee has exclusive rights to the property set forth in (a) and (b) above, then CLS shall have not right to sublicense those rights to a third-party, nor shall CLS have a right to use such property set forth in (a) and (b) above for its own development or commercial purposes. In exchange for the license set forth in this Section 10.6(b), CLS shall pay to XBIO an amount equal to on a quarterly basis, [***] of all proceeds received by CLS or any of its Affiliates, successors, or assigns arising from or relating to any Licensed Product, Licensed Patent, or Licensed Know-how.

10.7. Survival. Any expiration or termination of this Agreement will be without prejudice to the rights of either Party against the other accrued or accruing under this Agreement prior to expiration or termination, including payment obligations arising prior to such expiration or termination. The provisions of Sections 2.4(a) and 5.6, and Articles V, VIII, VIII, IX and X will survive any expiration or termination of this Agreement and all other provisions contained in this Agreement that by their explicit terms survive expiration or termination of this Agreement, will survive. Except as set forth in this Article X, upon termination or expiration of this Agreement all other rights and obligations of the Parties under this Agreement terminate.

ARTICLE XI
DISPUTE RESOLUTION

11.1. Continuance of Rights and Obligations During Pendency of Dispute Resolution. If there are any disputes in connection with this Agreement, including disputes related to termination of this Agreement under Article X, all rights and obligations of the Parties shall continue until such time as any dispute has been resolved in accordance with the provisions of this Article XI.

11.2. Referral of Unresolved Matters to Senior Executives. In the event that the Parties are unable to resolve a dispute within twenty-five (25) days from the date such dispute is first brought to the other Party's attention, the matter shall be referred to a senior executive of each Party to be resolved by negotiation in good faith as soon as is practicable but in no event later than thirty (30) days after referral.

11.3. Arbitration. Any dispute, controversy or claim arising out of or relating to this Agreement during the preclinical and clinical trial development of a Licensed Product which the Parties have not resolved under Section 11.2, will be decided by arbitration in accordance with the Rules of the Conflict Prevention and Resolution Institute ("CPR") in effect at the time the dispute arises, unless the Parties hereto mutually agree otherwise. To the extent such rules are inconsistent with this provision, this provision will control. The following rules will apply to any such arbitration:

(a) Any demand for arbitration must be made in writing to the other Party.

(b) There will be three arbitrators, one of whom shall be appointed by each party and a third of whom shall be the chairman of the panel and be appointed by mutual agreement of the two arbitrators appointed by the Parties, and with the mutual written consent of the Parties, with such consent not to be unreasonably withheld. If the two arbitrators cannot agree on the appointment of the third arbitrator within thirty (30) days, then the CPR shall select the arbitrator, who shall be approved following the mutual written consent of the Parties, with such consent not to be unreasonably withheld. Any arbitration involving patent rights, other intellectual property rights or intellectual property will be heard by arbitrators who are expert in such areas.

(c) The arbitration will be held in the State of Delaware, or such other place as the Parties agree. The arbitrators will apply the substantive law of the Delaware.

(d) Neither Party will have the right independently to seek recourse from a court of law or other authorities in lieu of arbitration, but each Party has the right before or during the arbitration to seek and obtain from the appropriate court provisional remedies to avoid irreparable harm, maintain the status quo or preserve the subject matter of the arbitration. There shall be a stenographic record of the proceedings. The decision of the arbitrators will be final and binding upon both Parties. The arbitrators will render a written opinion setting forth findings of fact and conclusions of law.

(e) The expenses of the arbitration will be borne by the Parties in proportion as to which each Party prevails or is defeated in arbitration. Each Party will bear the expenses of its counsel and other experts.

11.4. Litigation. Any dispute, controversy or claim arising out of or relating to this Agreement following approval of a Licensed Product, which the Parties have not resolved under Section 11.2, will be decided by a court of the appropriate jurisdiction in the State of Delaware.

11.5. Equitable Relief. Notwithstanding anything to the contrary, each of the Parties hereby acknowledges that a breach of their respective obligations under this Agreement may cause irreparable harm and that the remedy or remedies at law for any such breach may be inadequate. Each of the Parties hereby agrees that, in the event of any such breach, in addition to all other available remedies hereunder, the non-breaching Party shall have the right, through the arbitration process described in Section 11.3, to seek equitable relief to enforce the provisions of this Agreement.

ARTICLE XII
MISCELLANEOUS

12.1. Governing Law and Jurisdiction. The validity, construction and performance of this Agreement will be governed by and construed in accordance with the substantive laws of the State of Delaware excluding any conflicts or choice of law rule or principle that might otherwise refer construction or interpretation of this Agreement to the substantive law of another jurisdiction.

12.2. Force Majeure. Except for each Party's confidentiality and indemnity obligations, the obligations of either Party under this Agreement shall be excused during each period of delay caused by matters such as acts of God, pandemics, epidemics, strikes, supplier delays, failure of utilities or common carriers, shortages of raw materials, government orders, sufferance of or voluntary compliance with acts of government or governmental regulation, or acts of war or terrorism, which are reasonably beyond the control of the Party obligated to perform. Force majeure shall not include a lack of funds, bankruptcy or other financial cause or disadvantage, and force majeure shall not excuse or delay any Party's payment obligations under this Agreement. Nothing contained in this Agreement shall affect either Party's ability or discretion regarding any strike or other employee dispute or disturbance and all such strikes, disputes or disturbances shall be deemed to be beyond the control of such Party. A condition of force majeure shall be deemed to continue only so long as the affected Party shall be taking all reasonable actions necessary to overcome such condition. If either Party shall be affected by a condition of force majeure, such Party shall give the other Party prompt notice thereof, which notice shall contain the affected Party's estimate of the duration of such condition and a description of the steps being taken or proposed to be taken to overcome such condition of force majeure. Any delay occasioned by any such cause shall not constitute a default, breach or failure under this Agreement, and the obligations of the Parties shall be suspended during the period of delay so occasioned. During any period of force majeure, the Party that is not directly affected by such condition of force majeure may take any reasonable action necessary to mitigate the effects of such condition of force majeure.

