UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549

FORM 10-Q

(Mark One)

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

For the quarterly period ended March 31, 2024

OR

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

For the transition period from _____ to _____

Commission File Number: 001-39871

SAB BIOTHERAPEUTICS, INC.

(Exact Name of Registrant as Specified in its Charter)

Delaware	**85-3899721**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
777 W 41st St, Suite 401 **Miami Beach, Florida**	**33140**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code: (605) 679-6980

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common stock, 0.0001 par value per share	SABS	The Nasdaq Stock Market LLC
Warrants, each exercisable for one share of Common Stock	SABSW	The Nasdaq Stock Market LLC

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

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

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

Large accelerated filer	☐	Accelerated filer	☐
Non-accelerated filer	☒	Smaller reporting company	☒
		Emerging growth company	☒

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

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

As of May 16, 2024, the registrant had 9,229,274 shares of common stock, $0.0001 par value per share, outstanding.

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PART I—FINANCIAL INFORMATION

Item 1. Condensed Consolidated Financial Statements (Unaudited).

SAB Biotherapeutics, Inc. and Subsidiaries
Condensed Consolidated Balance Sheets

	March 31, 2024	December 31, 2023
	(Unaudited)	
Assets		
Current assets		
Cash and cash equivalents	$ 14,034,162	$ 56,566,066
Short-term investments	30,022,916	—
Accrued interest receivable	193,232	—
Prepaid expenses and other current assets	2,701,040	2,340,797
Total current assets	46,951,350	58,906,863
Deferred issuance cost	236,105	—
Long-term prepaid insurance	317,922	350,230
Long-term investments	1,235,150	—
Operating lease right-of-use assets	1,080,049	1,277,982
Financing lease right-of-use assets	3,647,953	3,669,659
Property, plant and equipment, net	17,902,553	19,736,519
Total assets	**$ 71,371,082**	**$ 83,941,253**
Liabilities and Stockholders' Equity		
Current liabilities		
Accounts payable	$ 1,239,943	$ 945,927
Notes payable	835,467	1,050,849
Operating lease liabilities, current portion	542,841	669,946
Finance lease liabilities, current portion	134,568	132,004
Deferred grant income	377,835	1,322,410
Accrued expenses and other current liabilities	5,174,316	6,692,181
Total current liabilities	8,304,970	10,813,317
Operating lease liabilities, noncurrent	554,547	635,777
Finance lease liabilities, noncurrent	3,383,864	3,418,483
Warrant liabilities	6,306,016	11,774,235
Total liabilities	18,549,397	26,641,812
Commitments and contingencies (Note 18)		
Stockholders' equity		
Preferred stock; $0.0001 par value; 10,000,000 shares authorized, 42,236 shares issued and outstanding at March 31, 2024 and December 31, 2023	5	5
Common stock; $0.0001 par value; 800,000,000 shares authorized at March 31, 2024 and December 31, 2023; 9,283,939 and 9,280,159 shares issued, respectively, and 9,229,274 and 9,225,494 outstanding at March 31, 2024 and December 31, 2023, respectively	929	929
Treasury stock, at cost; 54,665 shares held at March 31, 2024 and December 31, 2023	(5,521,246)	(5,521,246)
Additional paid-in capital	153,494,731	152,856,874
Accumulated other comprehensive income (loss)	(63,448)	26,420
Accumulated deficit	(95,089,286)	(90,063,541)
Total stockholders' equity	52,821,685	57,299,441
Total liabilities and stockholders' equity	**$ 71,371,082**	**$ 83,941,253**

**The condensed consolidated balance sheets' common stock share amounts have been retroactively adjusted to account for the Company's 1:10 Reverse Stock Split, effective January 5, 2024.*

See accompanying notes to the condensed consolidated financial statements

SAB Biotherapeutics, Inc. and Subsidiaries
Condensed Consolidated Statements of Operations
(Unaudited)

	For The Three Months Ended March 31,	
	2024	**2023**
Revenue		
Grant revenue	$ 944,575	$ 581,101
Total revenue	944,575	581,101
Operating expenses		
Research and development	8,146,070	4,535,721
General and administrative	4,189,121	3,447,389
Total operating expenses	12,335,191	7,983,110
Loss from operations	(11,390,616)	(7,402,009)
Other income (expense)		
Changes in fair value of warrant liabilities	5,468,219	82,586
Interest expense	(76,371)	(92,385)
Interest income	497,893	57,988
Other income	475,130	—
Total other income (expense)	6,364,871	48,189
Loss before income taxes	(5,025,745)	(7,353,820)
Net loss	$ (5,025,745)	$ (7,353,820)
Other comprehensive loss:		
Unrealized gain (loss), change in fair value of available-for-sale securities, net of tax	$ (56,061)	$
Foreign currency translation	(33,807)	—
Total comprehensive loss	$ (5,115,613)	$ (7,353,820)
Loss per common share attributable to the Company's shareholders		
Basic and diluted loss per common share	$ (0.54)	$ (1.46)
Weighted-average common shares outstanding – basic and diluted	9,241,940	5,039,705

**The condensed consolidated balance sheets' common stock share amounts have been retroactively adjusted to account for the Company's 1:10 Reverse Stock Split, effective January 5, 2024.*

See accompanying notes to the condensed consolidated financial statements

SAB Biotherapeutics, Inc. and Subsidiaries
Condensed Consolidated Statements of Changes In Stockholders' Equity
(Unaudited)

	Common stock		Preferred Stock			Treasury Stock				
	Shares	Amount	Shares	Amount	Additional Paid-In Capital	Shares	Amount	Accumulated Deficit	Accumulated Other Comprehensive Income (Loss)	Total Stockholders' Equity
Balance at December 31, 2022	**5,093,927**	**510**	**—**	**—**	**84,448,633**	**(54,665)**	**(5,521,246)**	**(47,869,755)**	**—**	**31,058,142**
Issuance of common stock for exercise of stock options	350	—	—	—	1,890	—	—	—	—	1,890
Professional fees settled with warrants	—	—	—	—	93,530	—	—	—	—	93,530
Stock-based compensation	—	—	—	—	602,780	—	—	—	—	602,780
Net loss	—	—	—	—	—	—	—	(7,353,820)	—	(7,353,820)
Balance at March 31, 2023	**5,094,277**	**510**	**—**	**—**	**85,146,833**	**(54,665)**	**(5,521,246)**	**(55,223,575)**	**—**	**24,402,522**
Balance at December 31, 2023	**9,280,159**	**$ 929**	**42,236**	**$ 5**	**$ 152,856,874**	**(54,665)**	**$ (5,521,246)**	**$ (90,063,541)**	**$ 26,420**	**$ 57,299,441**
Stock-based compensation	—	—	—	—	617,445	—	—	—	—	617,445
Issuance of common stock for exercise of stock options	3,780	—	—	—	20,412	—	—	—	—	20,412
Net loss	—	—	—	—	—	—	—	(5,025,745)	—	(5,025,745)
Foreign currency translation	—	—	—	—	—	—	—	—	(33,807)	(33,807)
Unrealized gain (loss), change in fair value of available-for-sale securities	—	—	—	—	—	—	—	—	(56,061)	(56,061)
Balance at March 31, 2024	**9,283,939**	**$ 929**	**42,236**	**$ 5**	**$ 153,494,731**	**(54,665)**	**$ (5,521,246)**	**$ (95,089,286)**	**$ (63,448)**	**$ 52,821,685**

**The condensed consolidated balance sheets' common stock share amounts have been retroactively adjusted to account for the Company's 1:10 Reverse Stock Split, effective January 5, 2024.*

See accompanying notes to the condensed consolidated financial statements.

SAB Biotherapeutics, Inc. and Subsidiaries
Condensed Consolidated Statements of Cash Flows
(Unaudited)

	Three Months Ended March 31,	
	2024	**2023**
Cash flows from operating activities:		
Net loss	$ (5,025,745)	$ (7,353,820)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	1,963,040	898,453
Amortization of finance right-of-use assets	21,706	24,716
Stock-based compensation expense	617,445	602,780
Changes in fair value of warrant liabilities	(5,468,219)	(82,586)
Accretion of discounts on short-term investments	(83,994)	—
Professional fees settled with equity instruments	—	93,530
Changes in operating assets and liabilities		
Accounts receivable	—	4,793,454
Prepaid expenses and other current assets	(289,541)	318,901
Operating lease right-of-use assets	(10,403)	125,531
Accrued interest receivable	(193,232)	—
Accounts payable	243,357	(2,234,157)
Deferred grant income	(944,575)	2,939,198
Accrued expense and other current liabilities	(1,579,848)	(1,731,717)
Net cash used in operating activities	**(10,750,009)**	**(1,605,717)**
Cash flows from investing activities:		
Purchases of equipment	(129,074)	(21,300)
Purchases of investment securities	(31,230,133)	—
Net cash used in investing activities	**(31,359,207)**	**(21,300)**
Cash flows from financing activities:		
Payment of deferred issuance costs	(167,393)	—
Payments of notes payable	(215,382)	(328,187)
Principal payments on finance leases	(32,055)	(33,493)
Proceeds from exercise of stock options	20,412	1,890
Net cash used in financing activities	**(394,418)**	**(359,790)**
Effect of exchange rate changes on cash and cash equivalents	(28,270)	—
Net decrease in cash and cash equivalents	(42,531,904)	(1,986,807)
Cash and cash equivalents		
Beginning of period	56,566,066	15,046,894
End of period	$ 14,034,162	$ 13,060,087
Supplemental cash flow information:		
Cash paid for interest	$ 66,163	$ 78,312
Supplemental information on non-cash investing and finance activities:		
Deferred issuance costs included in accounts payable and accrued expenses	$ 68,712	$ —

See accompanying notes to the condensed consolidated financial statements.

