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The first six months ended June 30, 2024, 20 million stock options to purchase shares of common stock were granted during the three and six months ended June 30, 2024. No RSUs were granted during each of the three and six months ended June 30, 2024 and 2023. The Company recognized a total of approximately \$42,000 and \$0.1 million of share-based expense related to employee stock options during the three months ended June 30, 2024 and 2023, respectively, and \$0.1 million during each of the six months ended June 30, 2024 and 2023, respectively. The Company issued 417 shares of common stock during the three and six months ended June 30, 2024 related to RSU awards. No employee stock options were exercised during the three and six months ended June 30, 2024 and 2023. During the three and six months ended June 30, 2024 stock options to purchase 11,667 shares of common stock were forfeited. No employee stock options expired during the three and six months ended June 30, 2023.

A Non-Employee Stock Options A There were no non-employee stock options granted or exercised during the three and six months ended June 30, 2024 and 2023, respectively. No non-employee stock option grants expired during the three and six months ended June 30, 2024. During the six months ended June 30, 2023, non-employee stock option grants to purchase approximately 100 shares of common stock expired. The Company did not recognize any expense related to non-employee stock options during the three and six months ended June 30, 2024 and 2023, respectively.

A 9. Income Taxes A During the three and six months ended June 30, 2024 and 2023, 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 \$40.4 million and \$39.7 million as of June 30, 2024 and December 31, 2023, respectively.

A As of June 30, 2024 and December 31, 2023, the Company did not record any unrecognized tax positions.

A 10. Related Party Transactions A 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, 2023 filed with the SEC on March 21, 2024, as amended on April 26, 2024.

A 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 an initial term of 15-months and accrued interest at a rate of 10% per annum. The Pharmsynthez Loan was guaranteed by all of the operating subsidiaries of Pharmsynthez, including SynBio and AS Kevelt, and was secured by all of the common and preferred stock of the Company owned by Pharmsynthez and SynBio.

A Pharmsynthez paid all obligations due under the Pharmsynthez Loan in May 2023, and no further amounts are due under the Pharmsynthez Loan. As a result, no amounts were outstanding as of June 30, 2024 and December 31, 2023. The Company did not recognize any interest income related to the Pharmsynthez Loan during the three and six months ended June 30, 2024. The Company recognized approximately \$65,000 of income related to interest and fees associated with the Pharmsynthez Loan including approximately \$40,000 related to interest income during the three and six months ended June 30, 2023.

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

A 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:

- anticipated effects of geopolitical events, including the conflicts in the Ukraine and the Middle East and associated sanctions imposed by the 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; our expectations regarding 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 Deoxyribose Nuclease ("DNase") 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"); our expectations to focus our efforts and resources on advancing the DNase platform into the clinic as an adjunctive therapy for pancreatic carcinoma and locally advanced or metastatic solid tumors; and our expectations regarding our PolyXen[®] platform, including concerning our plans to leverage the platform.

In some cases, these statements may be identified by terminology such as "may," "will," "could," "should," "expect," "plan," "anticipate," "believe," "estimate," "seek," "approximately," "intend," "predict," "potential," "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.

A 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.

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

- uncertainty of the expected financial performance of the Company;
- failure to realize the anticipated potential of the DNase or PolyXen technologies;
- our ability to implement our business strategy;
- our failure to maintain compliance with the continued listing requirements of the Nasdaq Stock Market ("Nasdaq");
- our need to raise additional working capital in the future for the purpose of further developing our pipeline 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 technology;
- 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;
- our reliance on consultants, advisors, vendors and business partners to conduct work on our behalf;
- 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;
- costs, diversion and other adverse effects of the actions of activist shareholders;
- 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 we may enter in the future;
- general economic and business conditions, as well as inflationary trends and financial market instability or disruptions to the banking system due to bank failures;
- 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 conflict in the Middle East, 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").

A 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.

A A BUSINESS OVERVIEW A We are a biopharmaceutical company focused on advancing innovative immune-oncology technologies addressing hard to treat cancers. Our DNase platform is designed to improve outcomes of existing treatments, including immunotherapies, by targeting NETs, which have been implicated in cancer progression and resistance to cancer treatments. We are currently focused on advancing our systemic DNase program into the clinic as an adjunctive therapy for pancreatic carcinoma and locally advanced or metastatic solid tumors. 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.

A 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 have committed 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 or approval in the U.S. by the Food and Drug Administration nor in any other countries or 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, 2024, was on the advancement of our DNase technology.

A Impact of the Global Conflicts On Our Operations A The short and long-term implications of Russia's invasion of Ukraine and conflict in the Middle East are difficult to predict at this time. The imposition of current and future sanctions and counter sanctions may have an adverse effect on the economic markets generally and could impact our business, financial condition, and results of operations.

A RESULTS OF OPERATIONS A Comparison of Quarter Ended June 30, 2024 and 2023 A The comparison of our historical results of operations for the fiscal quarter ended June 30, 2024 to the fiscal quarter ended June 30, 2023 is as follows:

Description	Quarter Ended June 30, 2024	Quarter Ended June 30, 2023	% Change
Royalty revenue	\$726,404	\$651,005	+11.6%
Operating costs and expenses	(844,909)	(833,771)	+1.3%
Total operating costs and expenses	(118,505)	(182,766)	+35.7%
Other income (expense)	(21,143)	(21,143)	0.0%
Interest income, net	63,447	126,103	-49.7%
Revenue	63,447	126,103	-49.7%
Net loss	(1,273,970)	(1,050,963)	+21.2%
Revenue	63,447	126,103	-49.7%
Research and development	\$474,850	\$731,045	-35.3%
Personnel costs	\$415,807	\$416,957	-0.3%
Share-based expense	(3,804)	(13,778)	+72.5%
Total research and development expense	\$933,771	\$903,243	+3.3%
Decrease in outside services and contract research organizations expense	\$1,220,522	\$1,154,912	+5.7%
Personnel costs	\$561,612	\$251,750	+123.1%
Share-based expense	\$11,433	\$27,466	-58.4%
Total R&D cost	\$1,498,519	\$1,498,519	0.0%
General and administrative	\$84,525	\$64,391	+31.3%
Total G&A cost	\$84,525	\$64,391	+31.3%
Severance and benefits expensed in connection with separation agreement entered into during second quarter of 2024	\$1,220,522	\$1,154,912	+5.7%
Process development efforts offset by lower process development efforts related to our			

decreased to approximately \$137,000 during the six months ended June 30, 2024 as compared to approximately \$180,000 for the same period in the prior year. This decrease was primarily due to lower average invested funds during the six months ended June 30, 2024 compared to the same period in 2023 as well as a decrease in interest income received on the Pharmsynthes Loan. A Liquidity and Capital Resources A We incurred a net loss of approximately \$2.5 million for the six months ended June 30, 2024. We had an accumulated deficit of approximately \$195.7 million at June 30, 2024, as compared to an accumulated deficit of approximately \$193.2 million at December 31, 2023. Working capital was approximately \$6.4 million at June 30, 2024, and approximately \$8.8 million at December 31, 2023. During the six months ended June 30, 2024, our working capital decreased by approximately \$2.3 million primarily due to our net loss for the six months ended June 30, 2024. A Our principal source of liquidity consists of cash. At June 30, 2024, we had approximately \$7.3 million in cash and approximately \$1.6 million in current liabilities. At December 31, 2023, we had approximately \$9.0 million in cash and approximately \$0.8 million in current liabilities. We have historically relied upon sales of our equity securities to fund our operations. A 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. The Company believes that its existing resources will be adequate to fund the Company's operations for a period of at least twelve months from the date of the issuance of these financial statements. However, we anticipate we will need additional capital in the long-term to pursue our business initiatives. While the Company believes 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 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 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. A A A 19A A Cash Flows from Operating Activities A Cash flows used in operating activities for the six months ended June 30, 2024 totaled approximately \$1.7 million, which was primarily due to our net loss for the period, partially offset by non-cash charges associated with share-based expense and an increase in current liabilities during the period. Cash flows used in operating activities for the six months ended June 30, 2023 totaled approximately \$2.4 million, which was primarily due to our net loss for the period as well as advance payments made in accordance with our statement of work with Catalent, partially offset by cash received from the repayment of the Pharmsynthes Loan. In addition, current liabilities decreased during the six months ended June 30, 2023. A Cash Flows from Investing Activities A There were no cash flows from investing activities for the six months ended June 30, 2024 and 2023. A Cash Flow from Financing Activities A There were no cash flows from financing activities for the six months ended June 30, 2024 and 2023. A Contractual Obligations and Commitments A As of June 30, 2024, 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, 2023, filed with the SEC on March 21, 2024, as amended on April 26, 2024. A Off Balance Sheet Arrangements A 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, change in financial condition, revenues or expenses, results of operations, liquidity, capital expenditures, or capital resources. A Recent Accounting Standards A See Note 3 in our Annual Report on Form 10-K for the year ended December 31, 2023, filed with the SEC on March 21, 2024, as amended on April 26, 2024, for a discussion of recent accounting standards. A Critical Accounting Estimates A Our condensed consolidated financial statements are prepared in accordance with U.S. generally accepted accounting principles. 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. The result of these evaluations forms the basis for making judgments about the carrying values of assets and liabilities and the reported amount of expenses that are not readily apparent from other sources. Because future events and their effects cannot be determined with certainty, actual results and outcomes may differ materially from our estimates, judgments and assumptions. There have been no material changes in our critical accounting estimates from those disclosed in our Annual Report on Form 10-K for the year ended December 31, 2023, filed with the SEC on March 21, 2024, as amended on April 26, 2024. A A 20A A ITEM 3 aC QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK A 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). A ITEM 4 aC CONTROLS AND PROCEDURES A Evaluation of Disclosure Controls and Procedures A Our management, with the participation of our Interim 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. A Based on this evaluation, our management, including our Interim 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 Interim Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure. A Changes in Internal Control over Financial Reporting A 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. A A A A A A A A A A A A A A A 21A A PART II aC OTHER INFORMATION A ITEM 1 aC LEGAL PROCEEDINGS A 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. A ITEM 1A aC RISK FACTORS A 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, 2023 filed with the SEC on March 21, 2024, as amended on April 26, 2024. A ITEM 2 aC UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS A None. A ITEM 3 aC DEFAULTS UPON SENIOR SECURITIES A None. A ITEM 4 aC MINE SAFETY DISCLOSURES A Not applicable. A ITEM 5 aC OTHER INFORMATION A During the quarter ended June 30, 2024, no director or officer adopted or terminated any Rule 10b5-1 trading arrangement or non-Rule 10b5-1 trading arrangement, as each term is defined in Item 408(a) of Regulation S-K. A A 22A A ITEM 6 aC EXHIBITS A The following exhibits are incorporated herein by reference or filed as part of this report. A EXHIBIT NUMBER DESCRIPTION A 10.1* Confidential Separation Agreement and General Release, dated June 19, 2024, between Jeffrey Eisenberg and Xenetic Biosciences, Inc. 10.2* Confidential Separation Agreement and General Release, dated June 19, 2024, between Curtis Lockshin and Xenetic Biosciences, Inc. 10.3* Amendment to Employment Agreement, dated June 18, 2024, between James F. Parslow and Xenetic Biosciences, Inc. 31.1* Certification of James Parslow, Interim 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 31.1* Certification of James Parslow, Interim Principal Executive Officer and 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, 2024, formatted in inline XBRL, include: (i) Condensed Consolidated Balance Sheets, (ii) Condensed Consolidated Statements of Operations, (iii) Condensed Consolidated Statements of Changes in 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) A * 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. A A A A A A A 23A A SIGNATURES A 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. A A Xenetic Biosciences, Inc. A A A A August 13, 2024 A By: A /S/ JAMES PARSLow A A James Parslow Interim Chief Executive Officer and Chief Financial Officer (Principal Executive, Principal Financial Officer and Principal Accounting Officer) A A A A A A A 24A EX-10.1.2 xenetic ex1001.htm CONFIDENTIAL SEPARATION AGREEMENT AND GENERAL RELEASE, DATED JUNE 19, 2024, BETWEEN JEFFREY EISENBERG AND XENETIC BIOSCIENCES, INC. Exhibit 10.1 A Execution Version A CONFIDENTIAL SEPARATION AGREEMENT & GENERAL RELEASE A THIS CONFIDENTIAL SEPARATION AGREEMENT & GENERAL RELEASE (aC Agreement) is made and entered into by and between Jeffrey Eisenberg (aC Executive), and Xenetic Biosciences, Inc. (the aC Company). Executive and Company are collectively referred to herein as the aC Parties. A I. Recitals A Executive is currently employed by Company on an at will basis pursuant to the terms of that certain Amended and Restated Employment Agreement, by and between the Executive and Company, dated October 26, 2017 (the aC Employment Agreement); A B. On May 16, 2024, the Board of Directors (the aC Board) of the Company approved the termination of Executive from all roles in the Company, effective immediately, and recommended that Executive tender his resignation from the Board; A C. Executive's last date of employment is May 16, 2024 (the aC Separation Date); A D. Executive acknowledges that from and after the Separation Date, Executive has no authority to, and shall not, represent himself as an employee or agent of Company; A E. Executive represents and warrants that he does not have any claims or charges pending against Company with any court, tribunal or administrative agency; A F. Executive and Company desire to enter into this Agreement related to Executive's separation from Company; and A G. Nothing within this Agreement shall constitute an admission of any liability or wrongdoing by Company, which expressly denies any liability or wrongdoing. A II. General Provisions A The Parties hereby agree as follows: A A. Recitals A The Recitals contained in Section I are incorporated herein and made a part hereof. A B. Release and Discharge by Executive A 1. The term aC Released Parties includes the Company, Insperty PEO Services, L.P. (aC Insperty) and their respective current or former officers, directors, shareholders, investors, owners, partners, employees, associates, servants, agents, managing agents, partnerships, trustees, predecessors, successors, assigns, affiliates, parent corporations, and/or subsidiaries; and/or any other entity or company operated, affiliated with, controlled by, or under common control with any one of the foregoing; and each of their predecessors, successors, assigns, affiliates, partnerships, parent corporations, subsidiaries (whether or not wholly owned), divisions, business units by or through which Company does business, partners (including partners of partnerships and affiliates), related entities, all of their trustees, directors, officers, attorneys, insurers, reinsurers, accountants, lenders, investors, agents, servants, representatives, employees and former employees (in their respective capacities as such, in their individual and personal capacities, and in any and all other capacities); and all other related entities of any type, scope or existence, of each of the foregoing. Any reference to the aC Released Parties includes one or more or all of them. A A A 1A A 2. The term aC Released Claims means and shall include any and all claims, actions, and causes of action, liens, debts, liabilities, demands, obligations, contracts or commitments, suits, debts, accounts, covenants, disputes, controversies, agreements, promises, acts, costs and expenses, damages, and executions, of whatever kind or nature, including without limitation any statutory, civil, common law or administrative claim, such as but not limited to the following: claims under Title VII of the Civil Rights Act of 1964 and/or 1991, Section 1981 of the Civil Rights Act of 1866, the Americans with Disabilities Act of 1990, the Family and Medical Leave Act of 1993, the Fair Labor Standards Act of 1938, the Executive Retirement Income Security Act of 1974, the National Labor Relations Act of 1935, the Equal Pay Act of 1963, the Consolidated Omnibus Budget Reconciliation Act of 1985 (aC COBRA), the Immigration Reform and Control Act of 1986, the Occupational Safety and Health Act of 1970, the Worker Adjustment and Retraining Notification Act of 1988, the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, the Health Insurance Portability and Accountability Act of 1996, the Vocational Rehabilitation Act of 1973 (29 U.S.C. A 701 et seq.), or any related state law or local ordinance related to employment or employment discrimination; claims for disputed wages and penalties under federal or state law; claims for compensation, severance, employee benefits and vacation or sick pay; attorneys' fees, costs, expenses and expert witness fees and expenses; tort damages or personal injury damages; breach of implied or express contract; retaliation, failure to accommodate; failure to engage in an interactive process; wrongful termination in violation of public policy; breach of fiduciary duty; declaratory relief; injunctive relief; public policy breach; intentional or negligent infliction of emotional distress; breach of the Employment Agreement or any other employment contract (whether express, implied in law or fact, oral or written); breach of implied covenant of good faith and fair dealing; interference with contract; intentional or negligent interference with prospective economic advantage; intentional or negligent misrepresentation, promissory fraud, or fraud; conversion; defamation; libel or slander; discrimination, retaliation, harassment or hostile work environment on the basis of any statutorily protected class including but not limited to disability or age, or failure to prevent such discrimination, retaliation, harassment or hostile work environment; negligent hiring; constructive discharge; disparagement of any kind or nature; invasion of privacy; civil assault; malicious prosecution; abuse of process; declaratory or injunctive relief, or in any other type of action or proceeding, whether known or unknown, suspected or unsuspected, fixed or contingent, at law or in equity, which Executive ever had or held, now has or holds, or hereafter can, shall, or may have or hold at any time in the future, in any capacity, individually or as a member of a class, collective or representative action, relator-employee, or action for public benefit with respect to Executive's employment with Company, or the termination thereof, the subject matter of this Agreement, or any other matters with, by or between Company, or the Released Parties and Executive, or by any one or more of the Released Parties against Executive, at any time prior to and through the Effective Date of this Agreement. The Released Claims expressly exclude claims that may not be waived under applicable law at the time the Agreement is executed by Executive. A 3. In consideration of the terms and provisions of the Agreement, Executive shall and does hereby and forever fully, finally and forever generally remise, release, waive and discharge Company and the Released Parties from any and all known or unknown, suspected or unsuspected, fixed or contingent claims, rights, actions and causes of action, including but not limited to the Released Claims, at law or in equity, which Executive ever had or held, now has or holds, or hereafter can, shall, or may have or hold against Company or any or all of the Released Parties based on any occurrences, transactions, events, acts, or omissions of any kind whatsoever from any time prior to and through the Effective Date of the Agreement. A 4. Nothing in this Agreement prohibits Executive from: (a) filing an administrative charge of discrimination or an administrative charge within the jurisdiction of the National Labor Relations Board (aC NLRB) or Equal Employment Opportunity Commission (aC EEOC) or similar state or local civil rights agencies; (b) communicating directly with the U.S. Securities and Exchange Commission (aC SEC) about a possible securities law violation which Executive is not required to report or disclose to the Company; or (c) filing a charge or communicating with any other federal, state or local government office, official or agency concerning matters relevant to such governmental office or agency. Executive promises never to seek or accept any damages, remedies, or other relief, for Executive personally (any right to which Executive hereby waives and promises never to accept) with respect to any claim released hereunder, in any proceeding including, but not limited to, any EEOC or NLRB proceeding, other than a benefit or remedy pursuant to Section 922 of the Dodd-Frank Wall Street Reform or the Consumer Protection Act or as otherwise required by law. Notwithstanding the foregoing, this Agreement does not limit Executive's right to receive an award for information provided to the SEC. A A 2A A C. Payment and Other Consideration A 1. Consideration. A a) In consideration of the releases and promises set forth in this Agreement: A i. the Company shall pay Executive the sum of \$420,420, representing an amount equal to one times Executive's Base Salary (as defined in the Employment Agreement), less all applicable withholdings, deductions and taxes as required by law, payable in one lump sum within thirty days after the Effective Date (as defined in Section X below) (the aC Separation Payment); A ii. all of the unvested stock options held by Executive as of the Separation Date as listed on Exhibit A shall fully vest on the Separation Date and not be subject to forfeiture; and A iii. the Company shall reimburse Executive for reasonable legal fees in an amount not to exceed \$10,000 that the Executive incurs in connection with the negotiation of this Agreement, subject to the delivery of appropriate documentation thereof and provided that the Executive shall submit invoices to the Company within thirty (30) days of incurrence of the expense. A b) The Separation Payment will be reported on an IRS Form W-2. Executive understands, acknowledges and agrees that the Separation Payment will be paid by the Company, provided: (a) Executive is not in breach of any term, condition, warranty, representation, covenant or provision of this Agreement, (b) Executive does not revoke the Agreement within the Revocation Period described in Section IX below; and (c) Executive first returns a signed and dated copy of this Agreement to the Company. Executive acknowledges that the Separation Payment and other consideration to be provided under the terms of this Agreement is not an entitlement and shall serve as good and sufficient consideration of the promises made by Executive herein. Executive further acknowledges that the Separation Payment to be paid under this Agreement is due solely