12.3. Further Assurances. Each Party hereto agrees to perform such acts, execute such further instruments, documents or certificates, and provide such cooperation in proceedings and actions as may be reasonably requested by the other Party in order to carry out the intent and purpose of this Agreement.

12.4. Notices. Any notice required or permitted to be given under this Agreement will be in writing and will be deemed to have been properly given if delivered in person by an internationally recognized overnight courier, or by fax (and promptly confirmed by overnight courier), to the addresses given below or such other addresses as may be designated in writing by the Parties from time to time during the Term.

In the case of CLS:

CLS Therapeutic Limited
PO Box 175, Frances House,
Sir William Place, St Peter Port
Guernsey, Channel Islands
GY1 4HQ
Attention: Mrs. Anne Le Cheminant
Facsimile: +44 (0) 1481 722674
Email: AnneLeCheminant@equiomgroup.com

With a copy to:

CLS Therapeutics, Inc.
Attn: Chief Executive Officer
101 6th Avenue, Floor 3
New York, NY 10013, U.S.A.

In the case of XBIO:

Xenetic Biosciences, Inc.
40 Speen Street, Suite 102
Framingham, Massachusetts 01701
Attn: Chief Executive Officer
Email: j.eisenberg@xeneticbio.com

With a copy to:

Holland & Knight LLP
701 Brickell Avenue, Suite 3300
Miami, FL 33131
Attention: Danielle Price, Esq.
Email: danielle.price@hklaw.com

12.5. Assignment. This Agreement may not be assigned or otherwise transferred by either Party, without the written consent of the other Party such consent not to be unreasonably withheld, conditioned or delayed; provided, however, that either Party may, without such consent, assign this Agreement, in whole or in part, (i) to any of its Affiliates, and (ii) to a Third Party successor or purchaser of all or substantially all of its business or assets to which this Agreement relates, whether in a merger, sale of stock, sale of assets or other similar transaction, provided that, the Third Party successor or purchaser provides written notice to the other Party that such Third Party agrees to be bound by the terms of this Agreement. Any purported assignment in violation of this Section 12.5 will be void. Any permitted assignee shall assume all obligations of its assignor under this Agreement.

12.6. Affiliate Performance. Any obligation of XBIO or CLS under or pursuant to this Agreement may be satisfied, met or fulfilled, in whole or in part, either by XBIO or CLS directly or by any Affiliate or Sublicensee of either party.

12.7. Amendment. The Parties hereto may amend, modify or alter any of the provisions of this Agreement, but only by a written instrument duly executed by both Parties hereto.

12.8. Entire Agreement. This Agreement, along with all schedules and exhibits attached hereto, contains the entire understanding of the Parties with respect to the subject matter hereof and supersedes all prior agreements, whether written or oral. Each Party confirms that it is not relying on any representations, warranties or covenants of the other Party except as specifically set out in this Agreement.

12.9. No Benefit to Third Parties. The provisions of this Agreement are for the sole benefit of the Parties and their successors and permitted assigns, and they shall not be construed as conferring any rights in any other person or entity.

12.10. Waiver. The failure of a Party to enforce at any time for any period any of the provisions of this Agreement will not be construed as a waiver of such provisions or of the rights of such Party thereafter to enforce each such provision.

12.11. No Implied Licenses. Except as expressly and specifically provided under this Agreement, the Parties agree that neither Party is granted any implied rights to or under any of the other Party's current or future patents, trade secrets, copyrights, moral rights, trade or service marks, trade dress, or any other intellectual property rights.

12.12. Relationship of the Parties. The Parties agree that their relationship established by this Agreement is that of independent contractors. Furthermore, the Parties agree that this Agreement does not, is not intended to, and shall not be construed to, establish a partnership or joint venture, and nor shall this Agreement create or establish an employment, agency or any other relationship. Except as may be specifically provided in this Agreement, neither Party shall have any right, power or authority, nor shall they represent themselves as having any authority to assume, create or incur any expense, liability or obligation, express or implied, on behalf of the other Party, or otherwise act as an agent for the other Party for any purpose.

12.13. Severability. If any provision of this Agreement is held unenforceable by a court or tribunal of competent jurisdiction in a final unappealable order because it is invalid or conflicts with any law of any relevant jurisdiction, then such provision will be inoperative in such jurisdiction and the remainder of this Agreement shall remain binding upon the Parties hereto.

12.14. Interpretation.

(a) General. Unless the context of this Agreement otherwise requires, (a) words of one gender include the other gender; and (b) words using the singular or plural number also include the plural or singular number, respectively. Whenever this Agreement refers to a number of days, unless otherwise specified, such number shall refer to Calendar Days.

(b) Other Definitional and Agreement References. References to any agreement, contract, statute, act, or regulation are to that agreement, contract, statute, act, or regulation as amended, modified or supplemented from time to time in accordance with the terms hereof and thereof.

(c) Capitalization. Any capitalized terms used in any Exhibit or Schedule but not otherwise defined therein, shall have the meaning as defined in this Agreement.

(d) Date References. References from or through any date mean, unless otherwise specified, from and including or through and including, respectively.

(e) Schedules and Exhibits. All Schedules and Exhibits annexed hereto or referred to herein are hereby incorporated in and made a part of this Agreement as if set forth in full herein.

(f) Person References. References to any Person include the successors and permitted assigns of that Person.

(g) References to Parts of this Agreement. References to Articles, Sections, Schedules, and Exhibits are to Articles, Sections, Schedules, and Exhibits of this Agreement unless otherwise specified.

(h) Other Definitional and Interpretative Provisions. The words “hereof”, “herein” and “hereunder” and words of like import used in this Agreement shall refer to this Agreement as a whole and not to any particular provision of this Agreement. Whenever the words “include”, “includes” or “including” are used in this Agreement, they shall be deemed to be followed by the words “without limitation”, whether or not they are in fact followed by those words or words of like import. The word “or” is used in the inclusive sense (and/or). “Writing”, “written” and comparable terms refer to printing, typing and other means of reproducing words (including electronic media) in a visible form.

(i) Headings. The Article and Section headings contained in this Agreement are for reference purposes only and shall not affect in any way the meaning or interpretation of this Agreement.