(1) Nature of Business

SAB Biotherapeutics, Inc., a Delaware corporation ("SAB" or "SAB Biotherapeutics", and together with its subsidiaries, the "Company"), is a clinical-stage biopharmaceutical company focused on the development of human polyclonal immunotherapeutic antibodies, or human immunoglobulins ("hIgG"), to address immune system disorders and infectious diseases. The Company's antibodies are both target-specific and polyclonal, meaning they are comprised of multiple hIgGs and can bind to multiple sites on specific immunogens, making them ideally suited to address the complexities associated with many immune-mediated disorders. The Company's lead candidate, SAB-142 is a human anti-thymocyte globulin ("ATG") focused on preventing or delaying the progression of type 1 diabetes ("T1D").

Australian Research and Development Tax Credit

In June 2023, the Company formed a new subsidiary in Australia, SAB BIO PTY LTD, a proprietary limited company ("SAB Australia"), primarily to conduct preclinical and clinical activities for product candidates. SAB Australia's research and development activities qualify for the Australian government's tax credit program, which provides a 43.5% credit for qualifying research and development expenses. The Company recently initiated a Phase 1 trial of SAB-142 to establish its safety and pharmacokinetic profiles in human subjects.

Liquidity

The accompanying unaudited condensed consolidated financial statements have been prepared assuming the Company will continue as a going concern, which contemplates continuity of operations, realization of assets and the satisfaction of liabilities and commitments in the normal course of business. The Company has experienced net losses, negative cash flows from operations and, as of March 31, 2024, had an accumulated deficit of $95.1 million. The Company anticipates to continue to generate losses for the foreseeable future and expects the losses to increase as the Company continues the development of, or seeks regulatory approvals for product candidates, and begins commercialization of products. As a result, the Company will require additional capital to fund operations in order to support long-term plans.

On September 29, 2023, the Company entered into a securities purchase agreement with certain accredited investors (the "September 2023 Purchase Agreement"), pursuant to which the Company agreed to issue and sell shares of preferred stock and warrants, in a private placement which provides for up to $110 million in proceeds across multiple tranches. Between October 2023 and November 2023, the Company received an aggregate of approximately $67.1 million for shares of preferred stock issued in this private placement offering. See Note 10, *Stockholders' Equity* for further information about the private placement offering.

Based on the Company's current level of operating expenses, existing resources will be sufficient to cover operating cash needs through the twelve months following the date of this report. In the future, the Company may seek additional funding through a combination of equity or debt financings, or other third-party financing, collaborative or other funding arrangements. Should the Company seek additional financing from outside sources, the Company may not be able to raise such financing on terms acceptable to the Company or at all. If the Company is unable to raise additional capital when required or on acceptable terms, the Company may be required to scale back or discontinue the advancement of product candidates, reduce headcount, liquidate assets, file for bankruptcy, reorganize, merge with another entity, or cease operations.

(2) Summary of Significant Accounting Policies

A summary of the significant accounting policies applied in preparation of the accompanying condensed consolidated financial statements is set forth below.

Basis of presentation

The financial statements have been prepared in conformity with U.S. Generally Accepted Accounting Principles ("GAAP") and include all adjustments necessary for the fair presentation of the Company's financial position for the periods presented.

Emerging growth company status

The Company is an "emerging growth company," as defined in Section 2(a) of the Securities Act of 1933, as amended (the "Securities Act"), as modified by the Jumpstart our Business Startups Act of 2012, (the "JOBS Act"), and it may take advantage of certain

exemptions from various reporting requirements that are applicable to other public companies that are not emerging growth companies including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, reduced disclosure obligations regarding executive compensation in its periodic reports and proxy statements, and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved.

Further, Section 102(b)(1) of the JOBS Act exempts emerging growth companies from being required to comply with new or revised financial accounting standards until private companies (that is, those that have not had a Securities Act registration statement declared effective or do not have a class of securities registered under the Securities Exchange Act of 1934, as amended (the "Exchange Act") are required to comply with the new or revised financial accounting standards. The JOBS Act provides that a company can elect to opt out of the extended transition period and comply with the requirements that apply to non-emerging growth companies but any such election to opt out is irrevocable. The Company has elected not to opt out of such extended transition period which means that when a standard is issued or revised and it has different application dates for public or private companies, the Company, as an emerging growth company, can adopt the new or revised standard at the time private companies adopt the new or revised standard. This may make comparison of the Company's financial statements with another public company which is neither an emerging growth company nor an emerging growth company which has opted out of using the extended transition period difficult or impossible because of the potential differences in accounting standards used.

Principles of consolidation

The accompanying condensed consolidated financial statements include the results of the Company and its wholly owned subsidiaries, SAB Sciences, Inc., SAB Capra, LLC, Aurochs, LLC, and SAB Australia. Intercompany balances and transactions have been eliminated in consolidation.

Significant risks and uncertainties

The Company's operations are subject to a number of factors that can affect its operating results and financial condition. Such factors include, but are not limited to, the results of research and development efforts, clinical trial activities of the Company's product candidates, the Company's ability to obtain regulatory approval to market its product candidates, competition from products manufactured and sold or being developed by other companies, and the Company's ability to raise capital.

The Company currently has no commercially approved products and there can be no assurance that the Company's research and development will be successfully commercialized. Developing and commercializing a product requires significant time and capital and is subject to regulatory review and approval as well as competition from other biotechnology and pharmaceutical companies. The Company operates in an environment of rapid change and is dependent upon the continued services of its employees and obtaining and protecting intellectual property.

Funding from government grants is not guaranteed to cover all costs, and additional funding may be needed to cover operational costs as the Company moves forward to with its efforts to develop a commercially approved product.

Use of estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenue and expenses and the disclosure of contingent assets and liabilities in the financial statements. The Company has used significant estimates in its determination of stock-based compensation assumptions, determination of the fair value of the Private Placement Warrant liabilities, determination of the incremental borrowing rate ("IBR") used in the calculation of the Company's right of use assets and lease liabilities, estimation of clinical and other accruals and the valuation allowance on deferred tax assets. Actual amounts realized may differ from these estimates.

Fair Value Measurements

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. The following fair value hierarchy classifies the inputs to valuation techniques that would be used to measure fair value into one of three levels:

Level 1: Unadjusted quoted prices in active markets for identical assets or liabilities.

Level 2: Inputs other than quoted prices that are observable for the asset or liability, either directly or indirectly. These include quoted prices for similar assets or liabilities in active markets and quoted prices for identical or similar assets or liabilities in markets that are not active.

Level 3: Unobservable inputs that reflect the reporting entity's own assumptions.

Certain of the Company's financial instruments are not measured at fair value on a recurring basis but are recorded at amounts that approximate their fair value due to the short-term nature of their maturities, such as cash and cash equivalents, accrued interest receivable, accounts payable, notes payable and accrued expenses.

The Company accounts for warrants to purchase its common stock pursuant to Accounting Standards Codification ("ASC") Topic 470, *Debt* ("ASC 470"), and ASC Topic 480, *Distinguishing Liabilities from Equity* ("ASC 480"), and classifies warrants for common stock as liabilities or equity. The warrants classified as liabilities are reported at their estimated fair value (see Note 13, *Fair Value Measurements*) and any changes in fair value are reflected in other income and expense. The warrants classified as equity are reported at their estimated relative fair value with no subsequent remeasurement. The Company's outstanding warrants are discussed in more detail in Note 12, *Warrants*.

Deferred Issuance Costs

The Company capitalizes certain legal, professional accounting and other third-party fees that are directly associated with in-process equity financings as deferred issuance costs until such financings are consummated. After consummation of the equity financing, these costs are recorded in shareholders' equity as a reduction of additional paid-in capital generated as a result of the issuance.

As of March 31, 2024, the Company had $236 thousand in deferred issuance costs related to the Company's sales agreement with Cantor Fitzgerald & Co. The sales agreement is discussed further in Note 10, *Stockholders' Equity*. The Company had no deferred issuance costs as of December 31, 2023.

Cash, cash equivalents, and restricted cash

Cash and cash equivalents are comprised of cash and highly liquid investments with original maturities of 90 days or less at the date of purchase. Cash equivalents consist primarily of exchange-traded money market funds.

The Company is exposed to credit risk in the event of default by the financial institutions or the issuers of these investments to the extent the amounts on deposit or invested are in excess of amounts that are insured.

Short and long-term investments

The Company accounts for short-term investments in accordance with Accounting Standard Codification (ASC) Topic 320, Investments - Debt and Equity Securities. Management determines the appropriate classification of its investments at the time of purchase and reevaluates such determinations at each reporting period.

At March 31, 2024, the Company's short and long-term investments consisted of U.S. treasury securities with original maturity exceeding 90 days and investments in exchange traded mutual funds. The Company classifies these securities as both current and non-current depending on their time to maturity.

Trading securities are measured at fair value with unrealized gains and losses reported within other income in the condensed consolidated statement of operations. Available-for-sale debt securities are measured at fair value with unrealized gains and losses reported in accumulated other comprehensive income (loss) in the condensed consolidated statement of operations. The Company considers all of its securities for which there is a determinable fair market value, and there are no restrictions on the Company's ability to sell within the next twelve months, as available-for-sale securities.