from the Company and that Insperity has no obligation to pay the Separation Payment even though its payment may be processed through Insperity. Â c) Executive acknowledges and agrees that the Compensation Committee of the Board of the Company has not established an annual bonus target for Executive or any related performance goals for an annual bonus for Executive and, therefore the pro rata portion of the annual performance-based cash bonus for fiscal year 2024 owed to Executive pursuant to Section 7(d)(ii) of the Employment Agreement shall be deemed to be \$0. Â 2. Outstanding Equity Awards. The Executiveâ€™s outstanding equity awards as of the Separation Date are set forth on Exhibit A to this Agreement. Executive understands and agrees that except as otherwise specified herein, treatment of the Executiveâ€™s outstanding equity awards will be governed by the terms and conditions of the applicable award agreements and the Xenetic Biosciences, Inc. Amended and Restated Equity Incentive Plan. Per the terms of the applicable stock option award agreements, all vested stock options as of the Separation Date may be exercised at any time during the three or twelve month period, as applicable, following the Separation Date, as set forth on Exhibit A. Â 3. Final Paycheck and Expenses. Regardless of whether the Executive signs this Agreement, the Employee acknowledges and agrees that the Company has (a) paid the Executive for any accrued but unpaid portion of the Executiveâ€™s Base Salary through the Separation Date, (b) reimbursed the Executive for reasonable out-of-pocket business expenses that were appropriately incurred by the Executive prior to the Separation Date in furtherance of the business of the Company, subject to the Companyâ€™s applicable business expense reimbursement policy, and (c) paid the Executive an amount equal to any accrued but unused vacation pay as of the Separation Date. Â Â Â 3Â Â 4. Benefits. Following the Separation Date, Executive will be eligible to continue Executiveâ€™s participation in the Companyâ€™s group health benefit plans, such as they may exist from time-to-time, if and to the extent Executive was enrolled in such plans as of the Separation Date. Such benefits continuation will be provided concurrent with and in accordance with the terms of COBRA and/or applicable state/local benefits continuation laws. If Executive elects to receive such continued healthcare coverage, the Company shall reimburse Executive for the premium for Executive and Executiveâ€™s covered dependents, less the amount of Executiveâ€™s monthly premium contributions for such coverage prior to termination, for the period commencing on the first day following the Separation Date through the earlier of (i) the last day of the month during the first twelve months following the Separation Date and (ii) the date Executive and Executiveâ€™s covered dependents, if any, become eligible for healthcare coverage under another employerâ€™s plan(s). Executive shall notify the Company immediately if Executive becomes covered by a group health plan of a subsequent employer. If Executive does not elect COBRA, the Company has no obligation to pay any form of insurance coverage after the Separation Date. Executive further agrees and acknowledges that, except as specifically provided in this Agreement, Executiveâ€™s participation in all Company employee benefit plans shall terminate as of the Separation Date. Â 5. No Other Payments. Executive expressly acknowledges and agrees that this Agreement provides Executive with compensation to which Executive would not otherwise be entitled. Executive acknowledges and agrees that Executive has been paid all final wages owed to Executive by Company, and that these monies were due and owing to Executive regardless of whether Executive chooses to execute the Agreement or not. Other than payment of the Separation Payment and other payments and additional benefits provided hereunder, Executive acknowledges that no other payments, including but not limited to those for back pay, front pay, salary, benefits, bonus, vacation or sick pay, civil or statutory penalties, general or compensatory damages, interest, or costs for the period of time Executive was employed by the Company, or for any other period, are due and owing to Executive from Company or the Released Parties. Â D.Survival of Covenants Â Executive agrees that the covenants with respect to non-competition, non-solicitation, confidentiality, inventions and return of property set forth in Sections 9 through 13 in the Employment Agreement shall survive the separation of Executiveâ€™s employment with the Company and remain in full force and effect; provided, however, that for the sake of clarity, â€œCompeting Productsâ€ as defined in Section 9(c)(i) of the Employment Agreement shall be amended and restated to mean: â€œany product, process, or service of any person or organization other than the Company, in existence or under development, which is identical to, substantially the same as, or an adequate substitute for the Deoxyribonuclease (DNase) platform and the PolyXen technology.â€ Â E. Confidentiality and Nondisclosure of this Agreement Â 1. Executive acknowledges that the confidentiality and non-disclosure of all terms and conditions of this Agreement is an integral part of the agreement to pay severance benefits to Executive, and was a material inducement for Company to enter into this Agreement. Â 2. Executive agrees that Executive will maintain the terms of this Agreement in complete confidentiality. Executive shall make no comments, to any person or entity, including but not limited to the media, friends, co-workers, or former co-workers from Company regarding the Agreement, including the Separation Payment. For purposes of this Agreement, the word â€œcommentsâ€ includes any form of communication, whether oral, written, electronic or otherwise. Executive acknowledges that these nondisclosure provisions are an integral part of this Agreement. Executive may disclose the terms of this Agreement to Executiveâ€™s spouse, attorneys and tax preparer/accountants provided that such disclosure to the attorneys and tax preparer/accountants is made for the purposes of the attorneys and tax preparer/accountants providing legal and/or tax advice and provided that Executiveâ€™s spouse, Executiveâ€™s attorneys and tax preparer/accountants agree to be bound by this confidentiality section. Executive, if required by a Court order or subpoena, or as otherwise permitted by law, may disclose the terms of this Agreement without breaching these confidentiality provisions provided that in the event a demand is made upon Executive for the disclosure of the terms of the Agreement, Executive shall, within 48 hours immediately notify the Company of the demand, so that Company may have sufficient time to seek any necessary orders, including a protective order, or to otherwise participate in the tribunalâ€™s determination of the issue. Â Â Â 4A Â Â F.Waiver of Reemployment Â Executive agrees that by executing this Agreement, Executive waives and releases forever any right or rights Executive might have to seek or obtain employment, reemployment, or reinstatement with Company or the Released Parties. Â G.Return of Company Property, Log Ins and Passwords Â In order to be eligible to receive the Separation Payment, immediately prior to the Effective Date, Executive must return to Company all Company property and all Company confidential information in Executiveâ€™s possession, and Executive must provide to Company all log ins and passwords to any software, website, application or program, which Executive maintained and used as part of the performance of Executiveâ€™s job duties and responsibilities. Â III. Warranty of Capacity to Execute Agreement Â Executive represents and warrants that no other person or entity has or has had any interest in the claims, demands, obligations or causes of action referred to in this Agreement; that Executive has the sole and exclusive right to receive sums specified in it; that Executive has not sold, assigned, transferred, conveyed or otherwise disposed of any of the claims, demands, obligations or causes of action referred to in this Agreement; and that Executive has the mental capacity to understand and execute the terms and conditions of the Agreement. Â IV. Disclaimer of Liability Â Executive agrees to indemnify and hold harmless Company and the Released Parties from any and all claims or liens presently existing against the Separation Payment hereby by any person, entity or corporation, as well as any attorneysâ€™ fees and costs incurred in representation of Company or the Released Parties in litigation concerning any claims or liens, including but not limited to any claims or liens for attorneysâ€™ fees and costs. Â V. Entire Agreement & Successors in Interest Â Except as otherwise provided herein, Executive agrees that this Agreement contains the entire agreement between Executive and Company with respect to the matters set forth in it, and shall be binding upon and inure to the benefit of Executiveâ€™s executors, administrators, personal representatives, heirs, successors and assigns. There are no other understandings or agreements, verbal or otherwise, in relation thereto between the Parties, except as herein expressly set forth. There have been no representations not set forth herein that Executive has relied upon when entering into this Agreement. Executive agrees that should any provision of this Agreement require interpretation or construction that all Parties have participated in the drafting of this document and no presumption regarding construing the document against one Party shall apply. Â VI. Severability Â If any provision in this Agreement is found to be unenforceable, all other provisions will remain fully enforceable. The covenants set forth in this Agreement shall be considered and construed as separate and independent covenants. Should any part or provision of any provision of this Agreement be held invalid, void or unenforceable in any court of competent jurisdiction, such invalidity, voidness or unenforceability shall not render invalid, void or unenforceable any other part or provision of this Agreement. Â VII. Governing Law Â This Agreement is entered into in the State of Florida, and shall be construed and interpreted in accordance with its laws. The Parties agree that the proper and appropriate venue for any action arising from this Agreement shall be any court of competent jurisdiction in Miami-Dade County, Florida. Â Â Â 5A Â Â VIII. Additional Documents Â Executive agrees to cooperate fully, and execute any and all supplementary documents, and take all additional actions which may be necessary or appropriate to give full force and effect to the basic terms and intent of this Agreement. Â IX. Acknowledgement of Voluntariness and Opportunity for Review and Revocation Â 1.Executive acknowledges that (a) Executive knowingly and voluntarily enters into this Agreement with the purpose of waiving any right and releasing any claims under the Age Discrimination in Employment Act of 1967, 29 U.S.C. Â 621, et seq. (â€œADEAâ€); (b) Executive was given a period of up to twenty-one (21) days within which to review and consider this Agreement; (c) Executive understood Executive could use as much of said 21-day period as Executive desired; (d) Executive was encouraged by Company to consult with a lawyer, at Executiveâ€™s own expense; (e) if Executive decided not to use the 21-day period, Executive is signing this Agreement voluntarily and of Executiveâ€™s own free will; and (f) this Agreement is not final and binding until the seven-day period of revocation, described in the following sentences of this Section of the Agreement, has expired. Executive understands that Company would not have given Executive the special payments or benefits Executive is getting in exchange for this Agreement but for Executiveâ€™s promises and representations Executive is making by signing it. Â 2.Executive acknowledges that Executive may revoke Executiveâ€™s waiver of the rights and release of any ADEA (age discrimination) claims covered by this Agreement, by delivering written notice of Executiveâ€™s revocation of this Agreement to Jim Parslow at j.parslow@xeneticbio.com, no later than the close of business on the seventh (7th) calendar day after the date on which Executive signed this Agreement (the â€œRevocation Periodâ€). The written notice of revocation must state: â€œI HEREBY REVOKE MY ACCEPTANCE OF THE CONFIDENTIAL SEPARATION AGREEMENT AND GENERAL RELEASE.â€ If the Agreement is revoked in a timely manner, this Agreement shall not be effective, and Executive shall not receive the Separation Payment as described in Section II.C. herein. Â X. Effectiveness and Electronic Signatures Â This Agreement shall become effective following execution by all the Parties (â€œEffective Dateâ€). This Agreement may be executed via manual signature or electronic signature. â€œElectronic signatureâ€ means (a) the signing partyâ€™s manual signature, converted by the signing party to facsimile or industry-accepted digital form (such as a .pdf file) and received from the signing partyâ€™s customary email address, customary facsimile number, or other mutually agreed-upon authenticated source; or (b) the signing partyâ€™s digital signature executed using a mutually agreed-upon digital signature service provider, such as DocuSign or Adobe sign, and digital signature process. Each Party to this Agreement (i) agrees that it will be bound by its own electronic signature, (ii) accepts the electronic signature of each other Party to this Agreement, and (iii) agrees that such electronic signatures shall be the legal equivalent of manual signatures. This Agreement may be so executed in counterparts, each of which will be considered an original and all such counterparts will be considered and constitute one and the same agreement. Â XI. Disparaging Statements Â Neither the Executive nor the Company shall make any remarks or statements, either publicly or privately, orally or in writing, that are disparaging of the other party. The Executive shall not make any remarks or statements, either publicly, orally or in writing that are disparaging of the Companyâ€™s actual or prospective business and/or, in such capacities, current or former employees, officers, directors, trade partners, vendors, suppliers, or customers of the Company, either individually or collectively. For the avoidance of doubt, this includes remarks or statements, public or private, made via electronic mail, blogs, social media (such as, Facebook, Twitter or X, LinkedIn, Instagram or any other similar platform). This provision is subject to each partyâ€™s legally protected rights to communicate with governmental bodies and agencies and to engage in otherwise legally protected activity. Â [remainder of page intentionally blank] Â Â Â 6A Â Â EMPLOYEE: Â Â Â Â Â /s/ Jeffrey Eisenberg Â Â Jeffrey Eisenberg Â A Date: June 19, 2024 Â A Â A COMPANY: Â Â Â Â Â Xenetic Biosciences, Inc. Â Â Â Â Â By: /s/ James Parslow Â A Name: James Parslow Â A Title: Interim Chief Executive Officer and Chief Financial Officer Date: June 19, 2024 Â A Â Â Â Â Â [Signature page to Separation and Release Agreement] Â 7A Â Â Exhibit A Â Xenetic Biosciences, Inc. Â Jeffrey Eisenberg â€œ Outstanding Equity as of May 16, 2024 Â Date of Grant Shares Exercise Price Expiration Date Total Vested Total Unvested Vesting Exercisability post termination Stock Options 12/2/2016 1,917 \$ 409.20 12/2/2026 1,917 - Fully Vested 90 days post termination date Â Â Â Â Â 10/26/2017 1,042 \$ 253.20 10/26/2027 1,042 - Fully Vested 12 months post termination date Â Â Â Â Â 12/4/2019 23,000 \$ 13.10 12/4/2029 23,000 - Fully Vested 12 months post termination date Â Â Â Â Â 3/18/2021 10,000 \$ 26.00 3/18/2031 10,000 - Fully Vested 12 months post termination date Â Â Â Â Â 3/24/2022 10,000 \$ 11.20 3/24/2032 6,667 3,333 1/3rd on March 24, 2023; 2/3rds over remaining 8 quarters commencing June 24, 2023 thru March 24, 2025 12 months post termination date Â Â Â Â Â 12/1/2023 20,000 \$ 3.88 12/1/2033 - 20,000 1/3rd on December 11, 2024; 2/3rds over remaining 8 quarters commencing March 11, 2025 thru Dec 11, 2026 12 months post termination date Â Â Â Â Â Restricted Stock Units 10/26/2017 417 N/A N/A 417 - Fully Vested N/A Â Â Â Â Â 8A EX-10.2 3 xenetic ex1002.htm CONFIDENTIAL SEPARATION AGREEMENT AND GENERAL RELEASE, DATED JUNE 19, 2024, BETWEEN CURTIS LOCKSHIN AND XENETIC BIOSCIENCES, INC. Exhibit 10.2 Â Execution Version Â CONFIDENTIAL SEPARATION AGREEMENT & GENERAL RELEASE Â THIS CONFIDENTIAL SEPARATION AGREEMENT & GENERAL RELEASE (â€œAgreementâ€) is made and entered into by and between Curtis Lockshin (â€œExecutiveâ€), and Xenetic Biosciences, Inc. (the â€œCompanyâ€). Executive and Company are collectively referred to herein as the â€œParties.â€ Â I.Recitals Â A.Executive is currently employed by Company on an at will basis pursuant to the terms of that certain Employment Agreement, by and between the Executive and Company, dated January 1, 2017 (the â€œEmployment Agreementâ€); Â Â Â B.On May 16, 2024, the Board of Directors of the Company approved the termination of Executive from all roles in the Company and all of its subsidiaries, as applicable, effective immediately; Â Â Â C.Executiveâ€™s last date of employment is May 16, 2024 (the â€œSeparation Dateâ€); Â Â Â D.Executive acknowledges that from and after the Separation Date, Executive has no authority to, and shall not, represent himself as an employee or agent of Company; Â Â Â E.Executive represents and warrants that he does not have any claims or charges pending against Company with any court, tribunal or administrative agency; Â Â Â F.Executive and Company desire to enter into this Agreement related to Executiveâ€™s separation from Company; and Â Â Â G.Nothing within this Agreement shall constitute an admission of any liability or wrongdoing by Company, which expressly denies any liability or wrongdoing. Â II.General Provisions Â The Parties hereby agree as follows: Â A.Recitals Â The Recitals contained in Section I are incorporated herein and made a part hereof. Â B.Release and Discharge by Executive Â 1.The term â€œReleased Partiesâ€ includes Company, Insperity PEO Services, L.P. (â€œInsperityâ€) and their respective current or former officers, directors, shareholders, investors, owners, partners, employees, associates, servants, agents, managing agents, partnerships, trustees, predecessors, successors, assigns, affiliates, parent corporations, and/or subsidiaries; and/or any other entity or company operated, affiliated with, controlled by, or under common control with any one of the foregoing; and each of their predecessors, successors, assigns, affiliates, partnerships, parent corporations, subsidiaries (whether or not wholly owned), divisions, business units by or through which Company does business, partners (including partners of partnerships and affiliates), related entities, all of their trustees, directors, officers, attorneys, insurers, reinsurers, accountants, lenders, investors, agents, servants, representatives, employees and former employees (in their respective capacities as such, in their individual and personal capacities, and in any and all other capacities); and all other related entities of any type, scope or existence, of each of the foregoing. Any reference to the â€œReleased Partiesâ€ includes one or more or all of them. Â Â Â 1A Â Â 2.The term â€œReleased Claimsâ€ means and shall include any and all claims, actions, and causes of action, liens, debts, liabilities, demands, obligations, contracts or commitments, suits, debts, accounts, covenants, disputes, controversies, agreements, promises, acts, costs and expenses, damages, and executions, of whatever kind or nature, including without limitation any statutory, civil, common law or administrative claim, such as but not limited to the following: claims under Title VII of the Civil Rights Act of 1964 and/or 1991, Section 181 of the Civil Rights Act of 1866, the Americans with Disabilities Act of 1990, the Family and Medical Leave Act of 1990, the Fair Labor Standards Act of 1938, the Executive Retirement Income Security Act of 1974, the National Labor Relations Act of 1935, the Equal Pay Act of 1963, the Consolidated Omnibus Budget Reconciliation Act of 1985 (â€œCOBRAâ€), the Immigration Reform and Control Act of 1986, the Occupational Safety and Health Act of 1970, the Worker Adjustment and Retraining Notification Act of 1988, the Doddâ€Frank Wall Street Reform and Consumer Protection Act of 2010, the Health Insurance Portability and Accountability Act of 1996, the Vocational Rehabilitation Act of 1973 (29 U.S.C. Â 701 et seq.), or any related state law or local ordinance related to employment or employment discrimination; claims for disputed wages and penalties under federal or state law; claims for compensation, severance, employee benefits and vacation or sick pay; attorneysâ€™ fees, costs, expenses and expert witness fees and expenses; tort damages or personal injury damages; breach of implied or express contract; retaliation, failure to accommodate; failure to engage in an interactive process; wrongful termination in violation of public policy; breach of fiduciary duty; declaratory relief; injunctive relief; public policy breach; intentional or negligent infliction of emotional distress; breach of the Employment Agreement or any other employment contract (whether express, implied in law or fact, oral or written); breach of implied covenant of good faith and fair dealing; interference with contract; intentional or negligent interference with prospective economic advantage; intentional or negligent misrepresentation, promissory fraud, or fraud; conversion; defamation; libel or slander; discrimination, retaliation, harassment or hostile work environment on the basis of any statutorily protected class including but not limited to disability or age, or failure to prevent such discrimination,