(j) Expenses. Except as otherwise expressly provided in this Agreement, each Party shall pay the fees and expenses of its respective lawyers and other experts and all other expenses and costs incurred by such Party incidental to the negotiation, preparation, execution and delivery of this Agreement.

12.15. Further Assurances. Each Party agrees to execute, acknowledge and deliver such further documents and instruments and do any other acts, from time to time, as may be reasonably necessary, to effectuate the purposes of this Agreement.

12.16. Counterparts. This Agreement may be executed in any number of counterparts (including by facsimile or electronic signature, including DocuSign), each of which shall be deemed an original, but all of which together shall constitute one and the same document.

[Signature Page Follows]

IN WITNESS WHEREOF, XBIO and CLS have caused this Agreement to be duly executed by their authorized representatives under seal, in duplicate on the Effective Date.

CLS Therapeutics Ltd.

By: /s/ Trevor Pinchemain
Name: Trevor Pinchemain

By: /s/ Jodi Lanlois
Name: Jodi Langlois

Authorised Signatories of Equiom (Guernsey) Limited as Authorised Signatories of Virtus Directors Limited director of CLS Therapeutics Ltd.

Xenetic Biosciences, Inc.

By: /s/ Jeffrey Eisenberg

Name: Jeffrey Eisenberg

Title: Chief Executive Officer

Exhibit A

Licensed Patents

[***]

Exhibit B

Licensed Know-how

[***]

Exhibit C

[***]

Exhibit 10.3

THE SECURITIES HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933 OR THE SECURITIES LAWS OF ANY STATE OR ANY OTHER JURISDICTION. THERE ARE FURTHER RESTRICTIONS ON THE TRANSFERABILITY OF THE SECURITIES DESCRIBED HEREIN. THE PURCHASE OF THE SECURITIES INVOLVES A HIGH DEGREE OF RISK AND SHOULD BE CONSIDERED ONLY BY PERSONS WHO CAN BEAR THE RISK OF THE LOSS OF THEIR ENTIRE INVESTMENT.

XENETIC BIOSCIENCES, INC.

FORM OF SUBSCRIPTION AGREEMENT

APRIL 26, 2022

This Subscription Agreement (this "Agreement"), made this 26th day of April, 2022 (the "Effective Date"), is by and between Xenetic Biosciences, Inc., a Nevada corporation, with offices located at 40 Speen St., Suite 102, Framingham, MA 01701 (the "Company"), and CLS Therapeutics LTD, a company organized under the laws of Guernsey with principal offices located at of PO Box 175, Frances House, Sir William Place, St Peter Port, Guernsey, GY1 4HQ, UK ("CLS"). Each of the Company and CLS are sometimes referred to herein as a "Party" and collectively as the "Parties." When used in this Agreement, the terms "we," "our," "ours" and "us" refer to the Company.

WHEREAS, CLS owns or controls certain patent rights and know-how related to the use of Deoxyribonuclease enzyme for treatment of cancer;

WHEREAS, the Parties are entering into that certain Exclusive [License/Sublicense] Agreement, dated on or about the Effective Date (the "License Agreement"), pursuant to which CLS shall grant to the Company, and the Company shall obtain from CLS, an exclusive [license/sublicense] under such patent rights and to such know-how to develop and commercialize pharmaceutical products and methods incorporating Deoxyribonuclease enzyme (the "[License/Sublicense]"); and

WHEREAS, pursuant to the License Agreement, as partial consideration for the [License/Sublicense], the Company wishes to grant to CLS, and CLS wishes to receive, shares of common stock of the Company on the terms and subject to the conditions set forth in this Agreement.

NOW, THEREFORE, in consideration of the premises, mutual promises and covenants contained in this Agreement, and for other good and valuable consideration, the sufficiency of which is hereby acknowledged, the Parties hereto hereby agree as follows:

1. Issuance of Shares of Common Stock.

1.1 Common Stock Issuance. Subject to the terms and conditions contained in this Agreement, effective as of the Effective Date, the Company agrees to issue and deliver to CLS, and CLS agrees to accept, [ ] shares of the Company's common stock (the "Shares") as partial consideration for the [License/Sublicense] as set forth in the License Agreement.

1.2 Closing. The Company shall issue the Shares to CLS on the Effective Date. CLS acknowledges that the Shares will be subject to restrictions on transfer as set forth in this Agreement.

2. Representations and Warranties of CLS.

2.1 Investment Representations. The offering and sale of the Shares is intended to be exempt from registration under the Securities Act of 1933, as amended (the "Securities Act"), by virtue of Section 4(a)(2) of the Securities Act and the provisions of Regulation D promulgated thereunder. In furtherance thereof, CLS represents and warrants to the Company as follows:

(a) All assumptions and projections set forth in any material provided to CLS have been included therein for purposes of illustration only, and no assurance is given that actual results will correspond with the results contemplated by the various assumptions set forth therein;

(b) The statements and information set forth in the Investor Questionnaire attached hereto as Exhibit A are true, accurate and complete. All information which CLS has provided to the Company concerning CLS and its financial position is correct and complete as of the date set forth below, and if there should be any change in such information prior to its acceptance as a security holder of the Company, CLS will immediately provide such information to the Company and will promptly send confirmation of such information to the Company;

(c) CLS has been duly authorized and is duly qualified to (i) execute and deliver this Agreement and all other instruments executed and delivered on behalf of such corporation in connection herewith and (ii) receive and hold the Shares. The signature of CLS is binding upon the corporation and CLS has not been formed for the specific purpose of acquiring shares of the Company's common stock;

(d) CLS recognizes that an investment in the Company involves substantial risks and represents that it has taken full cognizance of and understands all of the risks related to the Shares, as set forth in the Risk Factors section of the Company's Annual Report on Form 10-K and in its other filings with the Securities and Exchange Commission from time to time, all of which are publicly available and CLS has reviewed, or has been given the opportunity to review all such risks;