The Company reviews its investments at each reporting date to identify and evaluate whether a decline in fair value below the amortized cost basis of available-for-sale securities is due to credit-related factors and determines if such unrealized losses are the result of credit losses that require impairment. Factors considered in determining whether an unrealized loss is the result of a credit loss or other factors include the extent to which the fair value is less than the cost basis, any changes to the rating of the security by a rating agency, the financial condition and near-term prospects of the issuer, any historical failure of the issuer to make scheduled interest or principal payments, any adverse legal or regulatory events affecting the issuer or issuer's industry, any significant deterioration in economic condition and the Company's intent and ability to hold the investment for a period of time sufficient to allow for any anticipated recovery in market value.

The Company did not recognize any credit losses on its short-term or long-term investments during the three months ended March 31, 2024 and 2023.

Concentration of credit risk

The Company maintains its cash and cash equivalent balances in the form of business checking accounts and money market accounts, the balances of which, at times, may exceed federally insured limits. Although the Company currently believes that the financial

institutions with whom it does business will be able to fulfill their commitments to the Company, there is no assurance that those institutions will be able to continue to do so. The Company has not experienced any credit losses associated with its balances in such accounts for the three months ended March 31, 2024 and 2023.

Lease liabilities and right-of-use assets

The Company is party to certain contractual arrangements for equipment, lab space, and an animal facility, which meet the definition of leases under Financial Accounting Standards Board ("FASB") ASC Topic 842, *Leases* ("ASC 842"). In accordance with ASC 842, the Company recorded right-of-use assets and related lease liabilities for the present value of the lease payments over the lease terms. The Company's IBR was used in the calculation of its right-of-use assets and lease liabilities.

The Company elected not to apply the recognition requirements of ASC 842 to short-term leases, which are deemed to be leases with a lease term of twelve months or less. Instead, the Company recognized lease payments in the Condensed Consolidated Statements of Operations on a straight-line basis over the lease term and variable payments in the period in which the obligation for these payments was incurred. The Company elected this policy for all classes of underlying assets.

Research and development expenses

Expenses incurred in connection with research and development activities are expensed as incurred. These include licensing fees to use certain technology in the Company's research and development projects, fees paid to consultants and various entities that perform certain research and testing on behalf of the Company, and expenses related to animal care, research-use equipment depreciation, salaries, benefits, and stock-based compensation granted to employees in research and development functions.

During the three months ended March 31, 2024 and 2023, the Company had contracts with multiple contract research organizations ("CRO") to complete studies as part of research grant agreements. These costs include upfront, milestone and monthly expenses as well as reimbursement for pass through costs. All research and development costs are expensed as incurred except when the Company is accounting for nonrefundable advance payments for goods or services to be used in future research and development activities. In these cases, these payments are capitalized at the time of payment and expensed in the period the research and development activity is performed. As actual costs become known, the Company will adjust the accrual; such changes in estimate may be a material change in the Company's clinical study accrual, which could also materially affect reported results of operations. For the three months ended March 31, 2024 and 2023, there were no material adjustments to the Company's prior period estimates of accrued expenses for clinical trials.

Property, Plant and Equipment

The Company records property, plant, and equipment at cost less depreciation and amortization. Depreciation is calculated using straight-line methods over the following estimated useful lives:

Animal facility equipment	7 years
Laboratory equipment	7 years
Leasehold improvements	Shorter of asset life or lease term
Office furniture and equipment	5 years
Vehicles	5 years

Repairs and maintenance expenses are expensed as incurred.

Impairment of long-lived assets

The Company reviews the recoverability of long-lived assets, including the related useful lives, whenever events or changes in circumstances indicate that the carrying amount of a long-lived asset may not be recoverable. If necessary, the Company compares the estimated undiscounted future net cash flows to the related asset's carrying value to determine whether there has been an impairment. If an asset is considered impaired, the asset is written down to fair value, which is based either on discounted cash flows or appraised values in the period the impairment becomes known. The Company believes that long-lived assets are recoverable, and no impairment was deemed necessary, during the three months ended March 31, 2024 and 2023.

Stock-based compensation

FASB ASC Topic 718, *Compensation– Stock Compensation*, prescribes accounting and reporting standards for all share-based payment transactions in which employee and non-employee services are acquired. The Company recognizes compensation cost relating to stock-based payment transactions using a fair-value measurement method, which requires all stock-based payments to

employees, directors, and non-employee consultants, including grants of stock options, to be recognized in operating results as compensation expense based on fair value over the requisite service period of the awards. The Company determines the fair value of common stock based on the closing market price at closing on the date of the grant.

In determining the fair value of stock-based awards, the Company utilizes the Black-Scholes option-pricing model, which uses both historical and current market data to estimate fair value. The Black-Scholes option-pricing model incorporates various assumptions, such as the value of the underlying common stock, the risk-free interest rate, expected volatility, expected dividend yield, and expected life of the options. For awards with performance-based vesting criteria, the Company estimates the probability of achievement of the performance criteria and recognizes compensation expense related to those awards expected to vest. No awards may have a term in excess of ten years. Forfeitures are recorded when they occur. Stock-based compensation expense is classified in the condensed consolidated statements of operations based on the function to which the related services are provided. The Company recognizes stock-based compensation expense over the vesting period.

Income taxes

Deferred income taxes reflect future tax effects of temporary differences between the tax and financial reporting basis of the Company's assets and liabilities measured using enacted tax laws and statutory tax rates applicable to the periods when the temporary differences will affect taxable income. When necessary, deferred tax assets are reduced by a valuation allowance, to reflect realizable value, and all deferred tax balances are reported as long-term on the condensed consolidated balance sheet. Accruals are maintained for uncertain tax positions, as necessary.

The Company uses a recognition threshold and measurement attribute for the financial statement recognition and measurement of a tax position taken, or expected to be taken, in a tax return. The Company has elected to treat interest and penalties related to income taxes, to the extent they arise, as a component of income taxes.

Revenue recognition

The Company's revenue is primarily generated through grants from government and other (non-government) organizations.

Grant revenue is recognized during the period that the research and development services occur, as qualifying expenses are incurred, or conditions of the grants are met. Deferred grant income represents grant proceeds received by the Company prior to the period in which the research and development services occur, as qualifying expenses are incurred, or conditions of the grants are met. The Company concluded that payments received under these grants represent conditional, nonreciprocal contributions, as described in ASC 958, *Not-for-Profit Entities*, and that the grants are not within the scope of ASC 606, *Revenue from Contracts with Customers*, as the organizations providing the grants do not meet the definition of a customer. Expenses for grants are tracked by using a project code specific to the grant, and the employees also track hours worked by using the project code.

Foreign Currency Translations and Transactions

Assets and liabilities of the Company's foreign subsidiary are translated at the year-end exchange rate. Operating results of the Company's foreign subsidiary are translated at average exchange rates during the period. Translation adjustments have no effect on net loss and are included in "Accumulated other comprehensive loss, net" in the accompanying Consolidated Balance Sheets.

Comprehensive income (loss)

Comprehensive income (loss) includes net loss as well as other changes in stockholders' equity that result from transactions and economic events other than those with stockholders. The Company's foreign currency translation adjustments of $34 thousand and unrealized loss related to available-for-sale securities of $56 thousand represents the difference between net loss and comprehensive loss for the three months ended March 31, 2024. The Company had no items of comprehensive loss other than its net loss for the three months ended March 31, 2023.

Litigation

From time to time, the Company is involved in legal proceedings, investigations and claims generally incidental to its normal business activities. In accordance with U.S. GAAP, the Company accrues for loss contingencies when it is probable that a liability has been incurred and the amount of the loss can be reasonably estimated. Legal costs in connection with loss contingencies are expensed as incurred.

Earnings per share

In accordance with ASC 260, *Earnings per Share* ("ASC 260"), basic net income (loss) per share attributable to common stockholders is computed by dividing net income (loss) attributable to common stockholders by the weighted-average number of common stock outstanding during the period. Diluted net income (loss) per share attributable to common stockholders is computed by dividing the diluted net income (loss) attributable to common stockholders by the weighted-average number of common stock outstanding for the period including potential dilutive common shares such as stock options.

Segment reporting

In accordance with ASC 280, *Segment Reporting*, the Company's business activities are organized into one reportable segment, as only the Company's operating results in their entirety are regularly reviewed by the Company's chief operating decision maker to make decisions about resources to be allocated and to assess performance.

Australian Research and Development Tax Credit

The Company recognizes other income from Australian research and development incentives when there is reasonable assurance that the income will be received, the relevant expenditure has been incurred, and the consideration can be reliably measured. The research and development incentive is one of the key elements of the Australian Government's support for Australia's innovation system and is supported by legislative law primarily in the form of the Australian Income Tax Assessment Act 1997, as long as eligibility criteria are met. Under the program, a percentage of eligible research and development expenses incurred by the Company through its subsidiary in Australia are reimbursed.

Management has assessed the Company's research and development activities and expenditures to determine which activities and expenditures are likely to be eligible under the research and development incentive regime described above. At each period end, management estimates the refundable tax offset available to the Company based on available information at the time and it is included in other income in the condensed consolidated statements of operations.