retaliation, harassment or hostile work environment; negligent hiring; constructive discharge; disparagement of any kind or nature; invasion of privacy; civil assault; malicious prosecution; abuse of process; declaratory or injunctive relief, or in any other type of action or proceeding, whether known or unknown, suspected or unsuspected, fixed or contingent, at law or in equity, which Executive ever had or held, now has or holds, or hereafter can, shall, or may have or hold at any time in the future, in any capacity, individually or as a member of a class, collective or representative action, relator-employee, or action for public benefit with respect to Executive's employment with Company, or the termination thereof, the subject matter of this Agreement, or any other matters with, by or between Company, or the Released Parties and Executive, or by any one or more of the Released Parties against Executive, at any time prior to and through the Effective Date of this Agreement. The Released Claims expressly exclude claims that may not be waived under applicable law at the time the Agreement is executed by Executive. 3. In consideration of the terms and provisions of the Agreement, Executive shall and does hereby and forever fully, finally and forever generally remise, release, waive and discharge Company and the Released Parties from any and all known or unknown, suspected or unsuspected, fixed or contingent claims, rights, actions and causes of action, including but not limited to the Released Claims, at law or in equity, which Executive ever had or held, now has or holds, or hereafter can, shall, or may have or hold against Company or any or all of the Released Parties based on any occurrences, transactions, events, acts, or omissions of any kind whatsoever from any time prior to and through the Effective Date of the Agreement. 4. Nothing in this Agreement prohibits Executive from: (a) filing an administrative charge of discrimination or an administrative charge within the jurisdiction of the National Labor Relations Board (NLRB) or Equal Employment Opportunity Commission (EEOC) or similar state or local civil rights agencies; (b) communicating directly with the U.S. Securities and Exchange Commission (SEC) about a possible securities law violation which Executive is not required to report or disclose to the Company; or (c) filing a charge or communicating with any other federal, state or local government office, official or agency concerning matters relevant to such governmental office or agency. Executive promises never to seek or accept any damages, remedies, or other relief, for Executive personally (any right to which Executive hereby waives and promises never to accept) with respect to any claim released hereunder, in any proceeding including, but not limited to, any EEOC or NLRB proceeding, other than a benefit or remedy pursuant to Section 922 of the Dodd-Frank Wall Street Reform and the Consumer Protection Act or as otherwise required by law. Notwithstanding the foregoing, this Agreement does not limit Executive's right to receive an award for information provided to the SEC. 5. A. 2A. A. C. Payment and Other Consideration 1. Separation Payment. A. a) In consideration of the releases and promises set forth in this Agreement: A. i. the Company shall pay Executive the sum of \$342,342, representing an amount equal to one times Executive's Base Salary (as defined in the Employment Agreement), less all applicable withholdings, deductions and taxes as required by law (the "Separation Payment"), payable in semi-monthly installments over the twelve month period following the Separation Date in accordance with the Company's normal payroll practices; and A. ii. the Company shall reimburse Executive for reasonable legal fees in an amount not to exceed \$10,000 that the Executive incurs in connection with the negotiation of this Agreement, subject to the delivery of appropriate documentation thereof and provided that the Executive shall submit invoices to the Company within thirty (30) days of incurrence of the expense. A. b) The Separation Payment will be reported on an IRS Form W-2. Executive understands, acknowledges and agrees that the Separation Payment will be paid by the Company, provided: (a) Executive is not in breach of any term, condition, warranty, representation, covenant or provision of this Agreement, (b) Executive does not revoke the Agreement within the Revocation Period described in Section IX below; and (c) Executive first returns a signed and dated copy of this Agreement to the Company. Executive acknowledges that the Separation Payment to be provided under the terms of this Agreement is not an entitlement and shall serve as good and sufficient consideration of the promises made by Executive herein. Executive further acknowledges that the Separation Payment to be paid under this Agreement is due solely from the Company and that Insperity has no obligation to pay the Separation Payment even though its payment may be processed through Insperity. 2. Outstanding Equity Awards. The Executive's outstanding equity awards as of the Separation Date are set forth on Exhibit A to this Agreement. Executive understands and agrees that treatment of the Executive's outstanding equity awards will be governed by the terms and conditions of the applicable award agreements and the Xenetic Biosciences, Inc. Amended and Restated Equity Incentive Plan. Per the terms of the applicable stock option award agreements, all vested stock options as of the Separation Date may be exercised at any time during the three month period following the Separation Date, or through the option expiration date, as applicable, as set forth on Exhibit A. Executive's rights with respect to any unvested stock options are forfeited effective as of the Separation Date. 3. Final Paycheck and Expenses. Regardless of whether the Executive signs this Agreement, the Employee acknowledges and agrees that the Company has (a) paid the Executive for any accrued but unpaid portion of the Executive's Base Salary through the Separation Date, (b) reimbursed the Executive for reasonable out-of-pocket business expenses that were appropriately incurred by the Executive prior to the Separation Date in furtherance of the business of the Company, subject to the Company's applicable business expense reimbursement policy, and (c) paid the Executive an amount equal to any accrued but unused vacation pay as of the Separation Date. 4. Benefits. Following the Separation Date, Executive will be eligible to continue Executive's participation in the Company's group health benefit plans, such as they may exist from time-to-time, if and to the extent Executive was enrolled in such plans as of the Separation Date. Such benefits continuation will be provided concurrent with and in accordance with the terms of COBRA and/or applicable state/local benefits continuation laws. If Executive elects to receive such continued healthcare coverage, the Company shall reimburse Executive on a monthly basis for the premium for Executive and Executive's covered dependents, less the amount of Executive's monthly premium contributions for such coverage prior to termination, for the period commencing on the first day following the Separation Date through the earlier of (i) the last day of the month during the first twelve months following the Separation Date and (ii) the date Executive and Executive's covered dependents, if any, become eligible for healthcare coverage under another employer's plan(s). Executive shall notify the Company immediately if Executive becomes covered by a group health plan of a subsequent employer. If Executive does not elect COBRA, the Company has no obligation to pay any form of insurance coverage after the Separation Date. Executive further agrees and acknowledges that, except as specifically provided in this Agreement, Executive's participation in all Company employee benefit plans shall terminate as of the Separation Date. 5. No Other Payments. Executive expressly acknowledges and agrees that this Agreement provides Executive with compensation to which Executive would not otherwise be entitled. Executive acknowledges and agrees that Executive has been paid all final wages owed to Executive by Company, and that these monies were due and owing to Executive regardless of whether Executive chooses to execute the Agreement or not. Other than payment of the Separation Payment and other payments and benefits provided hereunder, Executive acknowledges that no other payments, including but not limited to those for back pay, front pay, salary, benefits, bonus, vacation or sick pay, civil or statutory penalties, general or compensatory damages, interest, or costs for the period of time Executive was employed by the Company, or for any other period, are due and owing to Executive from Company or the Released Parties. D. Survival of Covenants 1. Executive agrees that the covenants with respect to non-competition, non-solicitation, confidentiality, inventions and return of property set forth in Sections 9 through 13 in the Employment Agreement shall survive the separation of Executive's employment with the Company and remain in full force and effect; provided, however, that for the sake of clarity, "Competing Products" as defined in Section 9(c)(i) of the Employment Agreement shall exclude (1) any use of polymers (including polysialic acid or PSA) in pharmaceutical product development so long as such use does not disclose or incorporate the Company's Confidential Information into research and development of any products, including pharmaceutical products; (2) work in the field of oncology therapeutics, excepting DNase-family enzymes as a component of oncology therapeutics, including combinations of DNase-family enzymes with chemotherapy, cell therapies, or immunotherapies, and provided such work does not disclose or incorporate the Company's Confidential Information into research and development of any products, including therapeutic products; and (3) work in the general area of cell therapies, including CAR T, so long as such work does not disclose or incorporate the Company's Confidential Information into research and development of any products, including therapeutic products. E. Confidentiality and Nondisclosure of this Agreement 1. Executive acknowledges that the confidentiality and non-disclosure of all terms and conditions of this Agreement is an integral part of the agreement to pay severance benefits to Executive, and was a material inducement for Company to enter into this Agreement. 2. Executive agrees that Executive will maintain the terms of this Agreement in complete confidentiality. Executive shall make no comments, to any person or entity, including but not limited to the media, friends, co-workers, or former co-workers from Company regarding the Agreement, including the Separation Payment. For purposes of this Agreement, the word "comments" includes any form of communication, whether oral, written, electronic or otherwise. Executive acknowledges that these nondisclosure provisions are an integral part of this Agreement. Executive may disclose the terms of this Agreement to Executive's spouse, attorneys and tax preparer/accountants provided that such disclosure to the attorneys and tax preparer/accountants is made for the purposes of the attorneys and tax preparer/accountants providing legal and/or tax advice and provided that Executive's spouse, Executive's attorneys and tax preparer/accountants agree to be bound by this confidentiality section. Executive, if required by a Court order or subpoena, or as otherwise permitted by law, may disclose the terms of this Agreement without breaching these confidentiality provisions provided that in the event a demand is made upon Executive for the disclosure of the terms of the Agreement, Executive shall, within 48 hours immediately notify the Company of the demand, so that Company may have sufficient time to seek any necessary orders, including a protective order, or to otherwise participate in the tribunal's determination of the issue. F. Waiver of Reemployment 1. Executive agrees that by executing this Agreement, Executive waives and releases forever any right or rights Executive might have to seek or obtain employment, reemployment, or reinstatement with Company or the Released Parties. G. Return of Company Property, Log Ins and Passwords 1. In order to be eligible to receive the Separation Payment, immediately prior to the Effective Date, Executive must return to Company all Company property and all Company confidential information in Executive's possession, and Executive must provide to Company all log ins and passwords to any software, website, application or program, which Executive maintained and used as part of the performance of Executive's job duties and responsibilities. 4A. A. III. Warranty of Capacity to Execute Agreement 1. Executive represents and warrants that no other person or entity has or has had any interest in the claims, demands, obligations or causes of action referred to in this Agreement; that Executive has the sole and exclusive right to receive sums specified in it; that Executive has not sold, assigned, transferred, conveyed or otherwise disposed of any of the claims, demands, obligations or causes of action referred to in this Agreement; and that Executive has the mental capacity to understand and execute the terms and conditions of the Agreement. IV. Disclaimer of Liability 1. Executive agrees to indemnify and hold harmless Company and the Released Parties from any and all claims or liens presently existing against the Separation Payment hereby by any person, entity or corporation, as well as any attorneys' fees and costs incurred in representation of Company or the Released Parties in litigation concerning any claims or liens, including but not limited to any claims or liens for attorneys' fees and costs. V. Entire Agreement & Successors in Interest A. Except as otherwise provided herein, Executive agrees that this Agreement contains the entire agreement between Executive and Company with respect to the matters set forth in it, and shall be binding upon and inure to the benefit of Executive's executors, administrators, personal representatives, heirs, successors and assigns. There are no other understandings or agreements, verbal or otherwise, in relation thereto between the Parties, except as herein expressly set forth. There have been no representations not set forth herein that Executive has relied upon when entering into this Agreement. Executive agrees that should any provision of this Agreement require interpretation or construction that all Parties have participated in the drafting of this document and no presumption regarding construing the document against one Party shall apply. VI. Severability 1. If any provision in this Agreement is found to be unenforceable, all other provisions will remain fully enforceable. The covenants set forth in this Agreement shall be considered and construed as separate and independent covenants. Should any part or provision of any provision of this Agreement be held invalid, void or unenforceable in any court of competent jurisdiction, such invalidity, voidness or unenforceability shall not render invalid, void or unenforceable any other part or provision of this Agreement. VII. Governing Law A. This Agreement is entered into in the Commonwealth of Massachusetts, and shall be construed and interpreted in accordance with its laws. The Parties agree that the proper and appropriate venue for any action arising from this Agreement shall be any court of competent jurisdiction in the Commonwealth of Massachusetts or of the United States of America for the District of Massachusetts. VIII. Additional Documents 1. Executive agrees to cooperate fully, and execute any and all supplementary documents, and take all additional actions which may be necessary or appropriate to give full force and effect to the basic terms and intent of this Agreement. 5A. A. IX. Acknowledgement of Voluntariness and Opportunity for Review and Revocation 1. Executive acknowledges that (a) Executive knowingly and voluntarily enters into this Agreement with the purpose of waiving any right and releasing any claims under the Age Discrimination in Employment Act of 1967, 29 U.S.C. 621, et seq. (ADEA); (b) Executive was given a period of up to twenty-one (21) days within which to review and consider this Agreement; (c) Executive understood Executive could use as much of said 21-day period as Executive desired; (d) Executive was encouraged by Company to consult with a lawyer, at Executive's own expense; (e) if Executive decided not to use the 21-day period, Executive is signing this Agreement voluntarily and of Executive's own free will; and (f) this Agreement is not final and binding until the seven-day period of revocation, described in the following sentences of this Section of the Agreement, has expired. Executive understands that Company would not have given Executive the special payments or benefits Executive is getting in exchange for this Agreement but for Executive's promises and representations Executive is making by signing it. 2. Executive acknowledges that Executive may revoke Executive's waiver of the rights and release of any ADEA (age discrimination) claims covered by this Agreement, by delivering written notice of Executive's revocation of this Agreement to Jim Parslow at j.parslow@xeneticbio.com, no later than the close of business on the seventh (7th) calendar day after the date on which Executive signed this Agreement (the "Revocation Period"). The written notice of revocation must state: "I HEREBY REVOKE MY ACCEPTANCE OF THE CONFIDENTIAL SEPARATION AGREEMENT AND GENERAL RELEASE." If the Agreement is revoked in a timely manner, this Agreement shall not be effective, and Executive shall not receive the Separation Payment as described in Section II.C. herein. A. X. Effectiveness and Electronic Signatures A. This Agreement shall become effective following execution by all the Parties (Effective Date). This Agreement may be executed via manual signature or electronic signature. Electronic signature means (a) the signing party's manual signature, converted by the signing party to facsimile or industry-accepted digital form (such as a .pdf file) and received from the signing party's customary email address, customary facsimile number, or other mutually agreed-upon authenticated source; or (b) the signing party's digital signature executed using a mutually agreed-upon digital signature service provider, such as DocuSign or Adobe sign, and digital signature process. Each Party to this Agreement (i) agrees that it will be bound by its own electronic signature, (ii) accepts the electronic signature of each other Party to this Agreement, and (iii) agrees that such electronic signatures shall be the legal equivalent of manual signatures. This Agreement may be so executed in counterparts, each of which will be considered an original and all such counterparts will be considered and constitute one and the same agreement. XI. Disparaging Statements A. Neither the Executive nor the Company shall make any remarks or statements, either publicly or privately, orally or in writing, that are disparaging of the other party. The Executive shall not make any remarks or statements, either publicly, orally or in writing that are disparaging of the Company's actual or prospective business and/or, in such capacities, current or former employees, officers, directors, trade partners, vendors, suppliers, or customers of the Company, either individually or collectively. For the avoidance of doubt, this includes remarks or statements, public or private, made via electronic mail, blogs, social media (such as, Facebook, Twitter or X, LinkedIn, Instagram or any other similar platform). This provision is subject to each party's legally protected rights to communicate with governmental bodies and agencies and to engage in otherwise legally protected activity. A. A. [remainder of page intentionally blank] A. A. 6A. A. EMPLOYEE: A. A. A. A. /s/ Curtis Lockshin A. A. Curtis Lockshin A. Date: June 19, 2024 A. A. A. COMPANY: A. A. A. A. Xenetic Biosciences, Inc. A. A. A. A. By: /s/ James Parslow A. A. Name: James Parslow A. A. Title: Interim Chief Executive Officer and Chief Financial Officer Date: June 19, 2024 A. A. A. A. A. A. A. A. A. A. [Signature page to Separation and Release Agreement] A. A. 7A. A. Exhibit A. Xenetic Biosciences, Inc. A. Curtis Lockshin & Outstanding Equity as of May 16, 2024 A. Date of Grant Shares Exercise Price Expiration Date Total Vested & Total Unvested & Forfeited as of May 16, 2024 Vesting Exercisability post termination 12/31/2014 122 \$ 550.80 12/31/2024 122 - Fully Vested 90-days post termination A. A. A. A. A. 9/6/2015 127 \$ 550.80 9/6/2025 127 - Fully Vested 10-years from grant date (9/6/25) A. A. A. A. A. 1/1/2017 1,459 \$ 516.00 1/1/2027 1,459 - Fully Vested 90-days post termination A. A. A. A. A. 12/4/2019 9,000 \$ 13.10 12/4/2029 9,000 - Fully Vested 90-days post termination A. A. A. A. A. 3/18/2021 5,000 \$ 26.00 3/18/2031 5,000 - 1/3rd on March 18, 2022; 2/3rds over remaining 8 quarters commencing June 18, 2022 thru March 18, 2024 90-days post termination A. A. A. A. A. 3/24/2022 5,000 \$11.20 3/24/2032 3,333 1,667 1/3rd on March 24, 2023; 2/3rds over remaining 8 quarters commencing June 24, 2023 thru March 24, 2025 90-days post termination A. A. A. A. A. 12/11/2023 10,000 \$3.88 12/11/2033 - 10,000 1/3rd on December 11, 2024; 2/3rds over remaining 8 quarters commencing March 11, 2025 thru Dec 11, 2026 90-days post termination A. A. 8A. EX-10.3 4 xenetic.ex1003.htm AMENDMENT TO EMPLOYMENT AGREEMENT, DATED JUNE 18, 2024, BETWEEN JAMES F. PARSLow AND XENETIC BIOSCIENCES, INC. Exhibit 10.3 A. AMENDMENT TO EMPLOYMENT AGREEMENT A. This Amendment (the "Amendment") to the Employment Agreement dated as of March 23, 2017 (the

[Axis] Measure [Axis] Pay vs Performance Disclosure, Table Company Selected Measure Name Named Executive Officers, Footnote Peer Group Issuers, Footnote Changed Peer Group, Footnote PEO Total Compensation Amount PEO Actually Paid Compensation Amount Adjustment To PEO Compensation, Footnote Non-PEO NEO Average Total Compensation Amount Non-PEO NEO Average Compensation Actually Paid Amount Adjustment to Non-PEO NEO Compensation Footnote Equity Valuation Assumption Difference, Footnote Compensation Actually Paid vs. Total Shareholder Return Compensation Actually Paid vs. Net Income Compensation Actually Paid vs. Company Selected Measure Total Shareholder Return Vs Peer Group Compensation Actually Paid vs. Other Measure Tabular List, Table Total Shareholder Return Amount Peer Group Total Shareholder Return Amount Net Income (Loss) Company Selected Measure Amount Other Performance Measure, Amount Adjustment to Compensation, Amount PEO Name Name Non-GAAP Measure Description Additional 402(v) Disclosure Pension Benefits Adjustments, Footnote Erroneously Awarded Compensation Recovery [Table] Restatement Determination Date [Axis] Restatement Determination Date Aggregate Erroneous Compensation Amount Erroneous Compensation Analysis Stock Price or TSR Estimation Method Outstanding Aggregate Erroneous Compensation Amount Aggregate Erroneous Compensation Not Yet Determined Name Forgone Recovery due to Expense of Enforcement, Amount Forgone Recovery due to Violation of Home Country Law, Amount Forgone Recovery due to Disqualification of Tax Benefits, Amount Forgone Recovery, Explanation of Impracticability Name Compensation Amount Restatement does not require Recovery Awards Close in Time to MNPI Disclosures [Table] Award Timing MNPI Disclosure Award Timing Method Award Timing Predetermined Award Timing MNPI Considered Award Timing, How MNPI Considered MNPI Disclosure Timed for Compensation Value Awards Close in Time to MNPI Disclosures, Table Name Underlying Securities Exercise Price Fair Value as of Grant Date Underlying Security Market Price Change Insider Trading Arrangements [Line Items] Material Terms of Trading Arrangement Name Title Rule 10b5-1 Arrangement Adopted Non-Rule 10b5-1 Arrangement Adopted Adoption Date Rule 10b5-1 Arrangement Terminated Non-Rule 10b5-1 Arrangement Terminated Termination Date Expiration Date Arrangement Duration Insider Trading Policies and Procedures [Line Items] Insider Trading Policies and Procedures Adopted Insider Trading Policies and Procedures Not Adopted Organization, Consolidation and Presentation of Financial Statements [Abstract] The Company Risks and Uncertainties [Abstract] Risks and Uncertainties Accounting Policies [Abstract] Summary of Significant Accounting Policies Significant Strategic Collaborations Payables and Accruals [Abstract] Accrued Expenses and Other Current Liabilities Fair Value Disclosures [Abstract] Fair Value Measurements Equity [Abstract] Stockholdersâ€™ Equity Share-Based Payment Arrangement [Abstract] Share-Based Expense Income Tax Disclosure [Abstract] Income Taxes Related Party Transactions [Abstract] Related Party Transactions Preparation of Interim Financial Statements Principles of Consolidation Basic and Diluted Net Loss per Share Schedule of share-based compensation expense Stockholders' Equity, Reverse Stock Split Collaborative Arrangement and Arrangement Other than Collaborative [Table] Collaborative Arrangement and Arrangement Other than Collaborative [Line Items] Royalty income Research and development expenses Prepaid expenses and other current assets Accrued expenses and other current liabilities Other assets Revenues Offsetting Assets [Table] Offsetting Assets [Line Items] Labor and related expenses Share based compensation Stock, Class of Stock [Table] Class of Stock [Line Items] Warrant Outstanding Exercise price Maturity date Warrants exercised Warrants forfeited Share-Based Payment Arrangement, Expensed and Capitalized, Amount [Table] Share-Based Payment Arrangement, Expensed and Capitalized, Amount [Line Items] Share-based compensation Schedule of Share-Based Compensation Arrangements by Share-Based Payment Award [Table] Share-Based Compensation Arrangement by Share-Based Payment Award [Line Items] Options granted Other than options granted, shares Stock issued for RSU's Options exercised Options forfeited Options expired Provision for income taxes Deferred tax valuation allowance Unrecognized tax positions Related Party Transaction [Table] Related Party Transaction [Line Items] Payments to Acquire Notes Receivable Accounts and Financing Receivable, after Allowance for Credit Loss Interest and Other Income Assets, Current Assets Liabilities, Current Liabilities Treasury Stock, Common, Value Equity, Attributable to Parent Liabilities and Equity General and Administrative Expense Operating Expenses Operating Income (Loss) Shares, Outstanding Increase (Decrease) in Accounts and Other Receivables Increase (Decrease) in Other Noncurrent Assets Net Cash Provided by (Used in) Operating Activities Cash, Cash Equivalents, Restricted Cash, and Restricted Cash Equivalents, Period Increase (Decrease), Excluding Exchange Rate Effect Cash, Cash Equivalents, Restricted Cash, and Restricted Cash Equivalents Forgone Recovery, Individual Name Outstanding Recovery, Individual Name Awards Close in Time to MNPI Disclosures, Individual Name Trading Arrangement, Individual Name Accrued Liabilities and Other Liabilities Other Assets EX-101.PRE 12 xbio-20240630_pre.xml XBRL PRESENTATION FILE XML 14 R1.htm IDEA: XBRL DOCUMENT v3.24.2.u1 Cover - shares 6 Months Ended Jun. 30, 2024 Aug. 09, 2024 Cover [Abstract] Å Document Type 10-Q Å Amendment Flag false Å Document Quarterly Report true Å Document Transition Report false Å Document Period End Date Jun. 30, 2024 Å Document Fiscal Period Focus Q2 Å Document Fiscal Year Focus 2024 Å Current Fiscal Year End Date -12-31 Å Entity File Number 001-37937 Å Entity Registrant Name XENETIC BIOSCIENCES, INC. Å Entity Central Index Key 0001534525 Å Entity Tax Identification Number 45-2952962 Å Entity Incorporation, State or Country Code NV Å Entity Address, Address Line One 945 Concord Street Å Entity Address, City or Town Framingham Å Entity Address, State or Province MA Å Entity Address, Postal Zip Code 01701 Å City Area Code 781 Å Local Phone Number 778-7720 Å Title of 12(b) Security Common Stock, \$0.001 par value per share Å Trading Symbol XBIO Å Security Exchange Name NASDAQ Å Entity Current Reporting Status Yes Å Entity Interactive Data Current Yes Å Entity Filer Category Non-accelerated Filer Å Entity Small Business true Å Entity Emerging Growth Company false Å Entity Shell Company false Å Entity Common Stock, Shares Outstanding Å 1,542,139 X - DefinitionBoolean flag that is true when the XBRL content amends previously-filed or accepted submission. + ReferencesNo definition available. + Details Name: dei_AmendmentFlag Namespace Prefix: dei_Data Type: xbrli:booleanItemType Balance Type: na Period Type: duration X - DefinitionArea code of city + ReferencesNo definition available. + Details Name: dei_CityAreaCode Namespace Prefix: dei_Data Type: xbrli:normalizedStringItemType Balance Type: na Period Type: duration X - DefinitionCover page. + ReferencesNo definition available. + Details Name: dei_CoverAbstract Namespace Prefix: dei_Data Type: xbrli:stringItemType Balance Type: na Period Type: duration X - DefinitionEnd date of current fiscal year in the format -MM-DD. + ReferencesNo definition available. + Details Name: dei_CurrentFiscalYearEndDate Namespace Prefix: dei_Data Type: xbrli:gMonthDayItemType Balance Type: na Period Type: duration X - DefinitionFiscal period values are FY, Q1, Q2, and Q3. 1st, 2nd and 3rd quarter 10-Q or 10-QT statements have value Q1, Q2, and Q3 respectively, with 10-K, 10-KT or other fiscal year statements having FY. + ReferencesNo definition available. + Details Name: dei_DocumentFiscalPeriodFocus Namespace Prefix: dei_Data Type: dei:fiscalPeriodItemType Balance Type: na Period Type: duration X - DefinitionThis is focus fiscal year of the document report in YYYY format. For a 2006 annual report, which may also provide financial information from prior periods, fiscal 2006 should be given as the fiscal year focus. Example: 2006. + ReferencesNo definition available. + Details Name: dei_DocumentFiscalYearFocus Namespace Prefix: dei_Data Type: xbrli:yearItemType Balance Type: na Period Type: duration X - DefinitionFor the EDGAR submission types of Form 8-K: the date of the report, the date of the earliest event reported; for the EDGAR submission types of Form N-1A: the filing date; for all other submission types: the end of the reporting or transition period. The format of the date is YYYY-MM-DD. + ReferencesNo definition available. + Details Name: dei_DocumentPeriodEndDate Namespace Prefix: dei_Data Type: xbrli:dateItemType Balance Type: na Period Type: duration X - DefinitionBoolean flag that is true only for a form used as an quarterly report. + ReferencesReference 1: <http://www.xbrl.org/2003/role/presentationRef-Publisher SEC -Name Form 10-Q -Number 240 -Section 308 -Subsection a> + Details Name: dei_DocumentQuarterlyReport Namespace Prefix: dei_Data Type: xbrli:booleanItemType Balance Type: na Period Type: duration X - DefinitionBoolean flag that is true only for a form used as a transition report. + ReferencesReference 1:

FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1BReference 30: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1B -Subparagraph (SX 210.13-02(a)(4)(iv)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1BReference 31: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1B -Subparagraph (SX 210.13-02(a)(5)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1BReference 32: http://www.xbrl.org/2003/role/disclosureRef -Topic 260 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 60B -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482689/260-10-45-60BReference 33: http://www.xbrl.org/2003/role/disclosureRef -Topic 205 -SubTopic 20 -Name Accounting Standards Codification -Section 50 -Paragraph 7 -Publisher FASB -URI https://asc.fasb.org/1943274/2147483499/205-20-50-7Reference 34: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 230 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 28 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482740/230-10-45-28Reference 35: http://www.xbrl.org/2003/role/disclosureRef -Topic 220 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 1A -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482790/220-10-45-1AReference 36: http://www.xbrl.org/2003/role/disclosureRef -Topic 220 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 1B -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482790/220-10-45-1BReference 37: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 942 -SubTopic 220 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.9-04(22)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147478524/942-220-S99-1 + Details Name: us-gaap NetIncomeLoss Namespace Prefix: us-gaap Data Type: xbrli:monetaryItemType Balance Type: credit Period Type: duration X - DefinitionThe aggregate amount of income or expense from ancillary business-related activities (that is to say, excluding major activities considered part of the normal operations of the business). + ReferencesReference 1: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 220 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 2 -Subparagraph (SX 210.5-03(7)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147483621/220-10-S99-2 + Details Name: us-gaap NonoperatingIncomeExpense Namespace Prefix: us-gaap Data Type: xbrli:monetaryItemType Balance Type: credit Period Type: duration X - ReferencesNo definition available. + Details Name: us-gaap NonoperatingIncomeExpenseAbstract Namespace Prefix: us-gaap Data Type: xbrli:stringItemType Balance Type: na Period Type: duration X - ReferencesNo definition available. + Details Name: us-gaap OperatingCostsAndExpensesAbstract Namespace Prefix: us-gaap Data Type: xbrli:stringItemType Balance Type: na Period Type: duration X - DefinitionGenerally recurring costs associated with normal operations except for the portion of these expenses which can be clearly related to production and included in cost of sales or services. Includes selling, general and administrative expense. + ReferencesNo definition available. + Details Name: us-gaap OperatingExpenses Namespace Prefix: us-gaap Data Type: xbrli:monetaryItemType Balance Type: debit Period Type: duration X - DefinitionThe net result for the period of deducting operating expenses from operating revenues. + ReferencesReference 1: http://www.xbrl.org/2009/role/commonPracticeRef -Topic 280 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 22 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482810/280-10-50-22Reference 2: http://www.xbrl.org/2009/role/commonPracticeRef -Topic 280 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 32 -Subparagraph (f) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482810/280-10-50-32Reference 3: http://www.xbrl.org/2009/role/commonPracticeRef -Topic 280 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 30 -Subparagraph (b) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482810/280-10-50-30Reference 4: http://www.xbrl.org/2009/role/commonPracticeRef -Topic 270 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 1 -Subparagraph (i) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482964/270-10-50-1Reference 5: http://www.xbrl.org/2009/role/commonPracticeRef -Topic 280 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 32 -Subparagraph (ee) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482810/280-10-50-32Reference 6: http://fasb.org/us-gaap/role/ref/otherTransitionRef -Topic 280 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 32 -Subparagraph (c) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482810/280-10-50-32Reference 7: http://www.xbrl.org/2003/role/exampleRef -Topic 280 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 31 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482810/280-10-50-31 + Details Name: us-gaap OperatingIncomeLoss Namespace Prefix: us-gaap Data Type: xbrli:monetaryItemType Balance Type: credit Period Type: duration X - DefinitionAmount of income (expense) related to nonoperating activities, classified as other. + ReferencesReference 1: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 220 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 2 -Subparagraph (SX 210.5-03(9)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147483621/220-10-S99-2 + Details Name: us-gaap OtherNonoperatingIncomeExpense Namespace Prefix: us-gaap Data Type: xbrli:monetaryItemType Balance Type: credit Period Type: duration X - DefinitionAmount of expense for research and development. Includes, but is not limited to, cost for computer software product to be sold, leased, or otherwise marketed and writeoff of research and development assets acquired in transaction other than business combination or joint venture formation or both. Excludes write-down of intangible asset acquired in business combination or from joint venture formation or both, used in research and development activity. + ReferencesReference 1: http://www.xbrl.org/2003/role/exampleRef -Topic 280 -SubTopic 10 -Name Accounting Standards Codification -Section 55 -Paragraph 48 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482785/280-10-55-48Reference 2: http://www.xbrl.org/2003/role/disclosureRef -Topic 985 -SubTopic 20 -Name Accounting Standards Codification -Section 50 -Paragraph 2 -Publisher FASB -URI https://asc.fasb.org/1943274/2147481283/985-20-50-2Reference 3: http://www.xbrl.org/2003/role/disclosureRef -Topic 730 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 1 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482916/730-10-50-1Reference 4: http://www.xbrl.org/2009/role/commonPracticeRef -Topic 912 -SubTopic 730 -Name Accounting Standards Codification -Section 25 -Paragraph 1 -Publisher FASB -URI https://asc.fasb.org/1943274/2147479532/912-730-25-1 + Details Name: us-gaap ResearchAndDevelopmentExpense Namespace Prefix: us-gaap Data Type: xbrli:monetaryItemType Balance Type: debit Period Type: duration X - DefinitionAmount of revenue recognized from goods sold, services rendered, insurance premiums, or other activities that constitute an earning process. Includes, but is not limited to, investment and interest income before deduction of interest expense when recognized as a component of revenue, and sales and trading gain (loss). + ReferencesReference 1: http://www.xbrl.org/2003/role/exampleRef -Topic 280 -SubTopic 10 -Name Accounting Standards Codification -Section 55 -Paragraph 48 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482785/280-10-55-48Reference 2: http://www.xbrl.org/2003/role/disclosureRef -Topic 280 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 41 -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482810/280-10-50-41Reference 3: http://www.xbrl.org/2003/role/disclosureRef -Topic 270 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 1 -Subparagraph (i) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482964/270-10-50-1Reference 4: http://www.xbrl.org/2003/role/disclosureRef -Topic 280 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 32 -Subparagraph (ee) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482810/280-10-50-32Reference 5: http://fasb.org/us-gaap/role/ref/otherTransitionRef -Topic 280 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 32 -Subparagraph (b) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482810/280-10-50-32Reference 6: http://fasb.org/us-gaap/role/ref/otherTransitionRef -Topic 280 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 32 -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482810/280-10-50-32Reference 7: http://www.xbrl.org/2003/role/disclosureRef -Topic 235 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.4-08(g)(1)(ii)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480678/235-10-S99-1Reference 8: http://www.xbrl.org/2003/role/disclosureRef -Topic 323 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 3 -Subparagraph (c) -Publisher FASB -URI https://asc.fasb.org/1943274/2147481687/323-10-50-3Reference 9: http://www.xbrl.org/2003/role/disclosureRef -Topic 825 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 28 -Subparagraph (f) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482907/825-10-50-28Reference 10: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1A -Subparagraph (SX 210.13-01(a)(4)(i)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1AReference 11: http://www.xbrl.org/2009/role/commonPracticeRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1A -Subparagraph (SX 210.13-01(a)(4)(ii)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1AReference 12: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1A -Subparagraph (SX 210.13-01(a)(4)(iii)(A)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1AReference 13: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1A -Subparagraph (SX 210.13-01(a)(4)(iv)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1AReference 14: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1A -Subparagraph (SX 210.13-01(a)(5)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1AReference 15: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1B -Subparagraph (SX 210.13-02(a)(4)(i)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1BReference 16: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1B -Subparagraph (SX 210.13-02(a)(4)(iii)(A)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1BReference 17: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1B -Subparagraph (SX 210.13-02(a)(4)(iii)(B)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1BReference 18: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1B -Subparagraph (SX 210.13-02(a)(4)(iv)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1BReference 19: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1B -Subparagraph (SX 210.13-02(a)(5)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1BReference 20: http://www.xbrl.org/2003/role/disclosureRef -Topic 280 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 30 -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482810/280-10-50-30Reference 21: http://www.xbrl.org/2003/role/disclosureRef -Topic 280 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 42 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482810/280-10-50-42Reference 22: http://www.xbrl.org/2003/role/disclosureRef -Topic 280 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 22 -Subparagraph (b) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482810/280-10-50-22Reference 23: http://www.xbrl.org/2003/role/disclosureRef -Topic 280 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 40 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482810/280-10-50-40Reference 24: http://www.xbrl.org/2003/role/disclosureRef -Topic 280 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 22 -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482810/280-10-50-22Reference 25: http://www.xbrl.org/2003/role/disclosureRef -Topic 942 -SubTopic 235 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.9-05(b)(2)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147477314/942-235-S99-1Reference 26: http://www.xbrl.org/2003/role/disclosureRef -Topic 220 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 2 -Subparagraph (SX 210.5-03(1)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147483621/220-10-S99-2 + Details Name: us-gaap Revenues Namespace Prefix: us-gaap Data Type: xbrli:monetaryItemType Balance Type: credit Period Type: duration X - ReferencesNo definition available. + Details Name: us-gaap RevenuesAbstract Namespace Prefix: us-gaap Data Type: xbrli:stringItemType Balance Type: na Period Type: duration X - DefinitionAncillary revenue earned during the period from the consideration paid to the entity for the use of its rights and property by another party. Examples include licensing the use of copyrighted materials and leasing the extraction of natural resources. + ReferencesReference 1: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 220 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 2 -Subparagraph (SX 210.5-03(7)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147483621/220-10-S99-2 + Details Name: us-gaap RoyaltyIncomeNonoperating Namespace Prefix: us-gaap Data Type: xbrli:monetaryItemType Balance Type: credit Period Type: duration XML 18 R5.htm IDEA: XBRL DOCUMENT y3.24.2.u1 CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS (Unaudited) (Parenthetical) - \$ / shares 3 Months Ended 6 Months Ended Jun. 30, 2024 Jun. 30, 2023 Jun. 30, 2023 Income Statement [Abstract] Á Á Á Earnings Per Share, Basic \$ (0.83) \$ (0.69) \$ (1.60) \$ (1.25) Earnings Per Share, Diluted \$ (0.83) \$ (0.69) \$ (1.60) \$ (1.25) Weighted Average Number of Shares Outstanding, Basic 1,540,799 1,524,717 1,540,741 1,520,710 Weighted Average Number of Shares Outstanding, Diluted 1,540,799 1,524,717 1,540,741 1,520,710 X - DefinitionThe amount of net income (loss) for the period per each share of common stock or unit outstanding during the reporting period. + ReferencesReference 1: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 6 -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-6Reference 2: http://www.xbrl.org/2003/role/exampleRef -Topic 260 -SubTopic 10 -Name Accounting Standards Codification -Section 55 -Paragraph 52 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482635/260-10-55-52Reference 3: http://www.xbrl.org/2003/role/disclosureRef -Topic 805 -SubTopic 60 -Name Accounting Standards Codification -Section 65 -Paragraph 1 -Subparagraph (g) -Publisher FASB -URI https://asc.fasb.org/1943274/2147476176/805-60-65-1Reference 4: http://www.xbrl.org/2003/role/disclosureRef -Topic 740 -SubTopic 323 -Name Accounting Standards Codification -Section 65 -Paragraph 2 -Subparagraph (g)(3) -Publisher FASB -URI https://asc.fasb.org/1943274/2147478666/740-323-65-2Reference 5: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 3 -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-3Reference 6: http://www.xbrl.org/2003/role/disclosureRef -Topic 260 -SubTopic 10 -Name Accounting Standards Codification -Section 55 -Paragraph 15 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482635/260-10-55-15Reference 7: http://www.xbrl.org/2003/role/disclosureRef -Topic 815 -SubTopic 40 -Name Accounting Standards Codification -Section 65 -Paragraph 1 -Subparagraph (e)(4) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480175/815-40-65-1Reference 8: http://www.xbrl.org/2003/role/disclosureRef -Topic 815 -SubTopic 40 -Name Accounting Standards Codification -Section 65 -Paragraph 1 -Subparagraph (f) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480175/815-40-65-1Reference 9: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 11 -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-11Reference 10: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 11 -Subparagraph (b) -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-11Reference 11: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 7 -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-7Reference 12: http://www.xbrl.org/2003/role/disclosureRef -Topic 260 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 2 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482689/260-10-45-2Reference 13: http://www.xbrl.org/2003/role/disclosureRef -Topic 260 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 60B -Subparagraph (d) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482689/260-10-45-60BReference 14: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 4 -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-4Reference 15: http://www.xbrl.org/2003/role/disclosureRef -Topic 260 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 1 -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482662/260-10-50-1Reference 16: http://www.xbrl.org/2003/role/disclosureRef -Topic 260 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 10 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482689/260-10-45-10Reference 17: http://www.xbrl.org/2003/role/disclosureRef -Topic 220 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 2 -Subparagraph (SX 210.5-03(25)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147483621/220-10-S99-2Reference 18: http://www.xbrl.org/2003/role/disclosureRef -Topic 942 -SubTopic 220 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.9-04(27)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147478524/942-220-S99-1Reference 19: http://www.xbrl.org/2003/role/disclosureRef -Topic 944 -SubTopic 220 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.7-04(23)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147477250/944-220-S99-1Reference 20: http://www.xbrl.org/2003/role/disclosureRef -Topic 260 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 7 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482689/260-10-45-7 + Details Name: us-gaap EarningsPerShareBasic Namespace Prefix: us-gaap Data Type: dt-rtype:perShareItemBalanceType Balance Type: na Period Type: duration X - DefinitionThe amount of net income (loss) for the period available to each share of common stock or common unit outstanding during the reporting period and to each share or unit that would have been outstanding assuming the issuance of common shares or units for all dilutive potential common shares or units outstanding during the reporting period. + ReferencesReference 1: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -

Section 50 -Paragraph 6 -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-6Reference 2: http://www.xbrl.org/2003/role/exampleRef -Topic 260 -SubTopic 10 -Name Accounting Standards Codification -Section 55 -Paragraph 52 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482635/260-10-55-52Reference 3: http://www.xbrl.org/2003/role/disclosureRef -Topic 805 -SubTopic 60 -Name Accounting Standards Codification -Section 65 -Paragraph 1 -Subparagraph (g) -Publisher FASB -URI https://asc.fasb.org/1943274/2147476176/805-60-65-1Reference 4: http://www.xbrl.org/2003/role/disclosureRef -Topic 740 -SubTopic 323 -Name Accounting Standards Codification -Section 65 -Paragraph 2 -Subparagraph (g)(3) -Publisher FASB -URI https://asc.fasb.org/1943274/2147478666/740-323-65-2Reference 5: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 3 -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-3Reference 6: http://www.xbrl.org/2003/role/disclosureRef -Topic 260 -SubTopic 10 -Name Accounting Standards Codification -Section 55 -Paragraph 15 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482635/260-10-55-15Reference 7: http://www.xbrl.org/2003/role/disclosureRef -Topic 815 -SubTopic 40 -Name Accounting Standards Codification -Section 65 -Paragraph 1 -Subparagraph (e)(4) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480175/815-40-65-1Reference 8: http://www.xbrl.org/2003/role/disclosureRef -Topic 815 -SubTopic 40 -Name Accounting Standards Codification -Section 65 -Paragraph 1 -Subparagraph (f) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480175/815-40-65-1Reference 9: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 11 -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-11Reference 10: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 11 -Subparagraph (b) -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-11Reference 11: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 7 -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-7Reference 12: http://www.xbrl.org/2003/role/disclosureRef -Topic 260 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 2 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482689/260-10-45-2Reference 13: http://www.xbrl.org/2003/role/disclosureRef -Topic 260 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 60B -Subparagraph (d) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482689/260-10-45-60BReference 14: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 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Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.7-04(23)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147477250/944-220-S99-1Reference 19: http://www.xbrl.org/2003/role/disclosureRef -Topic 260 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 7 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482689/260-10-45-7 + Details Name: us-gaap EarningsPerShareDiluted Namespace Prefix: us-gaap Data Type: dtr-types:perShareItem Type Balance Type: na Period Type: duration X - ReferencesNo definition available. + Details Name: us-gaap IncomeStatementAbstract Namespace Prefix: us-gaap Data Type: xbrli:stringItem Type Balance Type: na Period Type: duration X - DefinitionThe average number of shares or units issued and outstanding that are used in calculating diluted EPS or earnings per unit (EPU), determined based on the timing of issuance of shares or units in the period. + ReferencesReference 1: http://www.xbrl.org/2003/role/disclosureRef -Topic 260 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 1 -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482662/260-10-50-1Reference 2: http://www.xbrl.org/2003/role/disclosureRef -Topic 260 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 16 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482689/260-10-45-16 + Details Name: us-gaap WeightedAverageNumberOfDilutedSharesOutstanding Namespace Prefix: us-gaap Data Type: xbrli:sharesItem Type Balance Type: na Period Type: duration X - DefinitionNumber of [basic] shares or units, after adjustment for contingently issuable shares or units and other shares or units not deemed outstanding, determined by relating the portion of time within a reporting period that common shares or units have been outstanding to the total time in that period. + ReferencesReference 1: http://www.xbrl.org/2003/role/disclosureRef -Topic 260 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 1 -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482662/260-10-50-1Reference 2: http://www.xbrl.org/2003/role/disclosureRef -Topic 260 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 10 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482689/260-10-45-10 + Details Name: us-gaap WeightedAverageNumberOfSharesOutstandingBasic Namespace Prefix: us-gaap Data Type: xbrli:sharesItem Type Balance Type: na Period Type: duration XML 19 R6.htm IDEA: XBRL DOCUMENT v3.24.2.u1 CONDENSED CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY (Unaudited) - USD (\$) Preferred Stock [Member] Common Stock [Member] Additional Paid-in Capital [Member] Retained Earnings [Member] AOCI Attributable to Parent [Member] Treasury Stock, Common [Member] Total Beginning balance, value at Dec. 31, 2022 \$ 2,774 \$ 1,520 \$ 207,769,904 \$ (189,099,618) \$ 253,734 \$ (5,281,180) \$ 13,647,134 Beginning balance, shares at Dec. 31, 2022 2,774,394 1,519,360 1,519,360 1,591,360 1,591,360 1,591,360 1,591,360 Net loss (1,907,517) (1,907,517) Issuance of common stock to adjust for reverse split rounding \$ 16 (16) Issuance of common stock to adjust for reverse split rounding, shares \$ 15,941 \$ 15,941 \$ 15,941 \$ 15,941 \$ 15,941 \$ 15,941 \$ 15,941 Ending balance, value at Jun. 30, 2023 \$ 2,774 \$ 1,536 207,908,129 (191,007,135) 253,734 (5,281,180) 11,877,858 Ending balance, shares at Jun. 30, 2023 2,774,394 1,535,301 1,535,301 1,535,301 1,535,301 1,535,301 1,535,301 Beginning balance, value at Mar. 31, 2023 \$ 2,774 \$ 1,520 207,838,756 (189,956,172) 253,734 (5,281,180) 12,859,432 Beginning balance, shares at Mar. 31, 2023 2,774,394 1,519,360 1,519,360 1,519,360 1,519,360 1,519,360 1,519,360 Share-based expense 69,389 69,389 Net loss (1,050,963) (1,050,963) Issuance of common stock to adjust for reverse split rounding \$ 16 (16) Issuance of common stock to adjust for reverse split rounding, shares \$ 15,941 \$ 15,941 \$ 15,941 \$ 15,941 \$ 15,941 \$ 15,941 \$ 15,941 Ending balance, value at Jun. 30, 2023 \$ 2,774 \$ 1,536 207,908,129 (191,007,135) 253,734 (5,281,180) 11,877,858 Ending balance, shares at Jun. 30, 2023 2,774,394 1,535,301 1,535,301 1,535,301 1,535,301 1,535,301 1,535,301 Beginning balance, value at Dec. 31, 2023 \$ 1,804 \$ 1,544 208,053,935 (193,234,196) 253,734 (5,281,180) 9,795,641 Beginning balance, shares at Dec. 31, 2023 1,804,394 1,543,385 1,543,385 1,543,385 1,543,385 1,543,385 1,543,385 Issuance of common stock in connection with restricted stock Issuance of common stock in connection with restricted stock, shares \$ 417 \$ 417 \$ 417 \$ 417 \$ 417 \$ 417 \$ 417 Net loss (2,469,083) (2,469,083) Ending balance, value at Jun. 30, 2024 \$ 1,804 \$ 1,544 208,173,105 (195,703,279) 253,734 (5,281,180) 7,445,728 Ending balance, shares at Jun. 30, 2024 1,804,394 1,543,802 1,543,802 1,543,802 1,543,802 1,543,802 1,543,802 Beginning balance, value at Mar. 31, 2024 \$ 1,804 \$ 1,544 208,131,009 (194,429,309) 253,734 (5,281,180) 8,677,602 Beginning balance, shares at Mar. 31, 2024 1,804,394 1,543,385 1,543,385 1,543,385 1,543,385 1,543,385 1,543,385 Issuance of common stock in connection with restricted stock Issuance of common stock in connection with restricted stock, shares \$ 417 \$ 417 \$ 417 \$ 417 \$ 417 \$ 417 \$ 417 Share-based expense 42,096 42,096 Net loss (1,273,970) (1,273,970) Ending balance, value at Jun. 30, 2024 \$ 1,804 \$ 1,544 208,173,105 (195,703,279) 253,734 (5,281,180) 7,445,728 Ending balance, shares at Jun. 30, 2024 1,804,394 1,543,802 1,543,802 1,543,802 1,543,802 1,543,802 1,543,802 X - ReferencesNo definition available. + Details Name: XBIO StockIssuedDuringPeriodValueReverseStockSplits Namespace Prefix: XBIO Data Type: xbrli:monetaryItem Type Balance Type: credit Period Type: duration X - DefinitionAmount of increase to additional paid-in capital (APIC) for recognition of cost for award under share-based payment arrangement. + ReferencesReference 1: http://www.xbrl.org/2003/role/disclosureRef -Topic 718 -SubTopic 10 -Name Accounting Standards Codification -Section 35 -Paragraph 2 -Publisher FASB -URI https://asc.fasb.org/1943274/2147480483/718-10-35-2Reference 2: http://fasb.org/us-gaap/role/ref/legacyRef -Name Accounting Standards Codification -Topic 718 -SubTopic 20 -Section 55 -Paragraph 13 -Publisher FASB -URI https://asc.fasb.org/1943274/2147481089/718-20-55-13Reference 3: http://fasb.org/us-gaap/role/ref/legacyRef -Name Accounting Standards Codification -Topic 718 -SubTopic 20 -Section 55 -Paragraph 12 -Publisher FASB -URI https://asc.fasb.org/1943274/2147481089/718-20-55-12 + Details Name: us-gaap AdjustmentsToAdditionalPaidInCapitalSharebasedCompensationRequisiteServicePeriodRecognitionValue Namespace Prefix: us-gaap Data Type: xbrli:monetaryItem Type Balance Type: credit Period Type: duration X - DefinitionThe portion of profit or loss for the period, net of income taxes, which is attributable to the parent. + ReferencesReference 1: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 6 -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-6Reference 2: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 9 -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-9Reference 3: http://www.xbrl.org/2003/role/disclosureRef -Topic 805 -SubTopic 60 -Name Accounting Standards Codification -Section 65 -Paragraph 1 -Subparagraph (g) -Publisher FASB -URI https://asc.fasb.org/1943274/2147476176/805-60-65-1Reference 4: http://www.xbrl.org/2003/role/disclosureRef -Topic 740 -SubTopic 323 -Name Accounting Standards Codification -Section 65 -Paragraph 2 -Subparagraph (g)(3) -Publisher FASB -URI https://asc.fasb.org/1943274/2147478666/740-323-65-2Reference 5: 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https://asc.fasb.org/1943274/2147479134/946-220-S99-1Reference 22: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1A -Subparagraph (SX 210.13-01(a)(4)(i)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1Reference 23: http://www.xbrl.org/2009/role/commonPracticeRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1A -Subparagraph (SX 210.13-01(a)(4)(ii)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1Reference 24: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1A -Subparagraph (SX 210.13-01(a)(4)(iii)(A)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1Reference 25: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1A 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-SubTopic 20 -Name Accounting Standards Codification -Section 50 -Paragraph 7 -Publisher FASB -URI https://asc.fasb.org/1943274/2147483499/205-20-50-7Reference 34: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 230 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 28 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482740/230-10-45-28Reference 35: http://www.xbrl.org/2003/role/disclosureRef -Topic 220 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 1A -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482790/220-10-45-1AReference 36: http://www.xbrl.org/2003/role/disclosureRef -Topic 220 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 1B -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482790/220-10-45-1BReference 37: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 942 -SubTopic 220 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.9-04(22)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147478524/942-220-S99-1 + Details Name: us-gaap NetIncomeLoss Namespace Prefix: us-gaap Data Type: xbrli:monetaryItem Type Balance Type: credit Period Type: duration X - DefinitionNumber of shares issued which are neither cancelled nor held in the treasury. + ReferencesNo definition available. + Details Name: us-gaap SharesOutstanding Namespace Prefix: us-gaap Data Type: xbrli:sharesItem Type Balance Type: na Period Type: instant X - DefinitionNumber of shares issued during the period as a result of the conversion of convertible securities. + ReferencesReference 1: http://fasb.org/us-gaap/role/ref/legacyRef -Name Accounting Standards Codification -Section 50 -Paragraph 2 -SubTopic 10 -Topic 505 -Publisher FASB -URI https://asc.fasb.org/1943274/2147481112/505-10-50-2Reference 2: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 210 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.5-02(29)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480566/210-10-S99-1Reference 3: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 210 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.5-02(30)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480566/210-10-S99-1Reference 4: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 20 -Name Accounting Standards Codification -Section 50 -Paragraph 1E -Subparagraph (c) -Publisher FASB -URI https://asc.fasb.org/1943274/2147481139/470-20-50-1EReference 5: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 505 -SubTopic 10 -

Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.3-04) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480008/505-10-S99-1Reference 6: http://fasb.org/us-gaap/role/ref/legacyRef -Name Accounting Standards Codification -Topic 505 -SubTopic 10 -Section 50 -Paragraph 3 -Publisher FASB -URI https://asc.fasb.org/1943274/2147481112/505-10-50-3 + Details Name: us-gaap StockIssuedDuringPeriodSharesConversionOfConvertibleSecurities Namespace Prefix: us-gaap Data Type: xbrli:sharesItem Type Balance Type: na Period Type: duration X - DefinitionReduction in the number of shares during the period as a result of a reverse stock split. + ReferencesReference 1: http://fasb.org/us-gaap/role/ref/legacyRef -Name Accounting Standards Codification -Section 50 -Paragraph 2 -SubTopic 10 -Topic 505 -Publisher FASB -URI https://asc.fasb.org/1943274/2147481112/505-10-50-2 + Details Name: us-gaap StockIssuedDuringPeriodSharesReverseStockSplits Namespace Prefix: us-gaap Data Type: xbrli:sharesItem Type Balance Type: na Period Type: duration X - DefinitionThe gross value of stock issued during the period upon the conversion of convertible securities. + ReferencesReference 1: http://fasb.org/us-gaap/role/ref/legacyRef -Name Accounting Standards Codification -Section 50 -Paragraph 2 -SubTopic 10 -Topic 505 -Publisher FASB -URI https://asc.fasb.org/1943274/2147481112/505-10-50-2Reference 2: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 210 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.5-02(29)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480566/210-10-S99-1Reference 3: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 210 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.5-02(30)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480566/210-10-S99-1Reference 4: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 210 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.5-02(31)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480566/210-10-S99-1Reference 5: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 505 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.3-04) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480008/505-10-S99-1 + Details Name: us-gaap StockIssuedDuringPeriodValueConversionOfConvertibleSecurities Namespace Prefix: us-gaap Data Type: xbrli:monetaryItem Type Balance Type: credit Period Type: duration X - DefinitionAmount of equity (deficit) attributable to parent. Excludes temporary equity and equity attributable to noncontrolling interest. + ReferencesReference 1: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 210 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.5-02(29)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480566/210-10-S99-1Reference 2: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 210 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.5-02(30)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480566/210-10-S99-1Reference 3: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 210 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.5-02(31)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480566/210-10-S99-1Reference 4: http://www.xbrl.org/2003/role/exampleRef -Topic 852 -SubTopic 10 -Name Accounting Standards Codification -Section 55 -Paragraph 10 -Publisher FASB -URI https://asc.fasb.org/1943274/2147481372/852-10-55-10Reference 5: http://www.xbrl.org/2003/role/exampleRef -Topic 946 -SubTopic 830 -Name Accounting Standards Codification -Section 55 -Paragraph 12 -Publisher FASB -URI https://asc.fasb.org/1943274/2147479168/946-830-55-12Reference 6: http://www.xbrl.org/2003/role/disclosureRef -Topic 946 -SubTopic 210 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.6-04(19)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147479170/946-210-S99-1Reference 7: http://www.xbrl.org/2003/role/disclosureRef -Topic 946 -SubTopic 210 -Name Accounting Standards Codification -Section S99 -Paragraph 2 -Subparagraph (SX 210.6-05(4)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147479170/946-210-S99-2Reference 8: http://www.xbrl.org/2009/role/commonPracticeRef -Topic 946 -SubTopic 220 -Name Accounting Standards Codification -Section S99 -Paragraph 3 -Subparagraph (SX 210.6-09(4)(b)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147479134/946-220-S99-3Reference 9: http://www.xbrl.org/2003/role/disclosureRef -Topic 946 -SubTopic 220 -Name Accounting Standards Codification -Section S99 -Paragraph 3 -Subparagraph (SX 210.6-09(6)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147479134/946-220-S99-3Reference 10: http://www.xbrl.org/2003/role/disclosureRef -Topic 946 -SubTopic 220 -Name Accounting Standards Codification -Section S99 -Paragraph 3 -Subparagraph (SX 210.6-09(7)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147479134/946-220-S99-3Reference 11: http://www.xbrl.org/2009/role/commonPracticeRef -Topic 235 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.4-08(g)(1)(ii)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480678/235-10-S99-1Reference 12: http://www.xbrl.org/2009/role/commonPracticeRef -Topic 323 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 3 -Subparagraph (c) -Publisher FASB -URI https://asc.fasb.org/1943274/2147481687/323-10-50-3Reference 13: http://www.xbrl.org/2009/role/commonPracticeRef -Topic 825 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 28 -Subparagraph (f) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482907/825-10-50-28Reference 14: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 310 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 2 -Subparagraph (SAB Topic 4.E) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480418/310-10-S99-2 + Details Name: us-gaap StockholdersEquity Namespace Prefix: us-gaap Data Type: xbrli:monetaryItem Type Balance Type: credit Period Type: instant XML 20 R7.htm IDEA: XBRL DOCUMENT v3.24.2.u1 CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS (Unaudited) -USD (\$) 3 Months Ended 6 Months Ended Jun. 30, 2024 Jun. 30, 2023 Jun. 30, 2024 Jun. 30, 2023 CASH FLOWS FROM OPERATING ACTIVITIES: Á Á Á Net loss \$ (1,273,970) \$ (1,050,963) \$ (2,469,083) \$ (1,907,517) Adjustments to reconcile net loss to net cash used in operating activities: Á Á Á Share-based expense 42,096 69,389 119,170 138,241 Changes in operating assets and liabilities: Á Á Á Prepaid expenses, receivables and other Á Á (112,553) (762,941) Other assets Á Á 0 362,500 Accounts payable, accrued expenses and other liabilities Á Á 778,017 (201,841) Net cash used in operating activities Á Á (1,684,449) (2,371,558) Net change in cash Á Á (1,684,449) (2,371,558) Cash at beginning of period Á Á 8,983,046 13,097,265 Cash at end of period \$ 7,298,597 \$ 10,725,707 7,298,597 10,725,707 SUPPLEMENTAL CASH FLOW INFORMATION: Á Á Á Cash paid for interest Á Á \$ 0 \$ 0 X - ReferencesNo definition available. + Details Name: us-gaap AdjustmentsToReconcileNetIncomeLossToCashProvidedByUsedInOperatingActivitiesAbstract Namespace Prefix: us-gaap Data Type: xbrli:stringItem Type Balance Type: na Period Type: duration X - DefinitionAmount of cash and cash equivalents, and cash and cash equivalents restricted to withdrawal or usage. Excludes amount for disposal group and discontinued operations. Cash includes, but is not limited to, currency on hand, demand deposits with banks or financial institutions, and other accounts with general characteristics of demand deposits. Cash equivalents include, but are not limited to, short-term, highly liquid investments that are both readily convertible to known amounts of cash and so near their maturity that they present insignificant risk of changes in value because of changes in interest rates. + ReferencesReference 1: http://www.xbrl.org/2003/role/disclosureRef -Topic 230 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 8 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482913/230-10-50-8Reference 2: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 230 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 24 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482740/230-10-45-24Reference 3: http://fasb.org/us-gaap/role/ref/legacyRef -Name Accounting Standards Codification -Topic 230 -SubTopic 10 -Section 45 -Paragraph 4 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482740/230-10-45-4 + Details Name: us-gaap CashCashEquivalentsRestrictedCashAndRestrictedCashEquivalents Namespace Prefix: us-gaap Data Type: xbrli:monetaryItem Type Balance Type: debit Period Type: instant X - DefinitionAmount of increase (decrease) in cash and cash equivalents, and cash and cash equivalents restricted to withdrawal or usage; excluding effect from exchange rate change. Cash includes, but is not limited to, currency on hand, demand deposits with banks or financial institutions, and other accounts with general characteristics of demand deposits. Cash equivalents include, but are not limited to, short-term, highly liquid investments that are both readily convertible to known amounts of cash and so near their maturity that they present insignificant risk of changes in value because of changes in interest rates. + ReferencesReference 1: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 230 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 24 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482740/230-10-45-24Reference 2: http://fasb.org/us-gaap/role/ref/legacyRef -Name Accounting Standards Codification -Section 45 -Paragraph 1 -SubTopic 230 -Topic 830 -Publisher FASB -URI https://asc.fasb.org/1943274/2147477401/830-230-45-1 + Details Name: us-gaap CashCashEquivalentsRestrictedCashAndRestrictedCashEquivalentsPeriodIncreaseDecreaseExcludingExchangeRateEffect Namespace Prefix: us-gaap Data Type: xbrli:monetaryItem Type Balance Type: debit Period Type: duration X - DefinitionThe increase (decrease) during the reporting period in the amount due from customers for the credit sale of goods and services; includes accounts receivable and other types of receivables. + ReferencesReference 1: http://fasb.org/us-gaap/role/ref/legacyRef -Name Accounting Standards Codification -Section 45 -Paragraph 28 -Subparagraph (a) -SubTopic 10 -Topic 230 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482740/230-10-45-28 + Details Name: us-gaap IncreaseDecreaseInAccountsAndOtherReceivables Namespace Prefix: us-gaap Data Type: xbrli:monetaryItem Type Balance Type: credit Period Type: duration X - DefinitionThe increase (decrease) during the reporting period in the amounts payable to vendors for goods and services received and the amount of obligations and expenses incurred but not paid. + ReferencesReference 1: http://fasb.org/us-gaap/role/ref/legacyRef -Name Accounting Standards Codification -Section 45 -Paragraph 28 -Subparagraph (a) -SubTopic 10 -Topic 230 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482740/230-10-45-28 + Details Name: us-gaap IncreaseDecreaseInAccountsPayableAndAccruedLiabilities Namespace Prefix: us-gaap Data Type: xbrli:monetaryItem Type Balance Type: debit Period Type: duration X - DefinitionAmount of increase (decrease) in noncurrent assets classified as other. + ReferencesReference 1: http://www.xbrl.org/2009/role/commonPracticeRef -Topic 230 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 28 -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482740/230-10-45-28 + Details Name: us-gaap IncreaseDecreaseInOtherNoncurrentAssets Namespace Prefix: us-gaap Data Type: xbrli:monetaryItem Type Balance Type: credit Period Type: duration X - ReferencesNo definition available. + Details Name: us-gaap IncreaseDecreaseInOtherOperatingAssetsAndLiabilitiesNetAbstract Namespace Prefix: us-gaap Data Type: xbrli:stringItem Type Balance Type: na Period Type: duration X - DefinitionAmount of cash paid for interest, excluding capitalized interest, classified as operating activity. Includes, but is not limited to, payment to settle zero-coupon bond for accreted interest of debt discount and debt instrument with insignificant coupon interest rate in relation to effective interest rate of borrowing attributable to accreted interest of debt discount. + ReferencesReference 1: http://www.xbrl.org/2003/role/disclosureRef -Topic 230 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 17 -Subparagraph (d) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482740/230-10-45-17Reference 2: http://www.xbrl.org/2003/role/disclosureRef -Topic 230 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 25 -Subparagraph (e) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482740/230-10-45-25Reference 3: http://www.xbrl.org/2003/role/disclosureRef -Topic 230 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 2 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482913/230-10-50-2 + Details Name: us-gaap InterestPaidNet Namespace Prefix: us-gaap Data Type: xbrli:monetaryItem Type Balance Type: credit Period Type: duration X - DefinitionAmount of cash inflow (outflow) from operating activities, including discontinued operations. Operating activity cash flows include transactions, adjustments, and changes in value not defined as investing or financing activities. + ReferencesReference 1: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 230 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 28 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482740/230-10-45-28Reference 2: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 230 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 24 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482740/230-10-45-24Reference 3: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 230 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 25 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482740/230-10-45-25 + Details Name: us-gaap NetCashProvidedByUsedInOperatingActivities Namespace Prefix: us-gaap Data Type: xbrli:monetaryItem Type Balance Type: na Period Type: duration X - ReferencesNo definition available. + Details Name: us-gaap NetCashProvidedByUsedInOperatingActivitiesAbstract Namespace Prefix: us-gaap Data Type: xbrli:stringItem Type Balance Type: na Period Type: duration X - DefinitionThe portion of profit or loss for the period, net of income taxes, which is attributable to the parent. + ReferencesReference 1: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 6 -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-6Reference 2: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 9 -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-9Reference 3: http://www.xbrl.org/2003/role/disclosureRef -Topic 805 -SubTopic 60 -Name Accounting Standards Codification -Section 65 -Paragraph 1 -Subparagraph (g) -Publisher FASB -URI https://asc.fasb.org/1943274/2147476176/805-60-65-1Reference 4: http://www.xbrl.org/2003/role/disclosureRef -Topic 740 -SubTopic 323 -Name Accounting Standards Codification -Section 65 -Paragraph 2 -Subparagraph (g)(3) -Publisher FASB -URI https://asc.fasb.org/1943274/2147478666/740-323-65-2Reference 5: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 220 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 2 -Subparagraph (SX 210.5-03(20)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147483621/220-10-S99-2Reference 6: http://www.xbrl.org/2003/role/disclosureRef -Topic 235 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.4-08(g)(1)(ii)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480678/235-10-S99-1Reference 7: http://www.xbrl.org/2003/role/disclosureRef -Topic 323 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 3 -Subparagraph (c) -Publisher FASB -URI https://asc.fasb.org/1943274/2147481687/323-10-50-3Reference 8: http://www.xbrl.org/2003/role/disclosureRef -Topic 825 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 28 -Subparagraph (f) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482907/825-10-50-28Reference 9: http://www.xbrl.org/2003/role/disclosureRef -Topic 220 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 6 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482765/220-10-50-6Reference 10: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 6 -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-3Reference 11: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 3 -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-3Reference 12: http://www.xbrl.org/2003/role/disclosureRef -Topic 815 -SubTopic 40 -Name Accounting Standards Codification -Section 65 -Paragraph 1 -Subparagraph (f) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480175/815-40-65-1Reference 13: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 8 -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-8Reference 14: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 11 -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-11Reference 15: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 11 -Subparagraph (b) -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-11Reference 16: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 4 -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-4Reference 17: http://www.xbrl.org/2003/role/exampleRef -Topic 946 -SubTopic 830 -Name Accounting Standards Codification -Section 55 -Paragraph 10 -Publisher FASB -URI https://asc.fasb.org/1943274/2147479168/946-830-55-10Reference 18: http://www.xbrl.org/2003/role/disclosureRef -Topic 946 -SubTopic 220 -Name Accounting Standards Codification -Section 45 -Paragraph 7 -Publisher FASB -URI https://asc.fasb.org/1943274/2147479105/946-220-45-7Reference 19: http://www.xbrl.org/2003/role/disclosureRef -Topic 944 -SubTopic 220 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.7-04(18)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147477250/944-220-S99-1Reference 20: http://www.xbrl.org/2003/role/disclosureRef -Topic 946 -SubTopic 220 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.6-07(9)) -Publisher FASB -URI 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(SX 210.13-01(a)(4)(iii)(A)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1AReference 25: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1A -Subparagraph (SX 210.13-01(a)(4)(iv)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1AReference 26: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 10 -Name Accounting Standards

Codification -Section S99 -Paragraph 1A -Subparagraph (SX 210.13-01(a)(5)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1AReference 27: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1B -Subparagraph (SX 210.13-02(a)(4)(i)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1BReference 28: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1B -Subparagraph (SX 210.13-02(a)(4)(iii)(A)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1BReference 29: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1B -Subparagraph (SX 210.13-02(a)(4)(iii)(B)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1BReference 30: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1B -Subparagraph (SX 210.13-02(a)(4)(iv)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1BReference 31: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1B -Subparagraph (SX 210.13-02(a)(5)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1BReference 32: http://www.xbrl.org/2003/role/disclosureRef -Topic 260 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 60B -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482689/260-10-45-60BReference 33: http://www.xbrl.org/2003/role/disclosureRef -Topic 205 -SubTopic 20 -Name Accounting Standards Codification -Section 50 -Paragraph 7 -Publisher FASB -URI https://asc.fasb.org/1943274/2147483499/205-20-50-7Reference 34: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 230 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 28 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482740/230-10-45-28Reference 35: http://www.xbrl.org/2003/role/disclosureRef -Topic 220 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 1A -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482790/220-10-45-1AReference 36: http://www.xbrl.org/2003/role/disclosureRef -Topic 220 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 1B -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482790/220-10-45-1BReference 37: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 942 -SubTopic 220 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.9-04(22)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147478524/942-220-S99-1 + Details Name: us-gaap NetIncomeLoss Namespace Prefix: us-gaap Data Type: xbrli:monetaryItemType Balance Type: credit Period Type: duration X - DefinitionAmount of noncash expense for share-based payment arrangement. + ReferencesReference 1: http://fasb.org/us-gaap/role/ref/legacyRef -Name Accounting Standards Codification -Section 45 -Paragraph 28 -Subparagraph (a) -SubTopic 10 -Topic 230 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482740/230-10-45-28 + Details Name: us-gaap ShareBasedCompensation Namespace Prefix: us-gaap Data Type: xbrli:monetaryItemType Balance Type: debit Period Type: duration X - ReferencesNo definition available. + Details Name: us-gaap SupplementalCashFlowInformationAbstract Namespace Prefix: us-gaap Data Type: xbrli:stringItemType Balance Type: na Period Type: duration XML 21 R8.htm IDEA: XBRL DOCUMENT v3.24.2.u1 Pay vs Performance Disclosure - USD (\$) 3 Months Ended 6 Months Ended Jun. 30, 2024 Jun. 30, 2023 Jun. 30, 2024 Jun. 30, 2023 Pay vs Performance Disclosure [Table] Á Á Á Á Net Income (Loss) \$(1,273,970) \$(1,050,963) \$(2,469,083) \$(1,907,517) X - ReferencesReference 1: http://www.xbrl.org/2003/role/presentationRef -Publisher SEC -Name Regulation S-K -Number 229 -Section 402 -Subsection v -Paragraph 1 + Details Name: ecd PvpTable Namespace Prefix: ecd Data Type: xbrli:stringItemType Balance Type: na Period Type: duration X - DefinitionThe portion of profit or loss for the period, net of income taxes, which is attributable to the parent. + ReferencesReference 1: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 6 -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-6Reference 2: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 9 -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-9Reference 3: http://www.xbrl.org/2003/role/disclosureRef -Topic 805 -SubTopic 60 -Name Accounting Standards Codification -Section 65 -Paragraph 1 -Subparagraph (g) -Publisher FASB -URI https://asc.fasb.org/1943274/2147476176/805-60-65-1Reference 4: http://www.xbrl.org/2003/role/disclosureRef -Topic 740 -SubTopic 323 -Name Accounting Standards Codification -Section 65 -Paragraph 2 -Subparagraph (g)(3) -Publisher FASB -URI https://asc.fasb.org/1943274/2147478666/740-323-65-2Reference 5: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 220 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 2 -Subparagraph (SX 210.5-03(20)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147483621/220-10-S99-2Reference 6: http://www.xbrl.org/2003/role/disclosureRef -Topic 235 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.4-08(g)(1)(iii)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480678/235-10-S99-1Reference 7: http://www.xbrl.org/2003/role/disclosureRef -Topic 323 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 3 -Subparagraph (c) -Publisher FASB -URI https://asc.fasb.org/1943274/2147481687/323-10-50-3Reference 8: http://www.xbrl.org/2003/role/disclosureRef -Topic 825 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 28 -Subparagraph (f) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482907/825-10-50-28Reference 9: http://www.xbrl.org/2003/role/disclosureRef -Topic 220 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 6 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482765/220-10-50-6Reference 10: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 3 -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-3Reference 11: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 1 -Subparagraph (b)(2) -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-1Reference 12: http://www.xbrl.org/2003/role/disclosureRef -Topic 815 -SubTopic 40 -Name Accounting Standards Codification -Section 65 -Paragraph 1 -Subparagraph (f) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480175/815-40-65-1Reference 13: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 8 -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-8Reference 14: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 11 -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-11Reference 15: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 11 -Subparagraph (b) -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-11Reference 16: http://www.xbrl.org/2003/role/disclosureRef -Topic 250 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 4 -Publisher FASB -URI https://asc.fasb.org/1943274/2147483443/250-10-50-4Reference 17: http://www.xbrl.org/2003/role/exampleRef -Topic 946 -SubTopic 830 -Name Accounting Standards Codification -Section 55 -Paragraph 10 -Publisher FASB -URI https://asc.fasb.org/1943274/2147479168/946-830-55-10Reference 18: http://www.xbrl.org/2003/role/disclosureRef -Topic 946 -SubTopic 220 -Name Accounting Standards Codification -Section 45 -Paragraph 7 -Publisher FASB -URI https://asc.fasb.org/1943274/2147479105/946-220-45-7Reference 19: http://www.xbrl.org/2003/role/disclosureRef -Topic 944 -SubTopic 220 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.7-04(18)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147477250/944-220-S99-1Reference 20: http://www.xbrl.org/2003/role/disclosureRef -Topic 946 -SubTopic 220 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.6-07(9)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147479134/946-220-S99-1Reference 21: http://www.xbrl.org/2003/role/disclosureRef -Topic 946 -SubTopic 220 -Name Accounting Standards Codification -Section S99 -Paragraph 3 -Subparagraph (SX 210.6-09(1)(d)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147479134/946-220-S99-3Reference 22: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1A -Subparagraph (SX 210.13-01(a)(4)(i)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1AReference 23: http://www.xbrl.org/2009/role/commonPracticeRef -Topic 470 -SubTopic 10 -Name Accounting Standards Codification -Section S99 -Paragraph 1A -Subparagraph (SX 210.13-01(a)(4)(ii)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1AReference 24: http://www.xbrl.org/2003/role/disclosureRef -Topic 470 -SubTopic 10 -Name Accounting Standards 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https://asc.fasb.org/1943274/2147480097/470-10-S99-1BReference 32: http://www.xbrl.org/2003/role/disclosureRef -Topic 260 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 60B -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482689/260-10-45-60BReference 33: http://www.xbrl.org/2003/role/disclosureRef -Topic 205 -SubTopic 20 -Name Accounting Standards Codification -Section 50 -Paragraph 7 -Publisher FASB -URI https://asc.fasb.org/1943274/2147483499/205-20-50-7Reference 34: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 230 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 28 -Publisher FASB -URI https://asc.fasb.org/1943274/2147482740/230-10-45-28Reference 35: http://www.xbrl.org/2003/role/disclosureRef -Topic 220 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 1A -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482790/220-10-45-1AReference 36: http://www.xbrl.org/2003/role/disclosureRef -Topic 220 -SubTopic 10 -Name Accounting Standards Codification -Section 45 -Paragraph 1B -Subparagraph (a) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482790/220-10-45-1BReference 37: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 942 -SubTopic 220 -Name Accounting Standards Codification -Section S99 -Paragraph 1 -Subparagraph (SX 210.9-04(22)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147478524/942-220-S99-1 + Details Name: us-gaap NetIncomeLoss Namespace Prefix: us-gaap Data Type: xbrli:monetaryItemType Balance Type: credit Period Type: duration XML 22 R9.htm IDEA: XBRL DOCUMENT v3.24.2.u1 Insider Trading Arrangements 3 Months Ended Jun. 30, 2024 Insider Trading Arrangements [Line Items] Á Rule 10b5-1 Arrangement Adopted false Non-Rule 10b5-1 Arrangement Adopted false Rule 10b5-1 Arrangement Terminated false Non-Rule 10b5-1 Arrangement Terminated false X - ReferencesReference 1: http://www.xbrl.org/2003/role/presentationRef -Publisher SEC -Name Regulation S-K -Number 229 -Section 408 -Subsection a + Details Name: ecd InsiderTradingArrLineItems Namespace Prefix: ecd Data Type: xbrli:stringItemType Balance Type: na Period Type: duration X - ReferencesReference 1: http://www.xbrl.org/2003/role/presentationRef -Publisher SEC -Name Regulation S-K -Number 229 -Section 408 -Subsection a -Paragraph 1 + Details Name: ecd NonRule10b51ArrAdoptedFlag Namespace Prefix: ecd Data Type: xbrli:booleanItemType Balance Type: na Period Type: duration X - ReferencesReference 1: http://www.xbrl.org/2003/role/presentationRef -Publisher SEC -Name Regulation S-K -Number 229 -Section 408 -Subsection a -Paragraph 1 + Details Name: ecd NonRule10b51ArrTrmtdFlag Namespace Prefix: ecd Data Type: xbrli:booleanItemType Balance Type: na Period Type: duration X - ReferencesReference 1: http://www.xbrl.org/2003/role/presentationRef -Publisher SEC -Name Regulation S-K -Number 229 -Section 408 -Subsection a -Paragraph 1 + Details Name: ecd Rule10b51ArrTrmtdFlag Namespace Prefix: ecd Data Type: xbrli:booleanItemType Balance Type: na Period Type: duration XML 23 R10.htm IDEA: XBRL DOCUMENT v3.24.2.u1 The Company 6 Months Ended Jun. 30, 2024 Organization, Consolidation and Presentation of Financial Statements [Abstract] Á The Company Á Background Á Xenetic Biosciences, Inc. (áœXeneticáœ or the áœCompanyáœ), 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 Companyáœ™s proprietary Deoxyribonuclease (áœdNaseáœ) platform is designed to improve outcomes of existing treatments, including immunotherapies, by targeting neutrophil extracellular traps (áœNETsáœ), which have been implicated in cancer progression and resistance to cancer treatments. Xenetic is currently focused on advancing its systemic dNase program into the clinic as an adjunctive therapy for pancreatic carcinoma and locally advanced or metastatic solid tumors. Additionally, Xenetic has partnered with biotechnology and pharmaceutical companies to develop its proprietary drug delivery platform, PolyXenÁœ®, and receives royalty payments under an exclusive license arrangement in the field of blood coagulation disorders. Á As used in this Quarterly Report on Form 10-Q (áœáœQuarterly Reportáœ), unless otherwise indicated, all references herein to áœXenetic,áœ the áœCompany,áœ áœáœweáœ or áœeusáœ refer to Xenetic Biosciences, Inc. and its wholly-owned subsidiaries. Á The Company, directly or indirectly, through its wholly-owned subsidiaries, Hesperix S.A. (áœHesperixáœ) and Xenetic Biosciences (U.K.) Limited (áœXenetic UKáœ), and the wholly-owned subsidiaries of Xenetic UK, Lipoxen Technologies Limited (áœLipoxenáœ), Xenetic Bioscience, Incorporated and SymbioTec, GmbH (áœSymbioTecaœ), own various United States (áœU.S.áœ) federal trademark registrations and applications along with unregistered trademarks and service marks, including but not limited to XCARTAáœ, OncoHístáœ, PolyXen, ErepoXenáœ, and ImuXenáœ, which may be used throughout this Quarterly Report. All other company and product names may be trademarks of the respective companies with which they are associated. Á Going Concern and Managementáœ™s Plan Á Management evaluates whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the Companyáœ™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. The Company believes that its existing resources will be adequate to fund the Companyáœ™s operations for a period of at least twelve months from the date of the issuance of these financial statements. However, the Company anticipates it will need additional capital in the long-term to pursue its business initiatives. While the Company believes 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 terms, timing and extent of any future financing will depend upon several factors, including the achievement of progress in its product development programs, its ability to identify and enter into licensing or other strategic arrangements, its continued listing on the Nasdaq Stock Market (áœNasdaqáœ), 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. X - ReferencesNo definition available. + Details Name: us-gaap OrganizationConsolidationAndPresentationOfFinancialStatementsAbstract Namespace Prefix: us-gaap Data Type: xbrli:stringItemType Balance Type: na Period Type: duration X - DefinitionThe entire disclosure for organization, consolidation and basis of presentation of financial statements disclosure. + ReferencesReference 1: http://www.xbrl.org/2003/role/disclosureRef -Topic 946 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 1 -Publisher FASB -URI https://asc.fasb.org/1943274/2147480424/946-10-50-1Reference 2: http://www.xbrl.org/2003/role/disclosureRef -Topic 946 -SubTopic 10 -Name Accounting Standards Codification -Section 50 -Paragraph 2 -Publisher FASB -URI https://asc.fasb.org/1943274/2147480424/946-10-50-2Reference 3: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 810 -Name Accounting Standards Codification -Publisher FASB -URI https://asc.fasb.org/810/tableOfContentReference 4: http://fasb.org/us-gaap/role/ref/legacyRef -Topic 205 -Name Accounting Standards Codification -Publisher FASB -URI https://asc.fasb.org/205/tableOfContent + Details Name: us-gaap OrganizationConsolidationAndPresentationOfFinancialStatementsDisclosureTextBlock Namespace Prefix: us-gaap Data Type: dtr-types:textBlockItemType Balance Type: na Period Type: duration XML 24 R11.htm IDEA: XBRL DOCUMENT v3.24.2.u1 Risks and Uncertainties 6 Months Ended Jun. 30, 2024 Risks and Uncertainties [Abstract] Á Risks and Uncertainties Á 2. Risks and Uncertainties Á Impact of Global Conflicts on Operations Á The short and long-term implications of Russiaáœ™s invasion of Ukraine and conflict in the Middle East are difficult to predict at this time. The imposition of current and future sanctions and counter sanctions may have an adverse effect on the economic markets generally and could impact our business, financial condition, and results of operations. X - DefinitionThe entire disclosure for any concentrations existing at the date of the financial statements that make an entity vulnerable to a reasonably possible, near-term, severe impact. This disclosure informs financial statement users about the general nature of the risk associated with the concentration, and may indicate the percentage of concentration risk as of the balance sheet date. + ReferencesReference 1: http://fasb.org/us-gaap/role/ref/legacyRef -Topic