(e) CLS and its representatives have undertaken such investigation and have been provided with and have evaluated such documents and information as they deem necessary to enable them to make an informed and intelligent decision with respect to the execution, delivery and performance of this Agreement and the transactions contemplated hereby. CLS and its representatives have received all materials relating to the business of the Company that they have requested and have been afforded the opportunity to obtain any additional information necessary to verify the accuracy of any such information or of any representation or warranty made by the Company hereunder or to otherwise evaluate the merits of the transactions contemplated hereby. CLS acknowledges that the Company has given CLS (i) open access to the key employees, and (ii) the opportunity to ask questions concerning the business of the Company or otherwise relating to the transactions contemplated hereby, which questions have been answered to the CLS's satisfaction. Without limiting the generality of the foregoing, CLS acknowledges that (a) the Company does not make any representation or warranty with respect to (i) any projections, estimates or budgets delivered to or made available to CLS of future revenue, future results of operations (or any component thereof), future cash flows or future financial condition (or any component thereof) of the Company or the future business and operations of the Company or (ii) any other information or documents made available to CLS or its counsel, accountants, advisors or other representatives with respect to the Company or its businesses, assets, liabilities or operations, except as expressly set forth in this Agreement, and (b) CLS has not relied and will not rely upon any of the information described in subclauses (i) and (ii) of clause (a) above in executing, delivering and performing this Agreement and the transactions contemplated hereby, provided, however, that nothing in the Agreement or the certificate shall impair any claim based on fraud; and

(f) CLS understands and agrees that, (i) in accordance with the Securities Act and the rules and regulations promulgates thereunder, including Rule 144 under the Securities Act ("Rule 144"), the Shares have not been and are not being registered under the Securities Act or any state securities laws, and shall bear the restrictive legend set forth below, and shall be issued to CLS in reliance on the applicable exemption from registration under the Securities Act, and may not be offered for sale, sold, assigned or transferred unless (A) subsequently registered thereunder or (B) an exemption exists permitting such Shares to be sold, assigned or transferred without such registration; (ii) any sale of the Shares made in reliance on Rule 144 may be made only in accordance with the terms of Rule 144 (including the requisite holding period prescribed by Rule 144) and further, if Rule 144 is not applicable, any resale of the Shares under circumstances in which the seller (or the person through whom the sale is made) may be deemed to be an underwriter (as that term is defined in the Securities Act) may require compliance with some other exemption under the Securities Act or the rules and regulations thereunder; and (iii) neither the Company nor any other person is under any obligation to register the Shares under the Securities Act or any state securities laws or to comply with the terms and conditions of any exemption thereunder:

> THE SECURITIES REPRESENTED BY THIS CERTIFICATE HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, OR APPLICABLE STATE SECURITIES LAWS. THE SECURITIES MAY NOT BE OFFERED FOR SALE, SOLD, TRANSFERRED OR ASSIGNED (I) IN THE ABSENCE OF (A) AN EFFECTIVE REGISTRATION STATEMENT FOR THE SECURITIES UNDER THE SECURITIES ACT OF 1933, AS AMENDED, OR APPLICABLE STATE SECURITIES LAWS, OR (B) AN OPINION OF COUNSEL, IN A REASONABLY ACCEPTABLE FORM, THAT REGISTRATION IS NOT REQUIRED UNDER SAID ACT OR APPLICABLE STATE SECURITIES LAWS, OR (II) UNLESS SOLD PURSUANT TO RULE 144 UNDER SAID ACT.

3. Representations and Warranties of the Company.

3.1 SEC Reports. The Company has filed all reports, schedules, forms, statements and other documents required to be filed by the Company under the Securities Act, and the Securities Exchange Act of 1934, as amended (the "Exchange Act"), including pursuant to Section 13(a) or 15(d) thereof, for the two years preceding the date hereof (or such shorter period as the Company was required by law or regulation to file such material) (the foregoing materials, including the exhibits thereto and documents incorporated by reference therein, being collectively referred to herein as the "SEC Reports") on a timely basis or has received a valid extension of such time of filing and has filed any such SEC Reports prior to the expiration of any such extension. As of their respective dates, the SEC Reports complied in all material respects with the requirements of the Securities Act and the Exchange Act, as applicable, and none of the SEC Reports, when filed, contained any untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading. The Company has never been an issuer subject to Rule 144(i) under the Securities Act.

3.2 Listing. As of the date hereof, the Company's common stock is registered pursuant to Section 12(b) or 12(g) of the Exchange Act, and the Company has taken no action designed to, or which to its knowledge is likely to have the effect of, terminating the registration of the Company's common stock under the Exchange Act nor has the Company received any notification that the Securities and Exchange Commission is contemplating terminating such registration. The Company has not, in the 12 months preceding the date hereof, received notice from the Nasdaq Stock Market to the effect that the Company is not in compliance with the listing or maintenance requirements of such trading market. As of the date hereof, the Company is in compliance with all such listing and maintenance requirements. As of the date hereof, the Company's common stock is currently eligible for electronic transfer through the Depository Trust Company or another established clearing corporation and the Company is current in payment of the fees to the Depository Trust Company (or such other established clearing corporation) in connection with such electronic transfer.

4. Representations and Warranties of the Parties.

4.1 Anti-Money Laundering and Office of Foreign Assets Control Sanctions and Representations. *The Parties should check the Office of Foreign Assets Control ("OFAC") website at* ***http://www.treas.gov/ofac*** *before making the following representations:*

(a) Each Party represents and warrants that none of: (a) the Party; (b) any person or entity controlling or controlled by the Party; (c) any person or entity having a beneficial interest in the Party; or (d) any person or entity for whom or which the Party is acting as agent or nominee in connection with this investment, is a country, territory, entity, or person named on the OFAC List of Specially Designated Nationals and Blocked Persons, OFAC's Sectoral Sanctions Identification List, or any other restricted party list maintained by OFAC, nor a Sanctioned Country or a person or entity acting for or on behalf of any sanctioned countries and territories, including individuals and entities in those countries. Each Party agrees to promptly notify the other should such Party become aware of any change in the information set forth in any of the Party's representations in this Agreement or any documentation to be executed by the Party in connection with this Agreement.