Retroactive Adjustments for Common Stock Reverse Split

On January 5, 2024, the Company completed a 1-for-10 reverse stock split of the Company's Common Stock. As a result of the Reverse Stock Split, every ten of the Company's issued shares of Common Stock were automatically combined into one issued share of Common Stock, without any change to the par value per share. All share and per share numbers in this Form 10-Q have been adjusted to reflect the Reverse Stock Split.

(3) New accounting standards

Recently Issued Accounting Standards

On March 29, 2024, the FASB issued ASU 2024-02 "Codification Improvements" ("ASU 2024-02") which amends the Codification to remove references to various concepts statements and impacts a variety of topics in the Codification. The amendments apply to all reporting entities within the scope of the affected accounting guidance, but in most instances the references removed are extraneous and not required to understand or apply the guidance. Generally, the amendments in ASU 2024-02 are not intended to result in significant accounting changes for most entities. ASU 2024-02 is effective January 1, 2025 and is not expected to have a significant impact on the Company's financial statements.

(4) Revenue

During the three months ended March 31, 2024 and 2023, the Company recognized revenue from the following grants:

Government grants

Total revenue recognized from government grants was approximately $945 thousand and $581 thousand for the three months ended March 31, 2024 and 2023, respectively.

National Institute of Health - National Institute of Allergy and Infectious Disease ("NIH-NIAID") (Federal Award #1R41AI131823-02) – this grant was for approximately $1.5 million and had an original term of April 2019 through March 2021. The grant was subsequently amended to extend the end date to March 2023. No grant income was recognized for this grant for the three months ended March 31, 2024 and approximately $192 thousand of grant income was recognized for the three months ended March 31, 2023. This grant was completed as of June 30, 2023.

NIH-NIAID through Geneva Foundation (Federal Award #1R01AI132313-01, Subaward #S-10511-01) – this grant was for approximately $2.7 million and had an original term of August 2017 through July 2021. The grant was subsequently amended to extend the end date to July 2023. No grant income was recognized for the three months ended March 31, 2024, and approximately $236 thousand of grant income was recognized for the three months ended March 31, 2023. This grant was completed as of June 30, 2023.

US Department of Defense ("DoD"), Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense Enabling Biotechnologies ("JPEO") through Advanced Technology International – this grant was for a potential of $25 million, awarded in stages starting in August 2019 and with potential stages running through February 2023. Additional contract modifications were added to this contract in 2020 and 2021 for work on a COVID therapeutic, bringing the contract total to $203.6 million. Deferred grant income recognized was approximately $945 thousand and $153 thousand for the three months ended March 31, 2024 and 2023, respectively. This grant was terminated in 2022.

The grants for the Company's Rapid Response contract with JPEO (the "JPEO Rapid Repsonse Contact") are cost reimbursement agreements, with reimbursement of qualified direct research and development expense (labor and consumables) with an overhead charge (based on actual, reviewed quarterly) and a fixed fee (9%).

On August 3, 2022, the Company received notice from the DoD terminating the JPEO Rapid Response contract (the "JPEO Rapid Response Contract Termination"). The Company engaged in negotiations with the DoD to compensate the Company for services provided prior to the JPEO Rapid Response Contract Termination and costs the Company would be expected to bear in future periods. A termination and settlement proposal was submitted to the DoD on September 9, 2022; the Company submitted a final invoice on December 15, 2022; and received payment from the DoD on or about January 12, 2023. The terms of the arrangement provide for a cost-reimbursable structure, and state that the parties will work in good faith equitable reimbursement for work performed toward accomplishment of the tasks provided in the agreement. At this time, other than certain deferred obligations (presented within deferred grant income within the Company's condensed consolidated unaudited balance sheet) potentially payable to the DoD solely due to subsequent negotiations with third-party vendors, the Company believes and has been advised there is a reasonable, good faith basis for the position that no present or future obligations exist. Revenue recognized subsequent to the JPEO Rapid Response Contract Termination relates to satisfaction of residual obligations under the termination and settlement agreement—see Note 2, *Summary of Significant Accounting Policies* for further information about the Company's established revenue recognition process.

(5) Earnings per share

The following is a reconciliation of the numerator and denominator used to calculate basic earnings per share and diluted earnings per share for the three months ended March 31, 2024 and 2023:

	For The Three Months Ended March 31,	
	2024	2023
Calculation of basic and diluted loss per share attributable to the Company's shareholders		
Net loss attributable to the Company's shareholders	$ (5,025,745)	$ (7,353,820)
Weighted-average common shares outstanding – basic and diluted	9,241,940	5,039,705
Net loss per share, basic and diluted	$ (0.54)	$ (1.46)

The Company's potentially dilutive securities, which include stock options, restricted stock awards, common stock warrants, earnout shares, and contingently issuable earnout shares have been excluded from the computation of diluted net loss per share as the effect would be to reduce the net loss per share. Therefore, the weighted average number of common shares outstanding used to calculate both basic and diluted net loss per share attributable to common stockholders is the same. The Company excluded the following potential common shares, presented based on amounts outstanding at each period end, from the computation of diluted net loss per share attributable to common stockholders for the periods indicated because including them would have had an anti-dilutive effect:

	For The Three Months Ended March 31,	
	2024	2023
Stock options and awards	10,435	573,573
Convertible Debt	40,438	37,542
Common Stock Warrants (1)	2,233,407	625,860
Series A Preferred Stock (2)	6,704,127	—
Preferred Stock Warrants (3)	23,803,334	—
Contingently issuable Earnout Shares from unexercised Rollover Options	150,806	150,806
Total	32,942,547	1,387,781

(1) Contained within common stock warrants are the 575,000 the public warrants (the "Public Warrants"), 20,860 warrants held by assignees of Big Cypress Holdings, LLC (the "Private Placement Warrants"), 30,000 warrants held by Ladenburg Thalmann & Co. Inc. (the "Ladenburg Warrants"), 736,337 warrants issued to the investors in the December 2022 Private Placement (the "PIPE Warrants"), 21,091 warrants issued to the placement agent in the December 2022 Private Placement (the "PIPE Placement Agent Warrants"), and 850,119 Preferred PIPE Placement Agent Warrants issued to the placement agent in the September 2023 Offering. See Note 12, *Warrants* for further details on the Company's outstanding warrants.

(2) Represents shares of common stock underlying 42,236 issued, outstanding, and convertible shares of Series A-2 Preferred Stock. See Note 10, *Stockholders' Equity* for further details on the Company's preferred stock.

(3) Represents 6,800,953 and 17,002,381 common shares underlying 42,846 outstanding Tranche B Warrants and 107,115 outstanding Tranche C Warrants, respectively.

(6) Property, plant and equipment

As of March 31, 2024 and December 31, 2023, the Company's property, plant and equipment was as follows:

	March 31, 2024	December 31, 2023
Laboratory equipment	$ 9,493,096	$ 9,415,210
Animal facility leasehold improvements	8,357,667	8,357,667
Animal facility equipment (1)	2,899,267	1,137,666
Construction-in-progress	51,188	—
Leasehold improvements (1)	7,064,722	9,296,344
Vehicles	208,453	208,453
Office furniture and equipment (1)	1,703,059	1,233,038
Total Property, plant and equipment, gross	29,777,452	29,648,378
Less: accumulated depreciation and amortization	(11,874,899)	(9,911,859)
Property, plant and equipment, net	$ 17,902,553	$ 19,736,519

(1) The Company re-classed $2.2 million of leasehold improvements to animal facility equipment ($1.8 million) and office furniture and equipment ($470 thousand) as of March 31, 2024.

Depreciation and amortization expense was $2.0 million and $898 thousand, respectively, for the three months ended March 31, 2024 and 2023. During the three months ended March 31, 2024, the Company recorded expense of approximately $932 thousand for an out-of-period adjustment related to the amortization of leasehold improvements which is included in research and development expense.

All tangible personal property with a useful life of at least three years and a unit acquisition cost of $5 thousand or more will be capitalized and depreciated over its useful life using the straight-line method of depreciation. The Company will expense the full acquisition cost of tangible personal property below these thresholds in the year of purchase. The basis of accounting for depreciable fixed assets is acquisition cost and any additional expenditures required to make the asset ready for use. The carrying amount at the balance sheet date of long-lived assets under construction-in-progress includes assets purchased, constructed, or being developed internally that are not yet in service. Depreciation commences when the assets are placed in service.

(7) Leases

The Company has an operating lease for lab space from Sanford Health, under a lease that started in June 2014 and initially ended in June 2019, at which time the lease was extended through August 2024. This lease can be terminated with one-year advance written

notice. This lease was amended again in October 2022 to reduce the Company's leased area to 21,014 square feet. Additionally, pursuant to the amendment in October 2022, the Company and Sanford Health agreed for the period of October 2022 to September 2023, the Company's obligation to pay the Annual Rent shall be abated and not required to be paid when normally due (the "Abated Rent"). In exchange for the Abated Rent, effective October 1, 2022, the Company issued Sanford Health an 8% unsecured, convertible promissory note (see Note 9, *Notes Payable* for further discussion). The October 2022 amendment was accounted for as a lease modification under ASC 842 - *Leases* and the right-of-use asset and lease liability were remeasured at the modification date of October 1, 2022. The October 2022 lease amendment reduced the lease payment to approximately $45 thousand per month through 2023 and approximately $46 thousand per month through 2024. The lease does not provide an implicit rate, and, therefore, the Company used an IBR of 6.92% as the discount rate when measuring the operating lease liability. The operating lease does not include an option to extend beyond the life of the current term. The Company estimated the IBR based upon comparing interest rates available in the market for similar borrowings and the credit quality of the Company.