ASB-URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1BReference 17: [http://www.xbrl.org/2003/role/disclosureRef-Topic 470-SubTopic 10-Name Accounting Standards Codification -Section S99-Paragraph 1B-Subparagraph \(SX 210.13-02\(a\)\(4\)\(iii\)\(B\)\)](http://www.xbrl.org/2003/role/disclosureRef-Topic 470-SubTopic 10-Name Accounting Standards Codification -Section S99-Paragraph 1B-Subparagraph (SX 210.13-02(a)(4)(iii)(B))) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1BReference 18: [http://www.xbrl.org/2003/role/disclosureRef-Topic 470-SubTopic 10-Name Accounting Standards Codification -Section S99-Paragraph 1B-Subparagraph \(SX 210.13-02\(a\)\(4\)\(iv\)\)](http://www.xbrl.org/2003/role/disclosureRef-Topic 470-SubTopic 10-Name Accounting Standards Codification -Section S99-Paragraph 1B-Subparagraph (SX 210.13-02(a)(4)(iv))) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1BReference 19: [http://www.xbrl.org/2003/role/disclosureRef-Topic 470-SubTopic 10-Name Accounting Standards Codification -Section S99-Paragraph 1B-Subparagraph \(SX 210.13-02\(a\)\(5\)\)](http://www.xbrl.org/2003/role/disclosureRef-Topic 470-SubTopic 10-Name Accounting Standards Codification -Section S99-Paragraph 1B-Subparagraph (SX 210.13-02(a)(5))) -Publisher FASB -URI https://asc.fasb.org/1943274/2147480097/470-10-S99-1BReference 20: [http://www.xbrl.org/2003/role/disclosureRef-Topic 280-SubTopic 10-Name Accounting Standards Codification -Section 50-Paragraph 30-Subparagraph \(a\)](http://www.xbrl.org/2003/role/disclosureRef-Topic 280-SubTopic 10-Name Accounting Standards Codification -Section 50-Paragraph 30-Subparagraph (a)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482810/280-10-50-30Reference 21: <http://www.xbrl.org/2003/role/disclosureRef-Topic 280-SubTopic 10-Name Accounting Standards Codification -Section 50-Paragraph 42> -Publisher FASB -URI https://asc.fasb.org/1943274/2147482810/280-10-50-42Reference 22: [http://www.xbrl.org/2003/role/disclosureRef-Topic 280-SubTopic 10-Name Accounting Standards Codification -Section 50-Paragraph 22-Subparagraph \(b\)](http://www.xbrl.org/2003/role/disclosureRef-Topic 280-SubTopic 10-Name Accounting Standards Codification -Section 50-Paragraph 22-Subparagraph (b)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482810/280-10-50-22Reference 23: <http://www.xbrl.org/2003/role/disclosureRef-Topic 280-SubTopic 10-Name Accounting Standards Codification -Section 50-Paragraph 40> -Publisher FASB -URI https://asc.fasb.org/1943274/2147482810/280-10-50-40Reference 24: [http://www.xbrl.org/2003/role/disclosureRef-Topic 280-SubTopic 10-Name Accounting Standards Codification -Section 50-Paragraph 22-Subparagraph \(a\)](http://www.xbrl.org/2003/role/disclosureRef-Topic 280-SubTopic 10-Name Accounting Standards Codification -Section 50-Paragraph 22-Subparagraph (a)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482810/280-10-50-22Reference 25: [http://www.xbrl.org/2003/role/disclosureRef-Topic 942-SubTopic 235-Name Accounting Standards Codification -Section S99-Paragraph 1-Subparagraph \(SX 210.9-05\(b\)\(2\)\)](http://www.xbrl.org/2003/role/disclosureRef-Topic 942-SubTopic 235-Name Accounting Standards Codification -Section S99-Paragraph 1-Subparagraph (SX 210.9-05(b)(2))) -Publisher FASB -URI https://asc.fasb.org/1943274/2147477314/942-235-S99-1Reference 26: [http://www.xbrl.org/2003/role/disclosureRef-Topic 220-SubTopic 10-Name Accounting Standards Codification -Section S99-Paragraph 2-Subparagraph \(SX 210.5-03\(1\)\)](http://www.xbrl.org/2003/role/disclosureRef-Topic 220-SubTopic 10-Name Accounting Standards Codification -Section S99-Paragraph 2-Subparagraph (SX 210.5-03(1))) -Publisher FASB -URI https://asc.fasb.org/1943274/2147483621/220-10-S99-2 + Details Name: us-gaap Revenues Namespace Prefix: us-gaap Data Type: xbrli:monetaryItemType Balance Type: credit Period Type: duration X - DefinitionAncillary revenue earned during the period from the consideration paid to the entity for the use of its rights and property by another party. Examples include licensing the use of copyrighted materials and leasing the extraction of natural resources. + ReferencesReference 1: [http://fasb.org/us-gaap/role/ref/legacyRef-Topic 220-SubTopic 10-Name Accounting Standards Codification -Section S99-Paragraph 2-Subparagraph \(SX 210.5-03\(7\)\)](http://fasb.org/us-gaap/role/ref/legacyRef-Topic 220-SubTopic 10-Name Accounting Standards Codification -Section S99-Paragraph 2-Subparagraph (SX 210.5-03(7))) -Publisher FASB -URI https://asc.fasb.org/1943274/2147483621/220-10-S99-2 + Details Name: srt ProductOrServiceAxis=XBIO CollaborativeAgreementsMember Namespace Prefix: Data Type: na Balance Type: Period Type: X - Details Name: srt CounterpartyNameAxis=XBIO CatalentPharmaSolutionsMember Namespace Prefix: Data Type: na Balance Type: Period Type: X - Details Name: srt CounterpartyNameAxis=XBIO ScrippsResearchMember Namespace Prefix: Data Type: na Balance Type: Period Type: X - Details Name: srt CounterpartyNameAxis=XBIO UniversityOfVirginiaMember Namespace Prefix: Data Type: na Balance Type: Period Type: XML R27.htm IDEA: XBRL DOCUMENT v3.24.2.u1 Accrued Expenses and Other Current Liabilities (Details Narrative) - USD (\$) 3 Months Ended 6 Months Ended Jun. 30, 2024 Jun. 30, 2023 Jun. 30, 2024 Jun. 30, 2023 Offsetting Assets [Line Items] Å Å Å Å Share based compensation \$ 42,096 \$ 69,389 \$ 119,170 \$ 138,241 Separation Agreements [Member] Å Å Å Å Offsetting Assets [Line Items] Å Å Å Å Labor and related expenses Å Å Å 800,000 Å Share based compensation Å 13,000 Å Accrued expenses and other current liabilities \$ 800,000 Å 800,000 Å X - DefinitionAmount of expenses incurred but not yet paid nor invoiced, and liabilities classified as other. + ReferencesNo definition available. + Details Name: us-gaap AccruedLiabilitiesAndOtherLiabilities Namespace Prefix: us-gaap Data Type: xbrli:monetaryItemType Balance Type: credit Period Type: instant X - DefinitionAmount of expense for salary, wage, profit sharing; incentive and equity-based compensation; and other employee benefit. + ReferencesReference 1: [http://www.xbrl.org/2009/role/commonPracticeRef-Topic 220-SubTopic 10-Name Accounting Standards Codification -Section S99-Paragraph 2-Subparagraph \(SX 210.5-03\(4\)\)](http://www.xbrl.org/2009/role/commonPracticeRef-Topic 220-SubTopic 10-Name Accounting Standards Codification -Section S99-Paragraph 2-Subparagraph (SX 210.5-03(4))) -Publisher FASB -URI https://asc.fasb.org/1943274/2147483621/220-10-S99-2 + Details Name: us-gaap LaborAndRelatedExpense Namespace Prefix: us-gaap Data Type: xbrli:monetaryItemType Balance Type: debit Period Type: duration X - DefinitionLine items represent financial concepts included in a table. These concepts are used to disclose reportable information associated with domain members defined in one or many axes to the table. + Details Name: us-gaap OffsettingAssetsLineItems Namespace Prefix: us-gaap Data Type: xbrli:stringItem Type Balance Type: na Period Type: duration X - DefinitionAmount of noncash expense for share-based payment arrangement. + ReferencesReference 1: [http://fasb.org/us-gaap/role/ref/legacyRef-Name Accounting Standards Codification -Section 45-Paragraph 28-Subparagraph \(a\)-SubTopic 10-Topic 230](http://fasb.org/us-gaap/role/ref/legacyRef-Name Accounting Standards Codification -Section 45-Paragraph 28-Subparagraph (a)-SubTopic 10-Topic 230) -Publisher FASB -URI https://asc.fasb.org/1943274/2147482740/230-10-45-28 + Details Name: us-gaap ShareBasedCompensation Namespace Prefix: us-gaap Data Type: xbrli:monetaryItemType Balance Type: debit Period Type: duration X - Details Name: us-gaap TransactionTypeAxis=XBIO SeparationAgreementsMember Namespace Prefix: Data Type: na Balance Type: Period Type: XML 38 R25.htm IDEA: XBRL DOCUMENT v3.24.2.u1 Stockholders' Equity (Details Narrative) - \$ / shares 3 Months Ended 6 Months Ended May 11, 2023 Jun. 30, 2024 Jun. 30, 2023 Jun. 30, 2024 Jun. 30, 2023 Dec. 31, 2023 Publicly Traded Warrants [Member] Å Å Å Å Class of Stock [Line Items] Å Å Å Å Warrant Outstanding Å 2,100 Å 2,100 Å 2,100 Exercise price Å \$ 130.00 Å \$ 130.00 Å Maturity date Å Jul. 19, 2024 Å Jul. 19, 2024 Å Other Warrants [Member] Å Å Å Å Class of Stock [Line Items] Å Å Å Å Warrant Outstanding Å 800 Å 800 Å 800 Exercise price Å \$ 29.09 Å \$ 29.09 Å Maturity date Å Jul. 03, 2026 Å Jul. 03, 2026 Å Warrants exercised Å 0 0 0 0 Å Warrants forfeited Å 0 0 0 0 Å Common Stock [Member] Å Å Å Å Class of Stock [Line Items] Å Å Å Å Issuance of common stock to adjust for reverse split rounding, shares 15,941 Å Å Å Å Series A Warrants [Member] Å Å Å Å Å Class of Stock [Line Items] Å Å Å Å Warrant Outstanding Å 462,963 Å 462,963 Å 462,963 Exercise price Å \$ 33.00 Å \$ 33.00 Å Maturity date Å Feb. 23, 2025 Å Feb. 23, 2025 Å Warrants exercised Å 0 0 0 0 Å Warrants forfeited Å 0 0 0 0 Å Publicly Traded Warrants [Member] Å Å Å Å Class of Stock [Line Items] Å Å Å Å Warrants exercised Å 0 0 0 0 Å Warrants forfeited Å 0 0 0 0 Å X - DefinitionLine items represent financial concepts included in a table. These concepts are used to disclose reportable information associated with domain members defined in one or many axes to the table. + ReferencesReference 1: [http://www.xbrl.org/2003/role/exampleRef-Topic 505-SubTopic 10-Name Accounting Standards Codification -Section 50-Paragraph 13-Subparagraph \(d\)](http://www.xbrl.org/2003/role/exampleRef-Topic 505-SubTopic 10-Name Accounting Standards Codification -Section 50-Paragraph 13-Subparagraph (d)) -Publisher FASB -URI https://asc.fasb.org/1943274/2147481112/505-10-50-13Reference 2: <http://www.xbrl.org/2003/role/recommendedDisclosureRef-Topic 272-SubTopic 10-Name Accounting Standards Codification -Section 45-Paragraph 3> -Publisher FASB -URI https://asc.fasb.org/1943274/2147483014/272-10-45-3Reference 3: <http://www.xbrl.org/2003/role/disclosureRef-Topic 272-SubTopic 10-Name Accounting Standards Codification -Section 50-Paragraph 1> -Publisher FASB -URI https://asc.fasb.org/1943274/2147482987/272-10-50-1Reference 4: [http://www.xbrl.org/2009/role/commonPractice](http://www.xbrl.org/2009/role/commonPracticeRef-Topic 235-SubTopic 10-Name Accounting Standards Codification -Section S99-Paragraph 1-Subparagraph (SX 210.4-08(d)))

information associated with domain members defined in one or many axes to the table. + ReferencesReference 1: <http://www.xbrl.org/2003/role/disclosureRef -Topic 718 -SubTopic 10 -Name Accounting Standards Codification -Section 35 -Paragraph 1D -Publisher FASB -URI https://asc.fasb.org/1943274/2147480483/718-10-35-1D>Reference 2:

[illegible]