(b) Each Party represents and warrants that none of: (a) the Party; (b) any person or entity controlling or controlled by the Party; (c) any person or entity having a beneficial interest in the Party; or (d) any person or entity for whom the Party is acting as an agent or nominee in connection with this investment is a senior foreign political figure,[1] or any immediate family member[2] or close associate[3] of a senior foreign political figure, as such terms are defined in the footnotes below; and

(c) If any Party is affiliated with a non-U.S. banking institution (a "Foreign Bank") or if such Party receives deposits from, makes payments on behalf of, or handles other financial transactions related to a Foreign Bank, each such Party represents and warrants to the other that: (a) the Foreign Bank has a fixed address, and not solely an electronic address, in a country in which the Foreign Bank is authorized to conduct banking activities; (b) the Foreign Bank maintains operating records related to its banking activities; (c) the Foreign Bank is subject to inspection by the banking authority that licensed the Foreign Bank to conduct its banking activities; and (d) the Foreign Bank does not provide banking services to any other Foreign Bank that does not have a physical presence in any country and that is not a regulated affiliate.

4.2 Authorization; Enforcement. Each Party represents and warrants on behalf of itself that: (i) such Party has the requisite corporate power and authority to enter into and to consummate the transactions contemplated by this Agreement and each of the other documents contemplated by this Agreement and otherwise to carry out its obligations hereunder and thereunder, (ii) the execution and delivery of this Agreement by such Party and the consummation by it of the transactions contemplated hereby and thereby have been duly authorized by all necessary action on the part of such Party and no further action is required by such Party, its board of directors or its stockholders in connection herewith or therewith, and (iii) this Agreement has been (or upon delivery will have been) duly executed by such Party and, when delivered in accordance with the terms hereof and thereof, will constitute the valid and binding obligation of such Party enforceable against such Party in accordance with its terms, except (i) as limited by general equitable principles and applicable bankruptcy, insolvency, reorganization, moratorium and other laws of general application affecting enforcement of creditors' rights generally, (ii) as limited by laws relating to the availability of specific performance, injunctive relief or other equitable remedies and (iii) insofar as indemnification and contribution provisions may be limited by applicable law.

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[1] A "senior foreign political figure" is defined as a senior official in the executive, legislative, administrative, military, or judicial branch of a foreign government (whether elected or not), a senior official of a major foreign political party, or a senior executive of a foreign government-owned corporation. In addition, a "senior foreign political figure" includes any corporation, business, or other entity that has been formed by, or for the benefit of, a senior foreign political figure.

[2] "Immediate family" of a senior foreign political figure typically includes such figure's parents, siblings, spouse, children, and in-laws.

[3] A "close associate" of a senior foreign political figure is a person who is widely and publicly known to maintain an unusually close relationship with such senior foreign political figure, and includes a person who is in a position to conduct substantial domestic and international financial transactions on behalf of such senior foreign political figure.

Each Party is entitled to rely upon the accuracy of the other Party's representations in this Agreement and all other representations made or to be made by such Party in any other documents executed by the Party in connection with this Agreement.

5. Survival of Representations and Warranties. The representations and warranties of each of the Parties set forth in this Agreement are true and accurate as of the date hereof and shall survive the Effective Date.

6. Indemnification. Each Party shall indemnify and hold harmless the other Party and its respective officers, employees, registered representatives, directors or control persons who was or is a party to, or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative, by reason of, or arising from any breach of the such Party's representations herein, against any losses, liabilities and expenses actually and reasonably incurred by the other Party or any of its respective officers, employees, registered representatives, directors or control persons (including reasonable attorneys' fees, judgments, fines and amounts paid in settlement) in connection with such action, suit or proceeding.

7. Legend Removal. Upon the request of CLS, the Company shall promptly remove the legend described in Section 2.1(f) (or instruct its transfer agent to so remove such legend) from the certificates or book-entry accounts evidencing the Shares issued and sold to CLS pursuant to this Agreement if (a) such Shares are sold or transferred pursuant to Rule 144, or (b) such Shares are eligible for sale under Rule 144, without the requirement for the Company to be in compliance with the current public information required under Rule 144(c)(1) as to such securities and without volume or manner of sale restrictions.

8. Miscellaneous.

8.1 This Agreement, including any exhibits hereto, and the License Agreement constitute the entire agreement among the Parties hereto with respect to the subject matter hereof and supersede any and all prior or contemporaneous representations, warranties, agreements and understandings in connection therewith. This Agreement may be amended only by a writing executed by all Parties hereto. This Agreement shall be binding upon each of the Parties, its heirs, estate, legal representatives, successors and assigns and shall inure to the benefit of each such Party and its successors and assigns. In the event that any provision of this Agreement is invalid or unenforceable under any applicable statute or rule of law, then such provision shall be deemed inoperative to the extent that it may conflict therewith and shall be deemed modified to conform with such statute or rule of law. Any provision hereof which may prove invalid or unenforceable under any law shall not affect the validity or enforceability of any other provision hereof. All pronouns and any variations thereof used herein shall be deemed to refer to the masculine, feminine, singular or plural as the identity of the person or persons may require. The failure of any Party to exercise any right or remedy under this Agreement, or any other agreement between the Parties, or otherwise, or delay in exercising such right or remedy, will not operate as a waiver thereof. No waiver by any Party will be effective unless and until it is in writing and signed by such Party.

8.2 Sections 10.3, 10.4, 10.5, 11.1, 11.3, 11.4, 11.5 and 11.9 of the License Agreement shall apply to this Agreement, mutatis mutandis, as if it had been fully set forth herein.

[Signature Page Follows]

SUBSCRIPTION AGREEMENT
SIGNATURE PAGE

The undersigned represents to Xenetic Biosciences, Inc., a company incorporated under the laws of the State of Nevada (the "Company"), that: (i) the information contained herein is complete and accurate on the date hereof and may be relied upon by the Company; (ii) the undersigned will notify the Company immediately of any change in any of such information occurring prior to the acceptance of the subscription and will promptly send to the Company written confirmation of such changes; and (iii) the undersigned has read and understands this Subscription Agreement.

NOW THEREFORE, the undersigned have executed this Subscription Agreement as of April 26, 2022, which may be executed in any number of counterparts (whether by original signature, facsimile or other electronic means, including .PDF), each of which shall be deemed an original, but such counterparts together shall constitute one and the same instrument.