The Company entered into a lease for office, laboratory, and warehouse space in November 2020, which was amended in July 2022 to add additional administrative and lab space. This amended lease has a 3-year term, with options to extend for 3 additional periods of 3 years each. The options were not included in the right of use calculation as it is unclear as to whether or not the location will meet the Company's requirements beyond the next three years. The July 2022 amendment was accounted for as a separate contract under ASC 842 – *Leases*. This lease renewed in November 2023. The lease costs are $36 thousand, $3 thousand and $31 thousand per month for the original leased space on November 2020, the amendment on July 2022, and the November 2023 lease renewal, respectively. The Company used an IBR of 4.69%, 6.60%, and 8.14%, as the discount rate when measuring the operating lease liability for the original leased space on November 2022, the amendment in July 2022, and the November 2023 lease renewal, respectively. The Company estimated the IBR based upon comparing interest rates available in the market for similar borrowings and the credit quality of the Company.

The Company has the following finance leases:

- In December 2018, the Company entered into a finance lease with Dakota Ag Properties for a new animal facility which includes the surrounding land. The facility and the land have been accounted for as separate lease components. The lease is based upon payback of $4 million in construction costs, with a 20-year term at an interest rate of 8%. The monthly payment for this lease is $34 thousand. The Company has the option to purchase the asset at any time during the term of the lease for the balance of the unamortized lease payments.
- In December 2018, the Company entered into an equipment lease for a 12,000-gallon propane tank that is located on the Company's animal facility. The lease is for five years, with an annual payment of $8 thousand. The Company has the option to purchase the asset at any time during the term of the lease for the balance of the unamortized lease payments.

The lease agreements do not require material variable lease payments, residual value guarantees or restrictive covenants.

The amortizable lives of the operating lease assets are limited by their expected lease terms. The amortizable lives of the finance lease assets are limited by their expected lives, as the Company intends to exercise the purchase options at the end of the leases. The following is the estimated useful lives of the finance lease assets:

Animal Facility	40 years
Equipment	3–7 years
Land	Indefinite

The Company's weighted-average remaining lease term and weighted-average discount rate for operating and finance leases as of March 31, 2024 are:

	Operating	Finance
Weighted-average remaining lease term	2.13	14.67
Weighted-average discount rate	7.90 %	7.72 %

The table below reconciles the undiscounted future minimum lease payments under non-cancelable leases with terms of more than one year to the total lease liabilities recognized on the condensed consolidated balance sheets as of March 31, 2024:

	Operating	Finance
2024 — remaining	$ 509,168	$ 301,122
2025	371,957	401,496
2026	309,964	401,496
2027	—	401,496
2028	—	401,496
Thereafter	—	3,981,502
Undiscounted future minimum lease payments	1,191,089	5,888,608
Less: Amount representing interest payments	(93,701)	(2,370,176)
Total lease liabilities	1,097,388	3,518,432
Less current portion	(542,841)	(134,568)
Noncurrent lease liabilities	$ 554,547	$ 3,383,864

Operating lease expense was approximately $221 thousand and $243 thousand for the three months ended March 31, 2024 and 2023, respectively. Operating lease costs are included within research and development expenses on the condensed consolidated statements of operations.

Finance lease costs for the three months ended March 31, 2024 and 2023 included approximately $22 thousand and $25 thousand, respectively, in right-of-use asset amortization and approximately $68 thousand and $69 thousand, respectively, of interest expense. Finance lease costs are included within research and development expenses on the condensed consolidated statements of operations.

Cash payments under operating and finance leases were approximately $231 thousand and $100 thousand, respectively, for the three months ended March 31, 2024. Cash payments under operating and finance leases were approximately $118 thousand and $103 thousand, respectively, for the three months ended March 31, 2023.

(8) Accrued Expenses and Other Current Liabilities

As of March 31, 2024 and December 31, 2023, accrued expenses and other current liabilities consisted of the following:

	March 31, 2024	December 31, 2023
Payroll and employee-related costs	$ 1,919,397	$ 3,400,308
Accrued research and development expenses	641,334	480,435
Accrued legal fees	813,390	907,816
Accrued financing fees payable	1,278,000	1,461,149
Accrued interest	88,203	77,995
Other accrued expenses	433,992	364,478
	$ 5,174,316	$ 6,692,181

(9) Notes Payable

8% Unsecured Convertible Note

Pursuant to the fourth amendment to the Company's lease with Sanford Health, the Company and Sanford Health agreed to a period of abated rent (the "Abated Rent") from October 1, 2022 to September 30, 2023. In exchange for the Abated Rent, effective as of October 1, 2022, the Company issued to Sanford Health an 8% unsecured, convertible promissory note (the "8% Unsecured Convertible Note").

Pursuant to the 8% Unsecured Convertible Note, the Company shall pay the sum of approximately $542 thousand (the "Principal") plus accrued and unpaid interest thereon on September 30, 2024 (the "Maturity Date"). Simple interest shall accrue on the outstanding Principal from and after the date of the 8% Unsecured Convertible Note and shall be payable on the Maturity Date. Sanford Health shall have the right, but not the obligation, to convert all or any part of the outstanding Principal of the 8% Unsecured Convertible Note, together with any accrued and unpaid interest thereon to the date of such conversion, into such number of fully paid and non-assessable shares of the Company's common stock, at any time and from time to time, prior to the later of the Maturity Date and the date on which the 8% Unsecured Convertible Note is paid in full, subject to certain restrictions, at a conversion price per share of common stock equal to greater of $15.00 and the price at which the Company sells shares of common stock in any bona fide private or public equity financing prior to the Maturity Date.

The Company evaluated the treatment of the 8% Unsecured Convertible Note under ASC 470 and determined the Principal in its entirety would be allocated to debt. The Company's condensed consolidated balance sheet as of March 31, 2024 includes accrued interest relating to the 8% Unsecured Convertible Note of approximately $65 thousand.

Insurance Financing

The Company obtained financing for certain Director & Officer liability insurance policy premiums. The agreement assigns First Insurance Funding ("Lender") a first priority lien on and security interest in the financed policies and any additional premium required in the financed policies including (a) all returned or unearned premiums, (b) all additional cash contributions or collateral amounts assessed by the insurance companies in relation to the financed policies and financed by Lender, (c) any credits generated by the financed policies, (d) dividend payments, and (e) loss payments which reduce unearned premiums. If any circumstances exist in which premiums related to any Financed Policy could become fully earned in the event of loss, Lender shall be named a loss-payee with respect to such policy.

The total premiums, taxes and fees financed is approximately $765 thousand with an annual interest rate of 7.96%. In consideration of the premium payment by Lender to the insurance companies or the Agent or Broker, the Company unconditionally promises to pay Lender the amount financed plus interest and other charges permitted under the agreement. The Company paid the insurance financing through installment payments with the last payment for the current note being September 22, 2024. At March 31, 2024 and December 31, 2023, the Company recognized approximately $294 thousand and $509 thousand, respectively, as an insurance financing note payable in its condensed consolidated balance sheets.

(10) Stockholders' Equity

Authorized and Outstanding Capital Stock

The total number of shares of the Company's authorized capital stock is 810,000,000. The total amount of authorized capital stock consists of 800,000,000 shares of common stock and 10,000,000 shares of preferred stock.

Series A Preferred Stock

On September 29, 2023, the Company entered into a securities purchase agreement (the "September 2023 Purchase Agreement") with certain accredited investors, pursuant to which the Company agreed to issue and sell, in a private placement (the "September 2023 Offering"), (i) 7,500 shares of Series A-1 Convertible Preferred Stock, par value $0.0001 per share, for an aggregate offering price of $7.5 million (the "Series A-1 Preferred Stock"), (ii) tranche A warrants (the "Preferred Tranche A Warrants") to acquire shares of Series A-1 Preferred Stock or Series A-3 Preferred Stock, par value $0.0001 per share, for an aggregate exercise price of $70.5 million (the "Series A-3 Preferred Stock"), (iii) tranche B warrants to acquire shares of Series A-3 Preferred Stock, par value $0.0001 per share, for an aggregate exercise price of $52.0 million (the "Preferred Tranche B Warrants"), and (iv) tranche C warrants to purchase Series A-3 Preferred Stock, par value $0.0001 per share, for an aggregate exercise price of $130.0 million (the "Preferred Tranche C Warrants" and together with the Preferred Tranche A Warrants, and Preferred Tranche B Warrants, the "Preferred Warrants" and the shares underlying the Preferred Warrants, the "Preferred Warrant Shares").

On October 3, 2023, the Company closed on the issuance of the 7,500 shares of Series A-1 Preferred Stock (the "Initial Issuance Date"). In connection with the issuance of the 7,500 shares of Series A-1 Preferred Stock, gross proceeds were $7.5 million, before deducting fees to be paid to the placement agent and financial advisors of the Company and other offering expenses payable by the Company. The Company intends to use the net proceeds from the September 2023 Offering for working capital purposes and other general corporate purposes and to advance its SAB-142-101 clinical trial.