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Cash includes, but is not limited to, currency on hand, demand deposits with banks or financial institutions, and other accounts with general characteristics of demand deposits. Cash equivalents include, but are not limited to, short-term, highly liquid investments that are both readily convertible to known amounts of cash and so near their maturity that they present insignificant risk of changes in value because of changes in interest rates." } } }, { "auth_ref": ["r10", "r50", "r100"] }, { "us-gaap_CashCashEquivalentsRestrictedCashAndRestrictedCashEquivalentsPeriodIncreaseDecreaseExcludingExchangeRateEffect": { "xbrltype": "monetaryItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "CashCashEquivalentsRestrictedCashAndRestrictedCashEquivalentsPeriodIncreaseDecreaseExcludingExchangeRateEffect", "crdr": "debit", "calculation": { "http://xeneticbio.com/role/CondensedConsolidatedStatementsOfCashFlows": { "parentTag": null, "weight": null, "order": null, "root": true } }, { "presentation": [{ "http://xeneticbio.com/role/CondensedConsolidatedStatementsOfCashFlows" }, { "en-us": { "role": { "totalLabel": "Net change in cash", "label": "Cash, Cash Equivalents, Restricted Cash, and Restricted Cash Equivalents, Period Increase (Decrease), Excluding Exchange Rate Effect", "documentation": "Amount of increase (decrease) in cash and cash equivalents, and cash and cash equivalents restricted to withdrawal or usage; excluding effect from exchange rate change. Cash includes, but is not limited to, currency on hand, demand deposits with banks or financial institutions, and other accounts with general characteristics of demand deposits. Cash equivalents include, but are not limited to, short-term, highly liquid investments that are both readily convertible to known amounts of cash and so near their maturity that they present insignificant risk of changes in value because of changes in interest rates." } } }, { "auth_ref": ["r0", "r50"] }, { "XBIO_CatalentPharmaSolutionsMember": { "xbrltype": "domainItemType", "nsuri": "http://xeneticbio.com/20240630", "localname": "CatalentPharmaSolutionsMember", "presentation": [{ "http://xeneticbio.com/role/SignificantStrategicCollaborationsDetailsNarrative" }, { "en-us": { "role": { "label": "Catalent Pharma Solutions [Member]" } } }, { "auth_ref": [] }, { "ecd_ChangedPeerGroupFnTextBlock": { "xbrltype": "textBlockItemType", "nsuri": "http://xbrl.sec.gov/ecd/2024", "localname": "ChangedPeerGroupFnTextBlock", "presentation": [{ "http://xbrl.sec.gov/ecd/role/PvpDisclosure" }, { "en-us": { "role": { "label": "Changed Peer Group, Footnote" } } }, { "auth_ref": ["r501"] }, { "dei_CityAreaCode": { "xbrltype": "normalizedStringItemType", "nsuri": "http://xbrl.sec.gov/dei/2024", "localname": "CityAreaCode", "presentation": [{ "http://xeneticbio.com/role/Cover" }, { "en-us": { "role": { "label": "City Area Code", "documentation": "Area code of city" } } }, { "auth_ref": [] }, { "us-gaap_ClassOfStockDomain": { "xbrltype": "domainItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "ClassOfStockDomain", "presentation": [{ "http://xeneticbio.com/role/CondensedConsolidatedBalanceSheets", "http://xeneticbio.com/role/CondensedConsolidatedBalanceSheetsParenthetical", "http://xeneticbio.com/role/StockholdersEquityDetailsNarrative" }, { "en-us": { "role": { "documentation": "Share of stock differentiated by the voting rights the holder receives. 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Note: elements for number of nonredeemable common shares, par value and other disclosure concepts are in another section within stockholders' equity." } } } , "auth_ref": ["r37", "r300", "r434"] } , "ecd_CompActuallyPaidVsCoSelectedMeasureTextBlock": { "xbrltype": "textBlockItemType", "nsuri": "http://xbrl.sec.gov/ecd/2024", "localname": "CompActuallyPaidVsCoSelectedMeasureTextBlock", "presentation": ["http://xbrl.sec.gov/ecd/role/PvpDisclosure"] , "lang": { "en-us": { "role": { "label": "Compensation Actually Paid vs. Company Selected Measure" } } } , "auth_ref": ["r507"] } , "ecd_CompActuallyPaidVsNetIncomeTextBlock": { "xbrltype": "textBlockItemType", "nsuri": "http://xbrl.sec.gov/ecd/2024", "localname": "CompActuallyPaidVsNetIncomeTextBlock", "presentation": ["http://xbrl.sec.gov/ecd/role/PvpDisclosure"] , "lang": { "en-us": { "role": { "label": "Compensation Actually Paid vs. Net Income" } } } , "auth_ref": ["r506"] } , "ecd_CompActuallyPaidVsOtherMeasureTextBlock": { "xbrltype": "textBlockItemType", "nsuri": "http://xbrl.sec.gov/ecd/2024", "localname": "CompActuallyPaidVsOtherMeasureTextBlock", "presentation": ["http://xbrl.sec.gov/ecd/role/PvpDisclosure"] , "lang": { "en-us": { "role": { "label": "Compensation Actually Paid vs. Other Measure" } } } , "auth_ref": ["r508"] } , "ecd_CompActuallyPaidVsTotalShareholderRtnTextBlock": { "xbrltype": "textBlockItemType", "nsuri": "http://xbrl.sec.gov/ecd/2024", "localname": "CompActuallyPaidVsTotalShareholderRtnTextBlock", "presentation": ["http://xbrl.sec.gov/ecd/role/PvpDisclosure"] , "lang": { "en-us": { "role": { "label": "Compensation Actually Paid vs. Total Shareholder Return" } } } , "auth_ref": ["r505"] } , "us-gaap_ConcentrationRiskDisclosureTextBlock": { "xbrltype": "textBlockItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "ConcentrationRiskDisclosureTextBlock", "presentation": ["http://xeneticbio.com/role/RisksAndUncertainties"] , "lang": { "en-us": { "role": { "label": "Risks and Uncertainties", "documentation": "The entire disclosure for any concentrations existing at the date of the financial statements that make an entity vulnerable to a reasonably possible, near-term, severe impact. This disclosure informs financial statement users about the general nature of the risk associated with the concentration, and may indicate the percentage of concentration risk as of the balance sheet date." } } } , "auth_ref": ["r54"] } , "us-gaap_ConsolidationPolicyTextBlock": { "xbrltype": "textBlockItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "ConsolidationPolicyTextBlock", "presentation": ["http://xeneticbio.com/role/SummaryOfSignificantAccountingPoliciesPolicies"] , "lang": { "en-us": { "role": { "label": "Principles of Consolidation", "documentation": "Disclosure of accounting policy regarding (1) the principles it follows in consolidating or combining the separate financial statements, including the principles followed in determining the inclusion or exclusion of subsidiaries or other entities in the consolidated or combined financial statements and (2) its treatment of interests (for example, common stock, a partnership interest or other means of exerting influence) in other entities, for example consolidation or use of the equity or cost methods of accounting. The accounting policy may also address the accounting treatment for intercompany accounts and transactions, noncontrolling interest, and the income statement treatment in consolidation for issuances of stock by a subsidiary." } } } , "auth_ref": ["r24", "r420"] } , "srt_CounterpartyNameAxis": { "xbrltype": "stringItemType", "nsuri": "http://fasb.org/srt/2024", "localname": "CounterpartyNameAxis", "presentation": ["http://xeneticbio.com/role/SignificantStrategicCollaborationsDetailsNarrative"] , "lang": { "en-us": { "role": { "label": "Counterparty Name [Axis]" } } } , "auth_ref": ["r105", "r106", "r162", "r167", "r285", "r287", "r293", "r417", "r419"] } , "dei_CountryRegion": { "xbrltype": "normalizedStringItemType", "nsuri": "http://xbrl.sec.gov/dei/2024", "localname": "CountryRegion", "presentation": ["http://xeneticbio.com/role/Cover"] , "lang": { "en-us": { "role": { "label": "Country Region", "documentation": "Region code of country" } } } , "auth_ref": [] } , "dei_CoverAbstract": { "xbrltype": "stringItemType", "nsuri": "http://xbrl.sec.gov/dei/2024", "localname": "CoverAbstract", "lang": { "en-us": { "role": { "label": "Cover [Abstract]", "documentation": "Cover page." } } } , "auth_ref": [] } , "dei_CurrentFiscalYearEndDate": { "xbrltype": "gMonthDayItemType", "nsuri": "http://xbrl.sec.gov/dei/2024", "localname": "CurrentFiscalYearEndDate", "presentation": ["http://xeneticbio.com/role/Cover"] , "lang": { "en-us": { "role": { "label": "Current Fiscal Year End Date", "documentation": "End date of current fiscal year in the format --MM-DD." } } } , "auth_ref": [] } , "us-gaap_DeferredTaxAssetsValuationAllowance": { "xbrltype": "monetaryItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "DeferredTaxAssetsValuationAllowance", "crdr": "credit", "presentation": ["http://xeneticbio.com/role/IncomeTaxesDetailsNarrative"] , "lang": { "en-us": { "role": { "label": "Deferred tax valuation allowance", "documentation": "Amount of deferred tax assets for which it is more likely than not that a tax benefit will not be realized." } } } , "auth_ref": ["r227"] } , "us-gaap_DisclosureOfCompensationRelatedCostsShareBasedPaymentsTextBlock": { "xbrltype": "textBlockItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "DisclosureOfCompensationRelatedCostsShareBasedPaymentsTextBlock", "presentation": ["http://xeneticbio.com/role/Share-basedExpense"] , "lang": { "en-us": { "role": { "label": "Share-Based Expense", "documentation": "The entire disclosure for share-based payment arrangement." } } } , "auth_ref": ["r183", "r187", "r214", "r215", "r216", "r428"] } , "us-gaap_DisclosureOfCompensationRelatedCostsShareBasedPaymentsAbstract": { "xbrltype": "stringItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "DisclosureOfCompensationRelatedCostsSharebasedPaymentsAbstract", "lang": { "en-us": { "role": { "label": "Share-Based Payment Arrangement [Abstract]" } } } , "auth_ref": [] } , "dei_DocumentAccountingStandard": { "xbrltype": "accountingStandardItemType", "nsuri": "http://xbrl.sec.gov/dei/2024", "localname": "DocumentAccountingStandard", "presentation": ["http://xeneticbio.com/role/Cover"] , "lang": { "en-us": { "role": { "label": "Document Accounting Standard", "documentation": "The basis of accounting the registrant has used to prepare the financial statements included in this filing This can either be 'U.S. GAAP', 'International Financial Reporting Standards', or 'Other.'" } } } , "auth_ref": ["r463"] } , "dei_DocumentAnnualReport": { "xbrltype": "booleanItemType", "nsuri": "http://xbrl.sec.gov/dei/2024", "localname": "DocumentAnnualReport", "presentation": ["http://xeneticbio.com/role/Cover"] , "lang": { "en-us": { "role": { "label": "Document Annual Report", "documentation": "Boolean flag that is true only for a form used as an annual report." } } } , "auth_ref": ["r461", "r463", "r475"] } , "dei_DocumentFiscalPeriodFocus": { "xbrltype": "fiscalPeriodItemType", "nsuri": "http://xbrl.sec.gov/dei/2024", "localname": "DocumentFiscalPeriodFocus", "presentation": ["http://xeneticbio.com/role/Cover"] , "lang": { "en-us": { "role": { "label": "Document Fiscal Period Focus", "documentation": "Fiscal period values are FY, Q1, Q2, and Q3. 1st, 2nd and 3rd quarter 10-Q or 10-QT statements have value Q1, Q2, and Q3 respectively, with 10-K, 10-KT or other fiscal year statements having FY." } } } , "auth_ref": [] } , "dei_DocumentFiscalYearFocus": { "xbrltype": "gYearItemType", "nsuri": "http://xbrl.sec.gov/dei/2024", "localname": "DocumentFiscalYearFocus", "presentation": ["http://xeneticbio.com/role/Cover"] , "lang": { "en-us": { "role": { "label": "Document Fiscal Year Focus", "documentation": "This is focus fiscal year of the document report in YYYY format. For a 2006 annual report, which may also provide financial information from prior periods, fiscal 2006 should be given as the fiscal year focus. Example: 2006." } } } , "auth_ref": [] } , "dei_DocumentPeriodEndDate": { "xbrltype": "dateItemType", "nsuri": "http://xbrl.sec.gov/dei/2024", "localname": "DocumentPeriodEndDate", "presentation": ["http://xeneticbio.com/role/Cover"] , "lang": { "en-us": { "role": { "label": "Document Period End Date", "documentation": "For the EDGAR submission types of Form 8-K: the date of the report, the date of the earliest event reported; for the EDGAR submission types of Form N-1A: the filing date; for all other submission types: the end of the reporting or transition period. 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Such disclosures about the financial instruments, assets, and liabilities would include: (1) the fair value of the required items together with their carrying amounts (as appropriate); (2) for items for which it is not practicable to estimate fair value, disclosure would include: (a) information pertinent to estimating fair value (including, carrying amount, effective interest rate, and maturity, and (b) the reasons why it is not practicable to estimate fair value; (3) significant concentrations of credit risk including: (a) information about the activity, region, or economic characteristics identifying a concentration, (b) the maximum amount of loss the entity is exposed to based on the gross fair value of the related item, (c) policy for requiring collateral or other security and information as to accessing such collateral or security, and (d) the nature and brief description of such collateral or security; (4) quantitative information about market risks and how such risks are managed; (5) for items measured on both a recurring and nonrecurring basis information regarding the inputs used to develop the fair value measurement; and (6) for items presented in the financial statement for which fair value measurement is elected: (a) information necessary to understand the reasons for the election, (b) discussion of the effect of fair value changes on earnings, (c) a description of [similar groups] items for which the election is made and the relation thereof to the balance sheet, the aggregate carrying value of items included in the balance sheet that are not eligible for the election; (7) all other required (as defined) and desired information." } } }, "auth_ref": ["r259", "r261", "r262", "r263", "r265", "r266", "r267", "r268", "r269", "r289", "r431", "r433"] }, "ecd_ForgoneRecoveryDueToDisqualificationOfTaxBenefitsAmt": { "xbrltype": "monetaryItemType", "nsuri": "http://xbrl.sec.gov/ecd/2024", "localname": "ForgoneRecoveryDueToDisqualificationOfTaxBenefitsAmt", 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Included in this element is interest derived from investments in debt securities, cash and cash equivalents, and other investments which reflect the time value of money or transactions in which the payments are for the use or forbearance of money and other income from ancillary business-related activities (that is, excluding major activities considered part of the normal operations of the business)." } } }, "auth_ref": [] }, "us-gaap_InterestIncomeExpenseNet": { "xbrltype": "monetaryItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "InterestIncomeExpenseNet", "crdr": "credit", "calculation": ["http://xeneticbio.com/role/CondensedConsolidatedStatementsOfOperations": { "parentTag": "us-gaap_NonoperatingIncomeExpense", "weight": 1.0, "order": 2.0 }, "presentation": ["http://xeneticbio.com/role/CondensedConsolidatedStatementsOfOperations", "lang": { "en-us": { "role": { "label": "Interest income, net", "documentation": "Amount of interest income (expense) classified as operating." } } }, "auth_ref": ["r290", "r556"] }, "XBIO_InterestIncomeOnlyMember": { "xbrltype": "domainItemType", "nsuri": "http://xeneticbio.com/20240630", "localname": "InterestIncomeOnlyMember", "presentation": ["http://xeneticbio.com/role/RelatedPartyTransactionsDetailsNarrative", "lang": { "en-us": { "role": { "label": "Interest Income Only [Member]" } } }, "auth_ref": [] }, "us-gaap_InterestPaidNet": { "xbrltype": "monetaryItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "InterestPaidNet", "crdr": "credit", "presentation": ["http://xeneticbio.com/role/CondensedConsolidatedStatementsOfCashFlows", "lang": { "en-us": { "role": { "label": "Cash paid for interest", "documentation": "Amount of cash paid for interest, excluding capitalized interest, classified as operating activity. Includes, but is not limited to, payment to settle zero-coupon bond for accreted interest of debt discount and debt instrument with insignificant coupon interest rate in relation to effective interest rate of borrowing attributable to accreted interest of debt discount." } } }, "auth_ref": ["r97", "r98", "r99"] }, "us-gaap_LaborAndRelatedExpense": { "xbrltype": "monetaryItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "LaborAndRelatedExpense", "crdr": "debit", "presentation": ["http://xeneticbio.com/role/AccruedExpensesAndOtherCurrentLiabilitiesDetailsNarrative", "lang": { "en-us": { "role": { "label": "Labor and related expenses", "documentation": "Amount of expense for salary, wage, profit sharing; incentive and equity-based compensation; and other employee benefit." } } }, "auth_ref": ["r546"] }, "us-gaap_Liabilities": { "xbrltype": "monetaryItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "Liabilities", "crdr": "credit", "calculation": ["http://xeneticbio.com/role/CondensedConsolidatedBalanceSheets": { "parentTag": "us-gaap_LiabilitiesAndStockholdersEquity", "weight": 1.0, "order": 1.0 }, "presentation": ["http://xeneticbio.com/role/CondensedConsolidatedBalanceSheets", "lang": { "en-us": { "role": { "totalLabel": "Total liabilities", "label": "Liabilities", "documentation": "Amount of liability recognized for present obligation requiring transfer or otherwise providing economic benefit to others." } } }, "auth_ref": ["r6", "r29", "r30", "r31", "r32", "r33", "r34", "r35", "r103", "r146", "r153", "r154", "r155", "r156", "r157", "r158", "r159", "r160", "r161", "r245", "r246", "r247", "r270", "r355", "r422", "r449", "r564", "r577", "r578"] }, "us-gaap_LiabilitiesAndStockholdersEquity": { "xbrltype": "monetaryItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "LiabilitiesAndStockholdersEquity", "crdr": "credit", "calculation": ["http://xeneticbio.com/role/CondensedConsolidatedBalanceSheets": { "parentTag": null, "weight": null, "order": null, "root": true }, "presentation": ["http://xeneticbio.com/role/CondensedConsolidatedBalanceSheets", "lang": { "en-us": { "role": { "totalLabel": "Total liabilities and stockholders' equity", "label": "Liabilities and Equity", "documentation": "Amount of liabilities and equity items, including the portion of equity attributable to noncontrolling interests, if any." } } }, "auth_ref": ["r42", "r66", "r303", "r434", "r549", "r561", "r575"] }, "us-gaap_LiabilitiesAndStockholdersEquityAbstract": { "xbrltype": "stringItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "LiabilitiesAndStockholdersEquityAbstract", "presentation": ["http://xeneticbio.com/role/CondensedConsolidatedBalanceSheets", "lang": { "en-us": { "role": { "label": "LIABILITIES AND STOCKHOLDERS' EQUITY" } } }, "auth_ref": [] }, "us-gaap_LiabilitiesCurrent": { "xbrltype": "monetaryItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "LiabilitiesCurrent", "crdr": "credit", "calculation": ["http://xeneticbio.com/role/CondensedConsolidatedBalanceSheets": { "parentTag": "us-gaap_Liabilities", "weight": 1.0, "order": 1.0 }, "presentation": []

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These concepts are used to disclose reportable information associated with domain members defined in one or many axes to the table." } } }, "auth_ref": [] }, "us-gaap_OffsettingAssetsTable": { "xbrltype": "stringItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "OffsettingAssetsTable", "presentation": ["http://xeneticbio.com/role/AccruedExpensesAndOtherCurrentLiabilitiesDetailsNarrative"], "lang": { "en-us": { "role": { "label": "Offsetting Assets [Table]", "documentation": "Disclosure of information about derivative and financial assets that are subject to offsetting, including enforceable master netting arrangements." } } }, "auth_ref": ["r43", "r44"] }, "us-gaap_OperatingCostsAndExpensesAbstract": { "xbrltype": "stringItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "OperatingCostsAndExpensesAbstract", "presentation": ["http://xeneticbio.com/role/CondensedConsolidatedStatementsOfOperations"], "lang": { "en-us": { "role": { "label": "Operating costs and expenses:" } } }, "auth_ref": [] }, "us-gaap_OperatingExpenses": { "xbrltype": "monetaryItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "OperatingExpenses", "crdr": "debit", "calculation": { "http://xeneticbio.com/role/CondensedConsolidatedStatementsOfOperations": { "parentTag": "us-gaap_OperatingIncomeLoss", "weight": -1.0, "order": 2.0 }, "presentation": ["http://xeneticbio.com/role/CondensedConsolidatedStatementsOfOperations"], "lang": { "en-us": { "role": { "negatedTotalLabel": "Total operating costs and expenses", "label": "Operating Expenses", "documentation": "Generally recurring costs associated with normal operations except for the portion of these expenses which can be clearly related to production and included in cost of sales or services. Includes selling, general and administrative expense." } } }, "auth_ref": [] }, "us-gaap_OperatingIncomeLoss": { "xbrltype": "monetaryItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "OperatingIncomeLoss", "crdr": "credit", "calculation": { "http://xeneticbio.com/role/CondensedConsolidatedStatementsOfOperations": { "parentTag": "us-gaap_NetIncomeLoss", "weight": 1.0, "order": 1.0 }, "presentation": ["http://xeneticbio.com/role/CondensedConsolidatedStatementsOfOperations"], "lang": { "en-us": { "role": { "totalLabel": "Loss from operations", "label": "Operating Income (Loss)", "documentation": "The net result for the period of deducting operating expenses from operating revenues." } } }, "auth_ref": ["r70", "r423", "r555", "r556", "r557", "r558", "r559"] }, "us-gaap_OrganizationConsolidationAndPresentationOffFinancialStatementsAbstract": { "xbrltype": "stringItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": 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Such amount may include accrued interest receivable in accordance with the terms of the note. The note also may contain provisions including a discount or premium, payable on demand, secured, or unsecured, interest bearing or noninterest bearing, among myriad other features and characteristics." } } }, "auth_ref": ["r9"] }, "ecd_PeerGroupIssuersFnTextBlock": { "xbrltype": "textBlockItemType", "nsuri": "http://xbrl.sec.gov/ecd/2024", "localname": "PeerGroupIssuersFnTextBlock", "presentation": ["http://xbrl.sec.gov/ecd/role/PvpDisclosure"], "lang": { "en-us": { "role": { "label": "Peer Group Issuers, Footnote" } } },