CLS Therapeutics LTD

By: _____

Name: _____

Title: _____

Xenetic Biosciences, Inc.

By: _____

Name: Jeffrey Eisenberg

Title: Chief Executive Officer

EXHIBIT A

Investor Questionnaire

(See attached)

INVESTOR QUESTIONNAIRE

Xenetic Biosciences, Inc.
a Nevada corporation (the "Company")

Please Print or Type and Complete Fully

NOTE: If the investor is an individual, please complete this Investor Questionnaire from the perspective of the subscribing individual. If the investor is an entity, such as a corporation, please complete this Investor Questionnaire from the perspective of the subscribing entity, not the individual completing the questionnaire.

PART I GENERAL INFORMATION

1. Name of individual subscriber or subscribing entity: _____

2. Social Security No. or Taxpayer Identification No. _____

3. Type of Ownership (check appropriate box)

□ Individual	□ Trust
□ Corporation	□ Joint Tenants w/ Right of Survivorship
□ Partnership	□ Tenants in Common Other
□ LLC	□ Other

Note: Each joint tenant and tenant in common must sign and complete an entire Investor Questionnaire. Every other document must also be signed by each of them.

4. Marital Status:

5. Date of Birth or Formation of Entity:

6. Address (The address given must be the physical address. POST OFFICE BOXES AND OTHER ADDRESSES WILL NOT BE ACCEPTED.)

   Street Address: _____

   City, State & Zip Code: _____

7. Telephone Number: (__)_____

   Fax Number: (__)_____

8. Employment Information (if Individual):

(a) Employer Name: _____

(b) Business Street Address: _____

Business City, State & Zip Code:

Telephone Number: (__)_____

(c) Nature of Employer's Business: _____

(d) Title: _____

(e) Length of Employment: _____

9. State of Principal Residence (if Individual) or Place of Business (if Entity):

(a) Indicate your state of principal residence or place of business for the last two years:

_____

(b) Indicate your state of incorporation (if Entity): _____

(c) Do you have any intention of changing your present state of residence or place of business in the near future?

Yes ¨ No ¨

(d) If "Yes" please explain: _____

10. Are you an employee benefit plan within the meaning of ERISA?

Yes ¨ No ¨

11. I would prefer to be contacted at my: ¨ Home ¨ Business

12. I would prefer to have correspondence sent to my: ¨ Home ¨ Business

PART II INVESTOR KNOWLEDGE AND EXPERIENCE

1. Do you have sufficient knowledge and experience in financial and business matters so as to be capable of evaluating the merits and risks associated with investing in the Company?

Yes ¨ No ¨

2. Do you understand the nature of an investment in the Company and the risks associated with such an investment?

Yes ¨ No ¨

3. Do you understand that there is no guarantee of any financial return on this investment and that you run the risk of losing your entire investment?

Yes ¨ No ¨

4. Are you purchasing these securities for investment and not with the intent to resell them?

Yes ¨ No ¨

5. You have the right, will be afforded an opportunity, and are encouraged to investigate the Company and review relevant records and documents pertaining to the Company and its business and to ask questions, and receive answers, of a qualified representative of the Company regarding this investment and the operations and method of doing business of the Company.

   Have you conducted any such investigation, sought such documents or asked questions of a qualified representative of the Company regarding this investment and the operations and methods of doing business of the Company?

Yes ¨ No ¨

PART III ACCREDITED INVESTOR STATUS

I HEREBY ACKNOWLEDGE that the representations contained in this Part III are made for the purpose of qualifying me/the entity as an "Accredited Investor" as that term is defined in Regulation D under the Securities Act of 1933, as amended. I hereby represent that the statement or statements initialed or checked below are true and correct in all respects. I understand that a false representation may constitute a violation of law and that any person, including the Company or its directors or officers, who suffers damages as a result of a false representation may have a claim against me for damages.

For INDIVIDUAL Investors

Note: Please complete Question 1 below if the investor is an individual.

1. The undersigned individual represents and warrants that he/she is an Accredited Investor because (check each that applies):

¨ (a) I have an individual net worth, or joint net worth with my spouse, which exceeds $1,000,000. For purposes of this Part III of the Investor Questionnaire, "net worth" means the excess of total assets at fair market value (including personal and real property, but excluding the estimated fair market value of a natural person's primary residence) over total liabilities. Total liabilities excludes any mortgage on the primary residence in an amount of up to the residence's estimated fair market value as long as the mortgage was incurred more than 60 days before the Securities are purchased, but includes (i) any mortgage amount in excess of the residence's fair market value and (ii) any mortgage amount that was borrowed during the 60-day period before the closing date for the sale of Securities for the purpose of investing in the Securities.

¨ (b) I had individual income (exclusive of any income attributable to my spouse) of more than $200,000 in each of the two most recent calendar years, and I reasonably expect to have individual income in excess of $200,000 in the current calendar year. For purposes of this Part III of the Investor Questionnaire, "individual income" means adjusted gross income, as reported for Federal income tax purposes, less any income attributable to a spouse or to property owned by a spouse.

¨ (c) My spouse and I had joint income of more than $300,000 in each of the two most recent calendar years, and we reasonably expect to have joint income in excess of $300,000 in the current calendar year.

¨ (d) I am a director or executive officer of the Company. For purposes of this Item III of the Investor Questionnaire, "executive officer" means the president, any vice president in charge of a principal business unit, division or function (such as sales, administration or finance), or any other person who performs a policymaking function, or person who performs similar policymaking functions for the Company.

For ENTITY Investors

Note: Please complete Questions 2-3 below if the investor is an entity.

2. The undersigned entity represents and warrants that it is an Accredited Investor because it is (check each that applies):

¨ (a) A bank, as defined in Section 3(a)(2) of the Securities Act of 1933, as amended (the "1933 Act").

¨ (b) A savings and loan association or other institution, as defined in Section 3(a)(5)(A) of the 1933 Act.

¨ (c) A broker or dealer registered under the Section 15 of the Securities Exchange Act of 1934, as amended (the "1934 Act").