The Company recorded $7.5 million in gross proceeds associated with the initial issuance of the September 2023 Offering whereby the Company issued 7,500 shares of Series A-1 Convertible preferred stock the Preferred Warrants. The Company estimated the initial value of the warrants to be $10.9 million. Since the warrants are classified as liabilities, the initial amount recorded as the warrant liability was equal to the estimated fair value of the warrants. Since the fair value of these warrants exceeded the equity proceeds, the entire amount of proceeds were allocated to the warrants and the remaining value allocated to the warrants resulted in a $3.4 million loss on the issuance of the Series A Preferred Stock.

Subject to the terms and limitations contained in the Certificate of Designation of Preferences, Rights and Limitations of the Series A Convertible Voting Preferred Stock (the "Certificate of Designation"):

- The Series A-1 Preferred Stock issued in the September 2023 Offering became convertible upon receipt of certain requisite approvals by the Company's stockholders related to the offering (the "Stockholder Approval").
- On the first trading day following the announcement of the Stockholder Approval, each share of Series A-1 Preferred Stock became automatically convertible into common stock, at the conversion price of $6.30 per share (the "Conversion Price"),

provided that to the extent such conversion would cause a holder of Series A-1 Preferred Stock to exceed the applicable beneficial ownership limitation, such holder will receive shares of Series A-2 Preferred Stock, par value $0.0001 per share (the "Series A-2 Preferred Stock"), in lieu of common stock.

- At the option of the holder, each share of Series A-2 Preferred Stock and Series A-3 Preferred Stock will be convertible into common stock, at the Conversion Price (which is subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization).

The Preferred Tranche A Warrants became exercisable beginning on October 2, 2023, (the "Issuance Date") until the earlier of (i) fifteen (15) trading days following the date of the public announcement of the fulsome data set from the Sanofi S.A. Protect trial or (ii) December 15, 2023. If any purchaser in the September 2023 Offering failed to exercise their Preferred Tranche A Warrant in full prior to its expiration date, such purchaser forfeited all Preferred Tranche A Warrants, Preferred Tranche B Warrants, and Preferred Tranche C Warrants issued to them.

The Preferred Tranche B Warrants became exercisable commencing on the Exercisability Date (as defined in the Form of Preferred Tranche B Warrant) until the later of (i) 15 days following the Company's announcement of data from its SAB-142-101 clinical trial and (ii) March 31, 2025.

The Preferred Tranche C Warrants became exercisable commencing on the Exercisability Date (as defined in the Form of Preferred Tranche C Warrant) until the five (5) year anniversary of the Exercisability Date.

Prior to the extended mandatory exercise time of certain Preferred Tranche A Warrants, certain investors informed the Company that they would not exercise such warrants. Certain other investors in the offering agreed to assume and exercise 16,269 of the 27,115 unexercised Preferred Tranche A Warrants and received 10,846 of the Preferred Tranche B Warrants and 27,115 of the Preferred Tranche C Warrants from the transferring Investors. The balance of the unexercised Preferred Tranche A Warrants and the remaining Tranche B Warrants and Tranche C Warrants issued to the investors who failed to exercise their Tranche B Warrants were cancelled. Following these updates to the offering, the Company issued 59,654 shares of Series A-1 Preferred Stock for aggregate proceeds of approximately $59.65 million upon the exercise of the Tranche A Warrants.

Pursuant to the Certificate of Designation, all shares of Series A-1 Preferred Stock, subject to the Stockholder Approval obtained in November 2023, were automatically converted into an aggregate of 3,954,674 shares of common stock, par value $0.0001 per share and 42,236 shares of Series A-2 Preferred Stock.

Following Shareholder Approval of the September 2023 Offering, on November 22, 2023, the Company issued 67,154 shares of Series A-1 Convertible Preferred Stock. Following shareholder approval of the September 2023 Offering, 24,918 shares of Series A-1 Convertible Preferred Stock were converted into 3,954,674 common shares, with the remaining 42,236 shares of Series A-1 Convertible Preferred Stock being converted into Series A-2 Convertible preferred stock.

For information pertaining to the Company's outstanding warrants to purchase shares of the Company's preferred stock, see Note 12, *Warrants*.

Earnout Shares

On October 22, 2021 (the "Closing Date"), the Company consummated the business combination (the "Business Combination") contemplated by the agreement and plan of merger, dated as of June 21, 2021, as amended on August 12, 2021, made by and among Big Cypress Acquisition Corp., a Delaware corporation ("BCYP"), Big Cypress Merger Sub Inc., a Delaware corporation ("Merger Sub"), the Company, and Shareholder Representative Services LLC, a Colorado limited liability company, solely in its capacity as the representative, agent and attorney-in-fact of the SAB Stockholders (the "Business Combination Agreement "). Upon closing of the Business Combination, Merger Sub merged with SAB Biotherapeutics, with SAB Biotherapeutics as the surviving company of the merger. Upon closing of the Business Combination, BCYP changed its name to "SAB Biotherapeutics, Inc.".

Additionally, the Business Combination Agreement included an earnout provision whereby the shareholders of SAB Biotherapeutics shall be entitled to receive additional consideration ("Earnout Shares") if the Company meets certain Volume Weighted Average Price ("VWAP") thresholds, or a change in control with a per share price exceeding the VWAP thresholds within a five-year period immediately following the Closing.

The Earnout Shares shall be released in four equal increments as follows:

(i) 25% of the Earnout Shares shall be released if, at any time during the five (5)-year period immediately following the Closing Date, the VWAP of the Company's publicly traded common stock is greater than or equal to $150.00 for any twenty (20) trading days within a period of thirty (30) consecutive trading days (the "First Earnout").

(ii) 25% of the Earnout Shares shall be released if, at any time during the five (5)-year period immediately following the Closing Date, the VWAP of the Company's publicly traded common stock is greater than or equal to $200.00 for any twenty (20) trading days within a period of thirty (30) consecutive trading days (the "Second Earnout").

(iii) 25% of the Earnout Shares shall be released if, at any time during the five (5)-year period immediately following the Closing Date, the VWAP of the Company's publicly traded common stock is greater than or equal to $250.00 for any twenty (20) trading days within a period of thirty (30) consecutive trading days (the "Third Earnout").

(iv) 25% of the Earnout Shares shall be released if, at any time during the five (5)-year period immediately following the Closing Date, the VWAP of the Company's publicly traded common stock is greater than or equal to $300.00 for any twenty (20) trading days within a period of thirty (30) consecutive trading days (the "Fourth Earnout" and together with the First Earnout, the Second Earnout and the Third Earnout, the "Earnouts").

Pursuant to the terms of the Business Combination Agreement, SAB Biotherapeutics' securityholders (including vested option holders) who own SAB Biotherapeutics securities immediately prior to the Closing Date will have the contingent right to receive their pro rata portion of (i) an aggregate of 1,200,000 Earnout Shares, of which 150,806 are contingently issuable based upon future satisfaction of the aforementioned VWAP thresholds. The remaining 1,049,194 are legally issued and outstanding, if the Company does not meet the above VWAP thresholds, or a change in control with a per share price below the VWAP thresholds occurs within a five-year period immediately following the Closing Date, the shares will be returned to the Company.

The Earnout Shares are indexed to the Company's equity and meet the criteria for equity classification. On the Closing Date, the fair value of the 1,200,000 Earnout Shares was $101.3 million. The Company recorded the Earnout Shares as a stock dividend by reducing additional paid-in capital, which was offset by the increase in additional paid-in capital associated with the Business Combination.

Sales Agreement

As previously disclosed, on January 26, 2024, the Company entered into a Controlled Equity Offering Sales Agreement (the "Sales Agreement") with Cantor Fitzgerald & Co. ("Cantor"), relating to shares of common stock. In accordance with the terms of the Sales Agreement, the Company may offer and sell shares of our common stock having an aggregate offering price of up to $20,000,000 from time to time through Cantor, acting as the Company's sales agent. For the period ended March 31, 2024, the Company did not offer or sell any shares of common stock pursuant to the Sales Agreement.

(11) Stock Option Plans

On August 5, 2014, the Company approved a stock option grant plan (the "2014 Equity Incentive Plan") for employees, directors, and non-employee consultants, which provides for the issuance of options to purchase common stock. As of March 31, 2024, there were 728,650 shares of common stock reserved for issuance under the 2014 Equity Incentive Plan, with 143,755 shares of common stock available for grant and 584,895 shares of common stock underlying outstanding grants.

The Company adopted the 2021 Omnibus Equity Incentive Plan (the "2021 Equity Incentive Plan", and collectively with the 2014 Equity Incentive Plan, the "Equity Compensation Plans"), which reserved 1,100,000 shares of common stock for issuance. At the beginning of each calendar year, the shares reserved for future issuance shall increase by two percent (2%) of the total number of shares of common stock issued and outstanding on a fully-diluted basis as of the end of the Company's immediately preceding fiscal year (or such lesser number of shares, including no shares, determined by the Board in its sole discretion); provided, however, that the aggregate number of additional shares available for issuance pursuant to this paragraph (b) shall not exceed a total of 500,000 shares. As of March 31, 2024, there were 1,600,000 shares of common stock reserved for issuance under the 2021 Equity Incentive Plan, with 43,296 shares of common stock available for grant and 1,556,704 shares of common stock underlying outstanding grants.

The expected term of the stock options was estimated using the "simplified" method, as defined by the SEC's Staff Accounting Bulletin No. 107, *Share-Based Payment*. The volatility assumption was determined by examining the historical volatilities for industry peer companies, as the Company does not have sufficient trading history for its common stock. The risk-free interest rate assumption is based on the U.S. Treasury instruments whose term was consistent with the expected term of the options. The dividend assumption is based on the Company's history and expectation of dividend payouts. The Company has never paid dividends on its common stock and does not anticipate paying dividends on its common stock in the foreseeable future. Therefore, the Company has assumed no dividend yield for purposes of estimating the fair value of the options.