"auth_ref": ["r501"] }, "ecd_PeerGroupTotalShareholderRtnAmt": { "xbrltype": "monetaryItemType", "nsuri": "http://xbrl.sec.gov/ecd/2024", "localname": "PeerGroupTotalShareholderRtnAmt", "presentation": ["http://xbrl.sec.gov/ecd/role/PvpDisclosure"], "lang": { "en-us": { "role": { "label": "Peer Group Total Shareholder Return Amount" } } }, "auth_ref": ["r501"] }, "ecd_PeoActuallyPaidCompAmt": { "xbrltype": "monetaryItemType", "nsuri": "http://xbrl.sec.gov/ecd/2024", "localname": "PeoActuallyPaidCompAmt", "presentation": ["http://xbrl.sec.gov/ecd/role/PvpDisclosure"], "lang": { "en-us": { "role": { "label": "PEO Actually Paid Compensation Amount" } } } }, "auth_ref": ["r500"] }, "ecd_PeoName": { "xbrltype": "normalizedStringItemType", "nsuri": "http://xbrl.sec.gov/ecd/2024", "localname": "PeoName", "presentation": ["http://xbrl.sec.gov/ecd/role/PvpDisclosure"], "lang": { "en-us": { "role": { "label": "PEO Name" } } }, "auth_ref": ["r503"] }, "ecd_PeoTotalCompAmt": { "xbrltype": "monetaryItemType", "nsuri": "http://xbrl.sec.gov/ecd/2024", "localname": "PeoTotalCompAmt", "presentation": ["http://xbrl.sec.gov/ecd/role/PvpDisclosure"], "lang": { "en-us": { "role": { "label": "PEO Total Compensation Amount" } } }, "auth_ref": ["r499"] }, "XBIO_PharmsynthezMember": { "xbrltype": "domainItemType", "nsuri": "http://xeneticbio.com/20240630", "localname": "PharmsynthezMember", "presentation": ["http://xeneticbio.com/role/RelatedPartyTransactionsDetailsNarrative"], "lang": { "en-us": { "role": { "label": "Pharmsynthez [Member]" } } }, "auth_ref": [] }, "ecd_PnsnBnftsAdjFnTextBlock": { "xbrltype": "textBlockItemType", "nsuri": "http://xbrl.sec.gov/ecd/2024", "localname": "PnsnBnftsAdjFnTextBlock", "presentation": ["http://xbrl.sec.gov/ecd/role/PvpDisclosure"], "lang": { "en-us": { "role": { "label": "Pension Benefits Adjustments, Footnote" } } }, "auth_ref": ["r500"] }, "dei_PreCommencementIssuerTenderOffer": { "xbrltype": "booleanItemType", "nsuri": "http://xbrl.sec.gov/dei/2024", "localname": "PreCommencementIssuerTenderOffer", "presentation": ["http://xeneticbio.com/role/Cover"], "lang": { "en-us": { "role": { "label": "Pre-commencement Issuer Tender Offer", "documentation": "Boolean flag that is true when the Form 8-K filing is intended to satisfy the filing obligation of the registrant as pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act." } } }, "auth_ref": ["r457"] }, "dei_PreCommencementTenderOffer": { "xbrltype": "booleanItemType", "nsuri": "http://xbrl.sec.gov/dei/2024", "localname": "PreCommencementTenderOffer", "presentation": ["http://xeneticbio.com/role/Cover"], "lang": { "en-us": { "role": { "label": "Pre-commencement Tender Offer", "documentation": "Boolean flag that is true when the Form 8-K filing is intended to satisfy the filing obligation of the registrant as pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act." } } }, "auth_ref": ["r459"] }, "us-gaap_PREFERREDStockMember": { "xbrltype": "domainItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "PreferredStockMember", "presentation": ["http://xeneticbio.com/role/CondensedConsolidatedStatementsOfChangesInStockholdersEquity"], "lang": { "en-us": { "role": { "label": "Preferred Stock [Member]", "documentation": "Preferred shares may provide a preferential dividend to the dividend on common stock and may take precedence over common stock in the event of a liquidation. Preferred shares typically represent an ownership interest in the company." } } }, "auth_ref": ["r440", "r441", "r444", "r445", "r446", "r447", "r611", "r613"] }, "us-gaap_PREFERREDStockParOrStatedValuePerShare": { "xbrltype": "perShareItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "PreferredStockParOrStatedValuePerShare", "presentation": ["http://xeneticbio.com/role/CondensedConsolidatedBalanceSheetsParenthetical"], "lang": { "en-us": { "role": { "label": "Preferred Stock, Par or Stated Value Per Share", "documentation": "Face amount or stated value per share of preferred stock nonredeemable or redeemable solely at the option of the issuer." } } }, "auth_ref": ["r36", "r165"] }, "us-gaap_PREFERREDStockSharesAuthorized": { "xbrltype": "sharesItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "PreferredStockSharesAuthorized", "presentation": ["http://xeneticbio.com/role/CondensedConsolidatedBalanceSheetsParenthetical"], "lang": { "en-us": { "role": { "label": "Preferred Stock, Shares Authorized", "documentation": "The maximum number of nonredeemable preferred shares (or preferred stock redeemable solely at the option of the issuer) permitted to be issued by an entity's charter and bylaws." } } }, "auth_ref": ["r36", "r357"] }, "us-gaap_PREFERREDStockSharesIssued": { "xbrltype": "sharesItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "PreferredStockSharesIssued", "presentation": ["http://xeneticbio.com/role/CondensedConsolidatedBalanceSheetsParenthetical"], "lang": { "en-us": { "role": { "label": "Preferred Stock, Shares Issued", "documentation": "Number of shares issued for nonredeemable preferred shares and preferred shares redeemable solely at option of issuer. Includes, but is not limited to, preferred shares issued, repurchased, and held as treasury shares. Excludes preferred shares classified as debt." } } }, "auth_ref": ["r36", "r165"] }, "us-gaap_PREFERREDStockSharesOutstanding": { "xbrltype": "sharesItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "PreferredStockSharesOutstanding", "presentation": ["http://xeneticbio.com/role/CondensedConsolidatedBalanceSheetsParenthetical"], "lang": { "en-us": { "role": { "label": "Preferred Stock, Shares Outstanding", "documentation": "Aggregate share number for all nonredeemable preferred stock (or preferred stock redeemable solely at the option of the issuer) held by stockholders. Does not include preferred shares that have been repurchased." } } }, "auth_ref": ["r36", "r357", "r376", "r613", "r614"] }, "us-gaap_PREFERREDStockValue": { "xbrltype": "monetaryItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "PreferredStockValue", "crdr": "credit", "calculation": { "parentTag": "us-gaap_StockholdersEquity", "weight": 1.0, "order": 1.0 }, "presentation": ["http://xeneticbio.com/role/CondensedConsolidatedBalanceSheets"], "lang": { "en-us": { "role": { "label": "Preferred Stock, Value, Issued", "documentation": "Aggregate par or stated value of issued nonredeemable preferred stock (or preferred stock redeemable solely at the option of the issuer). This item includes treasury stock repurchased by the entity. Note: elements for number of nonredeemable preferred shares, par value and other disclosure concepts are in another section within stockholders' equity." } } }, "auth_ref": ["r36", "r299", "r434"] }, "us-gaap_PrepaidExpenseAndOtherAssetsCurrent": { "xbrltype": "monetaryItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "PrepaidExpenseAndOtherAssetsCurrent", "crdr": "debit", "calculation": { "parentTag": "us-gaap_StockholdersEquity", "weight": 1.0, "order": 2.0 }, "presentation": ["http://xeneticbio.com/role/CondensedConsolidatedBalanceSheets"], "lang": { "en-us": { "role": { "label": "Prepaid expenses, receivables and other", "documentation": "Prepaid expenses and other current assets." } } }, "auth_ref": ["r145", "r382", "r383", "r386"] }, "us-gaap_RelatedPartyTransactionsAbstract": { "xbrltype": "stringItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "RelatedPartyTransactionsAbstract", "presentation": ["http://xeneticbio.com/role/RelatedPartyTransactionsDetailsNarrative"], "lang": { "en-us": { "role": { "label": "Related Party Transactions [Abstract]" } } }, "auth_ref": [] }, "us-gaap_RelatedPartyTransactionsByRelatedPartyAxis": { "xbrltype": "stringItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "RelatedPartyTransactionsByRelatedPartyAxis", "presentation": ["http://xeneticbio.com/role/RelatedPartyTransactionsDetailsNarrative"], "lang": { "en-us": { "role": { "label": "Related and Nonrelated Parties [Axis]", "documentation": "Information by related and nonrelated parties. Related party includes, but is not limited to, affiliate, other entity for which investment is accounted for under equity method, trust for benefit of employee, principal owner, management, and member of immediate family, and other party that may be prevented from pursuing separate interests because of control, significant influence, or ownership interest." } } }, "auth_ref": ["r145", "r182", "r283", "r284", "r296", "r304", "r350", "r351", "r352", "r353", "r354", "r375", "r377", "r408"] }, "us-gaap_RelatedPartyTransactionLineItems": { "xbrltype": "stringItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "RelatedPartyTransactionLineItems", "presentation": ["http://xeneticbio.com/role/RelatedPartyTransactionsDetailsNarrative"], "lang": { "en-us": { "role": { "label": "Related Party Transaction [Line Items]", "documentation": "Line items represent financial concepts included in a table. These concepts are used to disclose reportable information associated with domain members defined in one or many axes to the table." } } }, "auth_ref": ["r145", "r382", "r383", "r386"] }, "us-gaap_RelatedPartyTransactionsDisclosureTextBlock": { "xbrltype": "textBlockItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "RelatedPartyTransactionsDisclosureTextBlock", "presentation": ["http://xeneticbio.com/role/RelatedPartyTransactions"], "lang": { "en-us": { "role": { "label": "Related Party Transactions", "documentation": "The entire disclosure for related party transactions. Examples of related party transactions include transactions between (a) a parent company and its subsidiary; (b) subsidiaries of a common parent; (c) and entity and its principal owners; and (d) affiliates." } } }, "auth_ref": ["r280", "r281", "r282", "r284", "r286", "r333", "r334", "r335", "r384", "r385", "r386", "r405", "r407"] }, "srt_RepurchaseAgreementCounterpartyNameDomain": { "xbrltype": "domainItemType", "nsuri": "http://fasb.org/srt/2024", "localname": "RepurchaseAgreementCounterpartyNameDomain", "presentation": ["http://xeneticbio.com/role/SignificantStrategicCollaborationsDetailsNarrative"], "auth_ref": ["r105", "r106", "r162", "r167", "r285", "r287", "r293", "r418", "r419"] }, "us-gaap_ResearchAndDevelopmentExpense": { "xbrltype": "monetaryItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "ResearchAndDevelopmentExpense", "crdr": "debit", "calculation": { "parentTag": "us-gaap_OperatingExpenses", "weight": 1.0, "order": 1.0 }, "presentation": ["http://xeneticbio.com/role/CondensedConsolidatedStatementsOfOperations"], "auth_ref": ["r217", "r415", "r424", "r579"] }, "us-gaap_ResearchAndDevelopmentExpenseMember": { "xbrltype": "domainItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "ResearchAndDevelopmentExpenseMember", "presentation": ["http://xeneticbio.com/role/Share-basedExpenseDetails-SharesBasedExpense"], "lang": { "en-us": { "role": { "label": "Research and Development Expense [Member]", "documentation": "Primary financial statement caption in which the reported facts about research and development expense have been included." } } }, "auth_ref": [] }, "ecd_RestatementDateAxis": { "xbrltype": "stringItemType", "nsuri": "http://xbrl.sec.gov/ecd/2024", "localname": "RestatementDateAxis", "presentation": ["http://xbrl.sec.gov/ecd/role/ErrCompDisclosure"], "lang": { "en-us": { "role": { "label": "Restatement Determination Date [Axis]" } } }, "auth_ref": ["r466", "r477", "r512"] }, "ecd_RestatementDeterminationDate": { "xbrltype": "dateItemType", "nsuri": "http://xbrl.sec.gov/ecd/2024", "localname": "RestatementDeterminationDate", "presentation": ["http://xbrl.sec.gov/ecd/role/ErrCompDisclosure"], "lang": { "en-us": { "role": { "label": "Restatement Determination Date" } } }, "auth_ref": ["r467", "r478", "r488", "r513"] }, "ecd_RestatementDoesNotRequireRecoveryTextBlock": { "xbrltype": "textBlockItemType", "nsuri": "http://xbrl.sec.gov/ecd/2024", "localname": "RestatementDoesNotRequireRecoveryTextBlock", "presentation": ["http://xbrl.sec.gov/ecd/role/ErrCompDisclosure"], "lang": { "en-us": { "role": { "label": "Restatement does not require Recovery" } } }, "auth_ref": ["r474", "r485", "r495", "r520"] }, "us-gaap_RestrictedStockUnitsRSUMember": { "xbrltype": "domainItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "RestrictedStockUnitsRSUMember", "presentation": ["http://xbrl.sec.gov/ecd/role/AwardTimingDisclosure"], "lang": { "en-us": { "role": { "label": "Restricted Stock Units (RSUs) [Member]", "documentation": "Share instrument which is convertible to stock or an equivalent amount of cash, after a specified period of time or when specified performance conditions are met." } } }, "auth_ref": [] }, "us-gaap_RetainedEarningsAccumulatedDeficit": { "xbrltype": "monetaryItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "RetainedEarningsAccumulatedDeficit", "crdr": "credit", "calculation": { "parentTag": "us-gaap_StockholdersEquity", "weight": 1.0, "order": 4.0 }, "presentation": ["http://xeneticbio.com/role/CondensedConsolidatedBalanceSheets"], "lang": { "en-us": { "role": { "label": "Accumulated deficit", "documentation": "Amount of accumulated undistributed earnings (deficit)." } } }, "auth_ref": ["r39", "r60", "r302", "r321", "r323", "r331", "r358", "r434"] }, "us-gaap_RetainedEarningsMember": { "xbrltype": "domainItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "RetainedEarningsMember", "presentation": ["http://xeneticbio.com/role/CondensedConsolidatedStatementsOfChangesInStockholdersEquity"], "lang": { "en-us": { "role": { "label": "Retained Earnings [Member]", "documentation": "Accumulated undistributed earnings (deficit)." } } }, "auth_ref": ["r79", "r107", "r108", "r109", "r111", "r116", "r118", "r120", "r147", "r148", "r149", "r229", "r230", "r236", "r237", "r238", "r240", "r241", "r242", "r248", "r250", "r251", "r253", "r255", "r277", "r278", "r318", "r320", "r336", "r613"] }, "us-gaap_Revenues": {

"xbrltype": "monetaryItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "Revenues", "crdr": "credit", "calculation": { "http://xeneticbio.com/role/CondensedConsolidatedStatementsOfOperations": { "parentTag": "us-gaap_OperatingIncomeLoss", "weight": 1.0, "order": 1.0 } }, "presentation": ["http://xeneticbio.com/role/CondensedConsolidatedStatementsOfOperations", "http://xeneticbio.com/role/SignificantStrategicCollaborationsDetailsNarrative"], "lang": { "en-us": { "role": { "totalLabel": "Total revenue", "label": "Revenues", "documentation": "Amount of revenue recognized from goods sold, services rendered, insurance premiums, or other activities that constitute an earning process. Includes, but is not limited to, investment and interest income before deduction of interest expense when recognized as a component of revenue, and sales and trading gain (loss)." } } }, "auth_ref": ["r68", "r69", "r95", "r103", "r131", "r136", "r137", "r139", "r141", "r142", "r143", "r144", "r146", "r153", "r154", "r155", "r156", "r157", "r158", "r159", "r160", "r161", "r270", "r292", "r424", "r564"] }, "us-gaap_RevenuesAbstract": { "xbrltype": "stringItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "RevenuesAbstract", "presentation": ["http://xeneticbio.com/role/CondensedConsolidatedStatementsOfOperations"], "lang": { "en-us": { "role": { "label": "Revenue" } } }, "auth_ref": [] }, "us-gaap_RisksAndUncertaintiesAbstract": { "xbrltype": "stringItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "RisksAndUncertaintiesAbstract", "lang": { "en-us": { "role": { "label": "Risks and Uncertainties [Abstract]" } } }, "auth_ref": [] }, "us-gaap_RoyaltyIncomeNonoperating": { "xbrltype": "monetaryItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "RoyaltyIncomeNonoperating", "crdr": "credit", "calculation": { "http://xeneticbio.com/role/CondensedConsolidatedStatementsOfOperations": { "parentTag": "us-gaap_Revenues", "weight": 1.0, "order": 1.0 } }, "presentation": ["http://xeneticbio.com/role/CondensedConsolidatedStatementsOfOperations", "http://xeneticbio.com/role/SignificantStrategicCollaborationsDetailsNarrative"], "lang": { "en-us": { "role": { "label": "Royalty revenue", "verboseLabel": "Royalty income", "documentation": "Ancillary revenue earned during the period from the consideration paid to the entity for the use of its rights and property by another party. Examples include licensing the use of copyrighted materials and leasing the extraction of natural resources." } } }, "auth_ref": ["r48"] }, "ecd_Rule10b51ArrAdoptedFlag": { "xbrltype": "booleanItemType", "nsuri": "http://xbrl.sec.gov/ecd/2024", "localname": "Rule10b51ArrAdoptedFlag", "presentation": ["http://xbrl.sec.gov/ecd/role/InsiderTradingArrangements"], "lang": { "en-us": { "role": { "label": "Rule 10b5-1 Arrangement Adopted" } } }, "auth_ref": ["r529"] }, "ecd_Rule10b51ArrTrmndFlag": { "xbrltype": "booleanItemType", "nsuri": "http://xbrl.sec.gov/ecd/2024", "localname": "Rule10b51ArrTrmndFlag", "presentation": ["http://xbrl.sec.gov/ecd/role/InsiderTradingArrangements"], "lang": { "en-us": { "role": { "label": "Rule 10b5-1 Arrangement Terminated" } } }, "auth_ref": ["r529"] }, "us-gaap_ScheduleOfCollaborativeArrangementsAndNoncollaborativeArrangementTransactionsTable": { "xbrltype": "stringItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "ScheduleOfCollaborativeArrangementsAndNoncollaborativeArrangementTransactionsTable", "presentation": ["http://xeneticbio.com/role/SignificantStrategicCollaborationsDetailsNarrative"], "lang": { "en-us": { "role": { "label": "Collaborative Arrangement and Arrangement Other than Collaborative [Table]", "documentation": "Disclosure of information about collaborative arrangement and arrangement other than collaborative applicable to revenue-generating activity or operations." } } }, "auth_ref": ["r243"] }, "us-gaap_ScheduleOfCompensationCostForShareBasedPaymentArrangementsAllocationOfShareBasedCompensationCostsByPlanTableTextBlock": { "xbrltype": "textBlockItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "ScheduleOfCompensationCostForShareBasedPaymentArrangementsAllocationOfShareBasedCompensationCostsByPlanTableTextBlock", "presentation": ["http://xeneticbio.com/role/Share-basedExpenseTables"], "lang": { "en-us": { "role": { "label": "Schedule of share-based compensation expense", "documentation": "Tabular disclosure of cost recognized for award under share-based payment arrangement by plan. Includes, but is not limited to, related tax benefit." } } }, "auth_ref": ["r21"] }, "us-gaap_ScheduleOfEmployeeServiceShareBasedCompensationAllocationOfRecognizedPeriodCostsTable": { "xbrltype": "stringItemType", "nsuri": "http://fasb.org/us-gaap/2024", "localname": "ScheduleOfEmployeeServiceShareBasedCompensationAllocationOfRecognizedPeriodCostsTable", "presentation": ["http://xeneticbio.com/role/Share-basedExpenseDetails-ShareBasedExpense"], "lang": { "en-us": { "role": { "label": "Share-Based Payment Arrangement, Expensed and Capitalized, Amount [Table]", "documentation": "Disclosure of information about amount recognized for award under share-based payment arrangement. 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style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify;">>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. Certain of the Company's subsidiaries require guarantees of support from Xenetic. While all intercompany balances and transactions have been eliminated in consolidation, the Company has \$0.2 million of cash collateralizing these guarantees.</p><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 0.5in"></p><p id="xdx_843_eus-gaap--EarningsPerSharePolicyTextBlock_zC5L85BTzSxf" style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify"><i>Basic and Diluted Net Loss per Share</i></p><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 0.5in"></p><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify">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.</p><p style="font: 10pt Times New Roman, Times, Serif; margin-top: 0pt; margin-right: 0; margin-bottom: 0pt; text-align: left"></p><p style="font: 10pt Times New Roman, Times, Serif; margin-top: 0pt; margin-right: 0; margin-bottom: 0pt; text-align: justify">For the three and six months ended June 30, 2024 and 2023, basic and diluted net loss per share are the same in 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.</p><p style="font: 10pt Times New Roman, Times, Serif; margin-top: 0pt; margin-right: 0; margin-bottom: 0pt; text-align: left"></p><p id="xdx_809_eus-gaap--CollaborativeArrangementDisclosureTextBlock_zvL41370d11" style="font: 10pt Times New Roman, Times, Serif; margin-top: 0pt; margin-right: 0; margin-bottom: 0pt; text-align: left"></p><table cellpadding="0" cellspacing="0" style="font: 10pt Times New Roman, Times, Serif; width: 100%; border-collapse: collapse"><tr style="vertical-align: top"><td style="width: 33px">4</td><td style="text-align: justify"><i>Takeda Pharmaceutical Co., Ltd. (together with its wholly-owned subsidiaries, "Takeda")</i></td></tr><tr><td style="width: 33px">4</td><td style="text-align: justify"><i>Takeda Pharmaceutical Co., Ltd. (together with its wholly-owned subsidiaries, "Takeda")</i></td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify"></p><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify">In October 2017, the Company granted to 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 \$0.7 million and \$1.2 million were recorded as revenue by the Company during the three and six months ended June 30, 2024, respectively, and approximately \$0.7 million and \$1.3 million were recorded as revenue by the Company during the three and six months ended June 30, 2023, 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.</p><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify"><i>Belgian Volition SARL Limited ("Volition") Collaboration</i></p><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify"></p><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify">On August 2, 2022, the Company announced a research and development collaboration with Volition 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[®] technology 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. To date, Volition has funded \$26,000 under this agreement.</p><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify"><i>Catalent Pharma Solutions LLC ("Catalent")</i></p><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify"></p><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify">On June 30, 2022, the Company entered into a Statement of Work (the "SOW") with 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 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. The Company has paid Catalent approximately \$2.5 million through June 30, 2024, of which approximately \$28,000 and \$0.1 million has been recognized as an advance payment and is included in prepaid expenses, receivables and other current assets as of June 30, 2024 and December 31, 2023, respectively, and approximately \$49,000 has been recognized as a liability and is included in accrued expenses and other current liabilities as of June 30, 2024. There was \$no accrual as of December 31, 2023. In addition, approximately \$0.3 million and \$0.3 million has been recognized within other assets as of both June 30, 2024 and December 31, 2023.</p><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify"></p><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify"><i>Scripps Research Institute ("Scripps Research")</i></p><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify"></p><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify">On March 17, 2023, the Company and Scripps Research entered into a Research Funding and Option Agreement (the "Agreement"), pursuant to which the Company has agreed to provide Scripps Research an aggregate of up to \$0.9 million to fund research relating to advancing the pre-clinical development of the Company's DNase oncology platform technology. Under the Agreement, the Company has the option to acquire a worldwide exclusive license to Scripps Research's rights in the Technology or Patent Rights (as defined in the Agreement), as well as a non-exclusive, royalty-free, non-transferrable license to make and use TSRI Technology (as defined in the Agreement) solely for the Company's internal research purposes during the performance of the research program contemplated by the Agreement. During the second quarter of 2024, the Company amended the Agreement to extend the term to October 31, 2024 with no additional funding required. The Company has paid Scripps Research approximately \$0.9 million under the Agreement through June 30, 2024, of which approximately \$0.1 million and \$0.4 million has been recognized as an advance payment and is included in prepaid expenses, receivables and other current assets as of June 30, 2024 and December 31, 2023, respectively.</p><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify"></p><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify"><i>University of Virginia ("UVA")</i></p><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify"></p><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify">On December 21, 2023, the Company entered into a Research Funding and Material Transfer Agreement with UVA (the "UVA Agreement") to advance the development of our systemic DNase program.Under the terms of the UVA Agreement,0.2 million under the UVA Agreement through June 30, 2024, which was expensed during the six months ended June 30, 2024. There were \$no amounts incurred as of December 31, 2023.</p><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify"></p><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify"><i>Serum Institute of India ("Serum Institute"), PJSC Pharmsynthez ("Pharmsynthez") and SynBio LLC ("SynBio"), a wholly owned subsidiary of Pharmsynthez. The Company and its collaborative partners continue to engage in research and development activities with no resultant commercial products through June 30, 2024.</i></p><table cellpadding="0" cellspacing="0" style="font: 10pt Times New Roman, Times, Serif; width: 100%; border-collapse: collapse"><tr style="vertical-align: top"><td style="width: 33px">5</td><td style="text-align: justify"><i>Accrued Expenses and Other Current Liabilities</i></td></tr><tr><td style="width: 33px">5</td><td style="text-align: justify"><i>Accrued Expenses and Other Current Liabilities</i></td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify"></p><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify"></p><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify">On June 19, 2024, the Company entered into a confidential separation agreement and general release with each of Jeffrey F. Eisenberg, the Company's former Chief Executive Officer (the "Eisenberg Separation Agreement"), and Curtis Lockshin, the Company's former Chief Scientific Officer (the "Lockshin Separation Agreement" and together, the "Separation Agreements") pursuant to which Messrs. Eisenberg and Lockshin were each eligible for certain severance payments and benefits consistent with the terms of their existing employment agreements as described under "Employment Agreements with our Named Executive Officers" in the Amendment No. 1 to Annual Report on Form 10-K/A filed by the Company with the Securities and Exchange Commission on April 26, 2024. In addition, the Eisenberg Separation Agreement provides for accelerated vesting of all of the unvested stock options held by Mr. Eisenberg as of May 16, 2024. As of June 30, 2024, the Company expensed approximately \$0.8 million of accrued payroll and benefits related to the Separation Agreements. In addition, the Company recorded approximately \$13,000 of share-based expense for the accelerated vesting of unvested stock options. As of June 30, 2024, approximately \$0.8 million was accrued within accrued expenses and other current liabilities related to these obligations.</p><p id="xdx_807_eus-gaap-FairValueDisclosuresTextBlock_zAG1E1pBxKnf" style="font: 10pt Times

New Roman, Times, Serif, margin: 0pt 0; text-align: justify"></p></table cellpadding="0" cellspacing="0" style="font: 10pt Times New Roman, Times, Serif; font-size: 100%; border-collapse: collapse"><tr style="vertical-align: top"><td style="width: 33px">6.</td><td style="text-align: justify">8.2D 22ow2BYg0Puf">Fair Value Measurements</td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt"><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify">Accounting Standards Codification Topic 820, </i> </i> 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 unadjusted 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, 2024 and December 31, 2023, 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, 2024 and 2023.</p><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0"><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt">7.</td><td style="text-align: justify">7.2E 22ow2BYg0Puf">Stockholders' Equity</td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt">8.</td><td style="text-align: justify">8.2F 22ow2BYg0Puf">Warrants</td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt">9.</td><td style="text-align: justify">9.2G 22ow2BYg0Puf">Common Stock</td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt">10.</td><td style="text-align: justify">10.2H 22ow2BYg0Puf">Reverse Stock Split</td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt">11.</td><td style="text-align: justify">11.2I 22ow2BYg0Puf">Reverse Stock Split</td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt">12.</td><td style="text-align: justify">12.2J 22ow2BYg0Puf">Reverse Stock Split</td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt">13.</td><td style="text-align: justify">13.2K 22ow2BYg0Puf">Reverse Stock Split</td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt">14.</td><td style="text-align: justify">14.2L 22ow2BYg0Puf">Reverse Stock Split</td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt">15.</td><td style="text-align: justify">15.2M 22ow2BYg0Puf">Reverse Stock Split</td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt">16.</td><td style="text-align: justify">16.2N 22ow2BYg0Puf">Reverse Stock Split</td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt">17.</td><td style="text-align: justify">17.2O 22ow2BYg0Puf">Reverse Stock Split</td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt">18.</td><td style="text-align: justify">18.2P 22ow2BYg0Puf">Reverse Stock Split</td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt">19.</td><td style="text-align: justify">19.2Q 22ow2BYg0Puf">Reverse Stock Split</td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt">20.</td><td style="text-align: justify">20.2R 22ow2BYg0Puf">Reverse Stock Split</td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt">21.</td><td style="text-align: justify">21.2S 22ow2BYg0Puf">Reverse Stock Split</td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt">22.</td><td style="text-align: justify">22.2T 22ow2BYg0Puf">Reverse Stock Split</td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt">23.</td><td style="text-align: justify">23.2U 22ow2BYg0Puf">Reverse Stock Split</td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt">24.</td><td style="text-align: justify">24.2V 22ow2BYg0Puf">Reverse Stock Split</td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt">25.</td><td style="text-align: justify">25.2W 22ow2BYg0Puf">Reverse Stock Split</td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt">26.</td><td style="text-align: justify">26.2X 22ow2BYg0Puf">Reverse Stock Split</td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt">27.</td><td style="text-align: justify">27.2Y 22ow2BYg0Puf">Reverse Stock Split</td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt">28.</td><td style="text-align: justify">28.2Z 22ow2BYg0Puf">Reverse Stock Split</td></tr></table><p style="font: 10pt Times New Roman, Times, Serif; margin: 0pt 0; text-align: justify; text-indent: 24.5pt">29.</td><td style="text-align: justify"><span style="font-family: Times New Roman, Times, Serif

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