¨ (d) An insurance company, as defined in Section 2(a)(13) of the 1933 Act.

¨ (e) An investment company registered under the Investment Company Act of 1940, as amended (the "1940 Act"), or a business development company as defined in Section 2(a)(48) of the 1940 Act.

¨ (f) A Small Business Investment Company licensed by the U.S. Small Business Administration under Section 301(c) or (d) of the Small Business Investment Act of 1958.

¨ (g) A plan established and maintained by a state, its political subdivisions, or any agency or instrumentality of a state or its political subdivisions, for the benefit of its employees, that has total assets in excess of $5,000,000.

¨ (h) An employee benefit plan within the meaning of the Employee Retirement Income Security Act of 1974 ("ERISA"), and either (i) investment decisions are made by a plan fiduciary, as defined in Section 3(21) of ERISA, which is either a bank, insurance company, or registered investment adviser, (ii) the employee benefit plan has total assets in excess of $5,000,000, or (iii) if a self-directed plan, investment decisions are made solely by persons that qualify as accredited investors either under this paragraph 2 or paragraph 1.

¨ (i) A private business development company, as defined in Section 202(a)(22) of the Investment Advisers Act of 1940.

¨ (j) Any organization described in section 501(c)(3) of the Internal Revenue Code, corporation, Massachusetts or similar business trust, or partnership, not formed for the specific purpose of acquiring the securities offered, with total assets in excess of $5,000,000.

¨ (k) A trust, with total assets in excess of $5,000,000, not formed for the specific purpose of acquiring the securities offered, and whose purchase is directed by a person who has such knowledge and experience in financial and business matters that he or she is capable of evaluating the merits and risks of purchasing the shares.

¨ (l) An entity in which **all of the equity owners individually qualify as Accredited Investors**. **NOTE: If this box is checked each equity owner must complete a separate Investor Questionnaire as an individual**.

3. Please mark either (a) or (b) with an "X."

_____ (a) The undersigned was not organized or reorganized for the purpose of acquiring the securities offered and has total assets in excess of $5,000,000; or

_____ (b) If the undersigned was organized or reorganized for the purpose of acquiring the securities offered, or the entity does not have total assets in excess of $5,000,000, the number of stockholders, partners, members or other owners, direct or indirect, of the undersigned is and all such stockholders, members, partners or other equity owners qualify as Accredited Investors, either under Part III(1) or III(2). If the undersigned has marked this paragraph, please fill in the blank.

PART IV NON-FOREIGN STATUS

(a) The undersigned is a United States citizen and is not a nonresident alien for purposes of income taxation (as such term is defined in the Internal Revenue Code of 1986, as amended).

_____ True _____ False

(b) The undersigned is not a foreign corporation, foreign company, foreign trust or foreign estate (as such term is defined in the Internal Revenue Code of 1986, as amended).

_____ True _____ False

Note: If at any time any statement in this Part IV shall no longer be true, the undersigned shall promptly notify the Company. The undersigned understands that the information contained in this Part IV may be disclosed to the Internal Revenue Service by the Company and that any false statement contained in this Part IV could be punished by fine, imprisonment or both.

PART V FOR NON-U.S. PERSONS

Note: Please indicate with an "X" each of the following statements, to the extent that they are correct, in order to permit the Company to determine if the investor qualifies as a non-U.S. Person as that term is defined in Appendix A attached hereto and in Rule 902 of Regulation S promulgated under the Securities Act of 1933, as amended.

(a) The undersigned is a non-U.S. Person (as that term is defined in Appendix A attached hereto).

_____ True _____ False

i. Country of Residence or Organization/Incorporation _____

(b) The undersigned is not purchasing securities of the Company for the account or benefit of any U.S. person as that term is defined in Appendix A attached hereto and in Rule 902 of Regulation S promulgated under the Securities Act of 1933, as amended.

_____ True _____ False

(c) The undersigned agrees to resell any of the Company's securities in accordance with Regulation S, pursuant to a registration statement or other exemption under the Securities Act.

_____ True _____ False

(d) The undersigned agrees to not conduct a hedging transaction involving any of the Company's securities, unless in compliance with the securities laws.

_____ True _____ False

PART VI MISCELLANEOUS MATTERS

No part of the funds used by the undersigned to satisfy his, her or its investment constitutes or will constitute assets of any "employee benefit plan" within the meaning of Section 3(3) of the Employee Retirement Income Security Act of 1974, as amended, or other "benefit plan investor" (as defined in U.S. Department of Labor Reg. Section 2510.3-101 *et seq,* as amended) or assets allocated to any insurance company separate account or general account in which any such employee benefit plan or benefit plan investor (or related trust) has any interest.

_____ True _____ False

[Remainder of page intentionally left blank]

[Signatures on following page]

SIGNATURE PAGE

The undersigned hereby certifies, represents and warrants that all of the answers, statements and information set forth in this Investor Questionnaire are true and correct on the date hereof and will be true and correct as of the date, if any, the Subscription Agreement with which this Investor Questionnaire is associated is accepted by the Company. The undersigned hereby agrees to provide such additional information as requested by the Company.
Dated: April 26, 2022

CLS Therapeutics Ltd

Signature: _____
Name: _____
Title: _____

Appendix A

U.S. person.

1. "U.S. person" means:

    a. Any natural person resident in the United States;

    b. Any partnership or corporation organized or incorporated under the laws of the United States;

    c. Any estate of which any executor or administrator is a U.S. person;

    d. Any trust of which any trustee is a U.S. person;

    e. Any agency or branch of a foreign entity located in the United States;

    f. Any non-discretionary account or similar account (other than an estate or trust) held by a dealer or other fiduciary for the benefit or account of a U.S. person;

    g. Any discretionary account or similar account (other than an estate or trust) held by a dealer or other fiduciary organized, incorporated, or (if an individual) resident in the United States; and

    h. Any partnership or corporation if:

        1. Organized or incorporated under the laws of any foreign jurisdiction; and

        2. Formed by a U.S. person principally for the purpose of investing in securities not registered under the Securities Act of 1933, as amended, unless it is organized or incorporated, and owned, by accredited investors (as defined in Rule 501(a)) who are not natural persons, estates or trusts.