Stock Options

Stock option activity for employees and non-employees under the Equity Compensation Plans for the three months ended March 31, 2024 was as follows:

	Options	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (periods)	Aggregate Intrinsic Value
Outstanding options, December 31, 2023	1,009,519	$ 15.01	6.19	$ 664,967
Granted	1,084,000	$ 5.15		
Forfeited	(1,249)	$ 6.05		
Exercised	(3,780)	$ 5.40		
Expired	(13,778)	$ 51.10		
Outstanding options, March 31, 2024	2,074,712	$ 9.64	8.06	$ —
Options vested and exercisable, March 31, 2024	583,743	$ 18.29	4.05	$ —

Total unrecognized compensation cost related to non-vested stock options as of March 31, 2024 was approximately $6.8 million and is expected to be recognized within future operating results over a weighted-average period of 3.60 years.

The weighted average grant date fair value of options granted during the three months ended March 31, 2024 and 2023, was $3.94 and $3.86 per share, respectively. During the three months ended March 31, 2024 and 2023, 88,336 options vested with a fair value totaling $0.7 million and 21,362 options vested with a fair value totaling $0.6 million, respectively.

The estimated fair value of stock options granted to employees and consultants during the three months ended March 31, 2024 and 2023, were calculated using the Black-Scholes option-pricing model using the following assumptions:

	For The Three Months Ended March 31,	
	2024	2023
Expected volatility	89.9 - 90.4 %	81.9 %
Weighted-average volatility	89.9 %	81.9 %
Expected dividends	— %	— %
Expected term (in periods)	5.73 - 6.08	6.08
Risk-free rate	4.26 - 4.32 %	3.76 %

Restricted Stock

Stock award activity for employees and non-employees under the Equity Compensation Plans for the three months ended March 31, 2024 was as follows:

	Number of shares	Weighted Average Grant Date Fair Value
Unvested as of December 31, 2023	54,071	$ 11.56
Vested	(22,978)	$ 13.23
Unvested as of March 31, 2024	31,093	$ 11.56

At March 31, 2024, the Company had an aggregate of $454 thousand of unrecognized equity-based compensation related to restricted stock units outstanding. During the three months ended March 31, 2024, 10,162 shares with a fair value of $80 thousand vested. As of March 31, 2024, the Company had 22,978 restricted stock units vested but not issued. The unrecognized expense for restricted stock units is expected to be recognized within future operating results over a weighted average period of 2.60 years.

Stock-based compensation expense

Stock-based compensation expense for the three months ended March 31, 2024 and 2023 was as follows:

	For The Three Months Ended March 31,	
	2024	2023
Research and development	$ 216,351	$ 147,691
General and administrative	401,094	455,089
Total	$ 617,445	$ 602,780

(12) Warrants

Public Warrants

Each whole Public Warrant entitles the holder to purchase one share of the Company's common stock at a price of $115.00 per share, subject to adjustment as discussed herein.

Once the warrants become exercisable, the Company may call the warrants for redemption:

- in whole and not in part;
- at a price of $0.01 per warrant;
- upon not less than 30 days' prior written notice of redemption (the "30-day redemption period") to each warrant holder; and if, and only if, the reported last sale price of the common stock equals or exceeds $180.00 per share (as adjusted for stock splits, stock dividends, reorganizations, recapitalizations and the like) for any 20 trading days within a 30-trading day period ending three business days before the Company send the notice of redemption to the warrant holders.

If the Company calls the warrants for redemption as described above, management will have the option to require any holder that wishes to exercise its warrant to do so on a "cashless basis." If management takes advantage of this option, all holders of warrants would pay the exercise price by surrendering their warrants for that number of shares of common stock equal to the quotient obtained by dividing (x) the product of the number of shares of common stock underlying the warrants, multiplied by the excess of the "fair market value" (defined below) over the exercise price of the warrants by (y) the fair market value. The "fair market value" shall mean the average reported last sale price of the common stock for the 10 trading days ending on the third trading day prior to the date on which the notice of redemption is sent to the holders of warrants.

Private Placement Warrants

The Private Placement Warrants and the common stock issuable upon the exercise of the Private Placement Warrants were not transferable, assignable or saleable until after the completion of the Company's merger transaction in 2021. Additionally, the Private Placement Warrants are exercisable on a cashless basis and will be non-redeemable as long as they are held by the initial purchasers or their permitted transferees. If the Private Placement Warrants are held by someone other than the initial purchasers or their permitted transferees, the Private Placement Warrants will be redeemable by the Company and exercisable by such holders on the same basis as the Public Warrants.

PIPE Warrants and PIPE Placement Agent Warrants

In December 2022, the Company entered into a securities purchase agreement with certain institutional and accredited investors for the sale by the Company of 736,337 shares of common stock and the PIPE Warrants to purchase up to 736,337 shares of common stock, in a private placement offering. The combined purchase price each share and accompanying PIPE Warrant was $10.80 (the "December 2022 Private Placement"). Three directors of the Company participated in the December 2022 Private Placement, each paying a $1.25 premium per share and accompanying PIPE Warrant. The PIPE Warrants, including those purchased by the participating directors of the Company, are exercisable beginning six months from the date of issuance at an exercise price equal to $10.80 per share, and are exercisable for five years from the date of issuance. The Company received gross proceeds of approximately $8.0 million before deducting transaction related fees and expenses. The Company paid Brookline Capital Markets, the placement agent, a cash fee equal to seven percent of the gross proceeds received by the Company in the December 2022 Private Placement. The Company also issued Brookline Capital Markets the PIPE Placement Agent Warrants to purchase up to an aggregate of 21,091 shares of common stock, equal to 7% of the number of shares purchased by investors introduced to the Company by Brookline Capital Markets. The PIPE Placement Agent Warrants have an exercise price equal to $13.50 per share and are exercisable six months from the date of issuance and expire five years from the date of issuance.

2023 Ladenburg Agreement Warrants

On March 21, 2023, the Company entered into a settlement agreement with Ladenburg Thalmann & Co. Inc. ("Ladenburg"), effective March 23, 2023 (the "2023 Ladenburg Agreement", regarding the action brought by Ladenburg, the "Ladenburg Action"). In connection with the 2023 Ladenburg Agreement, on March 24, 2023, the Company (i) issued the Ladenburg Warrants to purchase up to 30,000 shares of common stock, exercisable for three years from the date of issuance at $5.424 per share; and (ii) furnished to Ladenburg a one-time cash payment of $500 thousand. Pursuant to the terms and subject to the conditions set forth in the 2023 Ladenburg Agreement, the Company will (i) no later than June 30, 2023, pay $1.5 million to Ladenburg in cash or shares of common stock, at the Company's option; and (ii) no later than December 31, 2023, pay $1.1 million to Ladenburg in cash or shares of common stock, at the Company's option. Following the completion of the Company's obligations under the 2023 Ladenburg Agreement, Ladenburg has agreed to dismiss the Ladenburg Action with prejudice and extinguish any and all obligations of the Company in connection therewith. All consideration contemplated by the 2023 Ladenburg Agreement are contained within accrued expenses and other current liabilities within the Company's condensed consolidated balance sheet as of December 31, 2022. On June 30, 2023, in accord with the terms of the agreement, the Company issued 191,689 shares of common stock to satisfy a portion of its obligations under the 2023 Ladenburg Agreement. Following the completion of the 2023 Private Placement, the Company settled the remaining $1.1 million due to Ladenburg in cash.

September 2023 Purchase Agreement Warrants

As of March 31, 2024, the Company had outstanding 42,846 Tranche B Warrants to acquire shares of Series A-3 Preferred Stock for an aggregate exercise price of approximately $42.85 million, and 107,115 Tranche C Warrants to purchase shares of Series A-3 Preferred Stock for an aggregate exercise price of approximately $107.1 million.

Both the Tranche B Warrants and Tranche C Warrants were classified as derivative liabilities because they are redeemable for cash upon occurrence of a Fundamental Transaction, (as defined in the Forms for such warrants), which may be outside the control of the Company.

Preferred PIPE Placement Agent Warrant

On November 21, 2023, the Company issued to Chardan Capital Markets LLC, the placement agent for the September 2023 Offering, a warrant to purchase 850,119 shares (as adjusted following the Reverse Stock Split) of the Company's common stock ("the Preferred PIPE Placement Agent Warrants"). The Preferred PIPE Placement Agent Warrants have an exercise price equal to $6.30 per share (subject to adjustment for stock dividends and splits) and are exercisable in whole or in part, at any time or times on or after the issuance date and on or before October 2, 2028. The Preferred PIPE Placement Agent Warrant was classified in equity in additional paid-in capital.