2. The following are not "U.S. persons":

    a. Any discretionary account or similar account (other than an estate or trust) held for the benefit or account of a non-U.S. person by a dealer or other professional fiduciary organized, incorporated, or (if an individual) resident in the United States;

    b. Any estate of which any professional fiduciary acting as executor or administrator is a U.S. person if:

        1. An executor or administrator of the estate who is not a U.S. person has sole or shared investment discretion with respect to the assets of the estate; and

2. The estate is governed by foreign law;

c. Any trust of which any professional fiduciary acting as trustee is a U.S. person, if a trustee who is not a U.S. person has sole or shared investment discretion with respect to the trust assets, and no beneficiary of the trust (and no settlor if the trust is revocable) is a U.S. person;

d. An employee benefit plan established and administered in accordance with the law of a country other than the United States and customary practices and documentation of such country;

e. Any agency or branch of a U.S. person located outside the United States if:

1. The agency or branch operates for valid business reasons; and

2. The agency or branch is engaged in the business of insurance or banking and is subject to substantive insurance or banking regulation, respectively, in the jurisdiction where located; and

f. The International Monetary Fund, the International Bank for Reconstruction and Development, the Inter-American Development Bank, the Asian Development Bank, the African Development Bank, the United Nations, and their agencies, affiliates and pension plans, and any other similar international organizations, their agencies, affiliates and pension plans.

Exhibit 10.4

CERTAIN INFORMATION IDENTIFIED IN THIS DOCUMENT, MARKED BY BRACKETS AND ASTERISKS ("[***]"), HAS BEEN EXCLUDED PURSUANT TO ITEM 601(B)(10) OF REGULATION S-K UNDER THE SECURITIES ACT OF 1933, AS AMENDED, BECAUSE IT IS (I) NOT MATERIAL AND (II) WOULD LIKELY CAUSE COMPETITIVE HARM TO THE REGISTRANT IF PUBLICLY DISCLOSED.

Xenetic Biosciences, Inc.

SOW: QTE-9206256_XNT_23DEC2021.v5_PD to 500L GMP
PRODUCT NAME: Human DNase I
DATE: June 28, 2022
[***]

Xenetic Biosciences, Inc.		**Catalent Pharma Solutions, LLC**	
/s/ Jeffrey Eisenberg		/s/ Scott Schultz	
Signature	Date June 30, 2022	Signature	Date June 30, 2022
		Scott Schultz	
Printed Name		Printed Name	
Jeffrey Eisenberg		General Manager	
Title		Title	
Chief Executive Officer			

PO Number (if applicable)

This Statement of Work (SOW) is valid for 30 days from the date hereof and becomes binding if signed and delivered by both parties during that period. Until the execution of a Master Services Agreement ("MSA"), the Catalent-Biologics Standard Terms and Conditions (the "Catalent Terms") attached to this SOW as Addendum A shall apply to this SOW. In the event of any conflict between this SOW and the Catalent Terms, the Catalent Terms shall govern. Upon the execution of the MSA, (I) the Catalent Terms will be (a) superseded by the MSA, (b) null and void, and (c) all activities related to the Project will thereafter be governed by and solely subject to the MSA and (II) in the event of any conflict between these Project-Specific Terms and the MSA, the MSA shall govern. Notwithstanding anything to the contrary in this SOW, Catalent shall not be required to initiate any CGMP manufacturing activities under this SOW until the parties execute an MSA. Client hereby authorizes Catalent to perform the tasks and activities, including the services set forth below, in accordance with the Catalent Terms and/or MSA.

The purpose of this SOW is to outline the general scope of work, timeline, and/or pricing. Upon execution of this SOW, all subsequent material changes to contents of the SOW shall be captured in a Change Order to be completed by Catalent and approved by Client. Such approved and executed Change Orders shall become a binding part of the SOW, and by reference, the Catalent Terms and/or MSA.

[***]

PROJECT PLAN

EXECUTIVE SUMMARY

Xenetic Biosciences, Inc. ("Xenetic" or "Client") has requested services from Catalent Pharma Solutions, LLC ("Catalent") to perform CGMP manufacturing for their recombinant protein, Human DNase I. This Statement of Work (SOW) was developed based upon Catalent's previous manufacturing for this project and on technical information provided by Xenetic and is subject to modification based on additional details or revisions in Xenetic's requirements. [***]

PRODUCT DESCRIPTION

- Product Name: Human DNase I
- Current Regulatory Phase: Phase 1/2

[***]

EXHIBIT 31.1

I, Jeffrey F. Eisenberg, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Xenetic Biosciences, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 11, 2022

By: /s/ JEFFREY F. EISENBERG
Jeffrey F. Eisenberg
Chief Executive Officer
(Principal Executive Officer)

EXHIBIT 31.2

I, James Parslow, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Xenetic Biosciences, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 11, 2022

By: /s/ JAMES PARSLOW
James Parslow
Chief Financial Officer
(Principal Financial and Principal Accounting Officer)

EXHIBIT 32.1

CERTIFICATION

Pursuant to the requirement set forth in Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended, (the "Exchange Act") and Section 1350 of Chapter 63 of Title 18 of the United States Code (18 U.S.C. §1350), Jeffrey F. Eisenberg, Chief Executive Officer of Xenetic Biosciences, Inc. (the "Company"), and James Parslow, Chief Financial Officer of the Company, each hereby certifies that, to the best of his knowledge:

The Company's Quarterly Report on Form 10-Q for the period ended June 30, 2022, to which this Certification is attached as Exhibit 32.1 (the "Periodic Report"), fully complies with the requirements of Section 13(a) or Section 15(d) of the Exchange Act; and

The information contained in the Periodic Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: August 11, 2022

In Witness Whereof, the undersigned have set their hands hereto as of the 11th day of August 2022.

/s/ Jeffrey F. Eisenberg
Jeffrey F. Eisenberg
Chief Executive Officer

/s/ James Parslow
James Parslow
Chief Financial Officer

"This certification accompanies the Form 10-Q to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of Xenetic Biosciences, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before or after the date of the Form 10-Q), irrespective of any general incorporation language contained in such filing."