The following table summarizes warrant activity for the three months ended March 31, 2024:

	Outstanding December 31, 2023	Warrants Issued	Warrants Exercised	Warrants Forfeited	Outstanding March, 31, 2024
Transaction					
Business Combination Public Warrants	575,000	—	—	—	575,000
Private Placement Warrants	20,860	—	—	—	20,860
PIPE Warrants	736,337	—	—	—	736,337
PIPE Placement Agent Warrants	21,091	—	—	—	21,091
Ladenburg Warrants	30,000	—	—	—	30,000
Tranche B Warrants	42,846	—	—	—	42,846
Tranche C Warrants	107,115	—	—	—	107,115
Preferred PIPE Placement Agent Warrants	850,119	—	—	—	850,119

Presentation and Valuation of the Warrants — Liability Classified Warrants

Public Warrants and Private Placement Warrants

The Public Warrants and Private Placement Warrants are accounted for as liabilities in accordance with ASC 815-40, *Derivatives and Hedging—Contracts in Entity's Own Equity* and were presented within warrant liabilities on the condensed consolidated balance sheets as of March 31, 2024 and December 31, 2023. The initial fair value of the warrant liabilities was measured at fair value at the Closing Date, and changes in the fair value of the warrant liabilities were presented within changes in fair value of warrant liabilities in the condensed consolidated statements of operations for three months ended March 31, 2024 and 2023.

On the Closing Date, the Company established the fair value of the Private Placement Warrants utilizing both the Black-Scholes Merton formula and a Monte Carlo Simulation (the "MCS") analysis. Specifically, the Company considered an MCS to derive the implied volatility in the publicly-listed price of the Public Warrants. The Company then considered this implied volatility in selecting the volatility for the application of a Black-Scholes Merton model for the Private Placement Warrants. The Company determined the fair value of the Public Warrants by reference to the quoted market price.

The Public Warrants were classified as a Level 1 fair value measurement, due to the use of the quoted market price, and the Private Placement Warrants held privately by assignees of Big Cypress Holdings LLC, were classified as a Level 3 fair value measurement, due to the use of unobservable inputs. See Note 13, *Fair Value Measurements,* for changes in fair value of the Private Placement Warrants.

The key inputs into the valuations as of March 31, 2024 and December 31, 2023 were as follows:

	March 31, 2024	December 31, 2023
Risk-free interest rate	4.44%	4.03%
Expected term remaining (periods)	2.56	2.81
Implied volatility	110.0%	85.0%
Closing common stock price on the measurement date	$ 0.45	$ 0.69

Preferred Warrants

Should the Company enter into or be party to a fundamental transaction, the Company will be required to purchase all outstanding Warrants from the holders by paying cash in an amount equal to the Black Scholes Value of the unexercised portion of each Preferred Warrant. As a result, the Preferred Warrants are accounted for as derivative liabilities in accordance with ASC 480 and ASC 815-40, *Derivatives and Hedging—Contracts in Entity's Own Equity* and were presented within warrant liabilities on the condensed consolidated balance sheet as of March 31, 2024 and December 31, 2023. The initial fair value of the warrant liabilities was measured at fair value at the Closing Date, and changes in the fair value of the warrant liabilities were presented within changes in fair value of warrant liabilities in the condensed consolidated statement of operations for the three months ended March 31, 2024 and 2023.

The Company established the fair value of the Preferred Warrants utilizing the Black-Scholes Merton formula.

All tranches of the Preferred Warrants were classified as Level 3 fair value measurements, due to the use of unobservable inputs. See Note 13, *Fair Value Measurements,* for changes in fair value of the Preferred Warrants.

The key inputs utilized in determining the fair value of each Tranche B Warrants as of March 31, 2024 and December 31, 2023 were as follows:

	March 31, 2024	December 31, 2023
Risk-free interest rate (1)	2.76%	2.58%
Expected term remaining (periods) (1)	0.55	0.69
Implied volatility	100.0%	85.0%
Underlying Stock Price (Preferred Series A)	$ 370.18	$ 560.56

(1) Reflects a probability-weighted input derived from multiple Black-Scholes calculations. These calculations take into account the various potential dates for the announcement of the SAB-142-101 data. The probability was 45.0% as of March 31, 2024 and December 31, 2023.

The key inputs utilized in determining the fair value of each Tranche C Warrants as of March 31, 2024 and December 31, 2023 were as follows:

	March 31, 2024	December 31, 2023
Risk-free interest rate (1)	4.24%	3.85%
Expected term remaining (periods) (1)	4.66	4.91
Implied volatility	85.0%	85.0%
Underlying Stock Price (Preferred Series A)	$ 370.18	$ 560.56

(1) Reflects a probability-weighted input derived from multiple Black-Scholes calculations. These calculations incorporate the Company's estimated probability of dissolution, should SABS' intellectual property fail to yield positive results in forthcoming clinical trials, potentially leading to dissolution before 2028. The probability was 25.0% as of March 31, 2024 and December 31, 2023.

Equity Classified Warrants

The Company determined the Ladenburg Warrants, PIPE Warrants, PIPE Placement Agent Warrants, and Preferred PIPE Placement Agent Warrants met all necessary criteria to be accounted for as equity in accordance with ASC 815-40, *Derivatives and Hedging—Contracts in Entity's Own Equity.* As such, they are presented within additional paid-in capital within Company's condensed consolidated statements of changes in stockholders' equity and condensed consolidated balance sheets.

Warrants classified as equity are initially measured at fair value. Subsequent changes in fair value are not recognized as long as the warrants continue to be classified as equity.

The initial fair value of each PIPE Warrant and PIPE Placement Agent Warrant issued was determined using the Black-Scholes option-pricing model. All relevant terms and conditions for the PIPE Warrant and PIPE Placement Agent Warrant are identical with the exception of the exercise prices of $10.80 and $13.50, respectively.

The initial fair value of each Ladenburg Warrant issued and exercisable at $5.424 was determined using the Black-Scholes option-pricing model.

The key inputs into the valuations as of the 2023 Ladenburg Agreement initial measurement date, March 21, 2023, were as follows:

	Initial Measurement	
Risk-free interest rate		3.98%
Expected term remaining (periods)		3.00
Implied volatility		94.0%
Closing common stock price on the measurement date	$	0.52

Upon initial measurement, the fair value of each Ladenburg Warrant was determined to be $3.10, per warrant for a value of approximately $93 thousand. The total fair value of the Ladenburg Warrants was recognized by the company as a non-cash expense and allocated to additional paid-in capital within the Company's condensed consolidated statement of changes in stockholders' equity and condensed consolidated balance sheet.

The initial fair value of each Preferred PIPE Placement Agent Warrant issued and exercisable at $6.30 has been determined using the Black-Scholes option-pricing model.

The key inputs into the valuations as of the October 3, 2023 initial measurement date were as follows:

	Initial Measurement	
Risk-free interest rate		4.80%
Expected term remaining (periods)		5.00
Implied volatility		85.0%
Closing common stock price on the measurement date	$	0.63

Upon initial measurement, the fair value of each Preferred PIPE Placement Agent Warrant was determined to be $4.40, per warrant for a value of approximately $3.7 million.

(13) Fair Value Measurements

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. The following fair value hierarchy classifies the inputs to valuation techniques that would be used to measure fair value into one of three levels:

Level 1: Unadjusted quoted prices in active markets for identical assets or liabilities.

Level 2: Inputs other than quoted prices that are observable for the asset or liability, either directly or indirectly. These include quoted prices for similar assets or liabilities in active markets and quoted prices for identical or similar assets or liabilities in markets that are not active.

Level 3: Unobservable inputs that reflect the reporting entity's own assumptions.

The following tables present information about the Company's assets and liabilities that are measured at fair value on a recurring basis at March 31, 2024 and December 31, 2023, and indicate the fair value hierarchy of the valuation inputs the Company utilized to determine such fair value:

	As of March 31, 2024			
	Total	Quoted Prices In Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Other Unobservable Inputs (Level 3)
Assets:				
Cash equivalents				
Money market funds	$ 3,330,765	$ 3,330,765	$ —	$ —
Short-term investments				
Mutual funds	7,558,195	7,558,195	—	—
U.S. treasury securities	22,464,721	22,464,721	—	—
Long-term investments				
U.S. treasury securities	1,235,150	1,235,150		
Total	$ 34,588,831	$ 34,588,831	$ —	$ —
Liabilities:				
Public Warrant liability	$ 230,000	$ 230,000	$ —	$ —
Private Placement Warrant liability	8,344	—	—	8,344
Preferred Warrants	6,067,672	—	—	6,067,672
Total	$ 6,306,016	$ 230,000	$ —	$ 6,076,016

	As of December 31, 2023			
	Total	Quoted Prices In Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Other Unobservable Inputs (Level 3)
Liabilities:				
Public Warrant liability	$ 172,500	$ 172,500	$ —	$ —
Private Placement Warrant liability	6,258	—	—	6,258
Preferred Warrants	11,595,477	—	—	11,595,477
Total	$ 11,774,235	$ 172,500	$ —	$ 11,601,735

The following table provides a summary of the changes in Level 3 fair value measurements for the Private Placement Warrant liability:

Balance, December 31, 2023	$ 6,258
Change in fair value of Private Placement Warrant liability	2,086
Balance, March 31, 2024	$ 8,344

The following table provides a summary of the changes in Level 3 fair value measurements for the Preferred Warrant liabilities:

Balance, December 31, 2023	$ 11,595,477
Change in fair value of the Preferred Warrant liabilities	(5,527,805)
Balance, March 31, 2024	$ 6,067,672

As of March 31, 2024 and December 31, 2023, the Company did not have any other assets or liabilities that are recorded at fair value on a recurring basis.

The Company believes that the carrying amounts of its cash and cash equivalents, accrued interest receivable, notes payable, accrued expenses and other current liabilities approximate their fair values due to their near-term maturities.

(14) Investment Securities

The fair value and amortized cost of the Company's available-for-sale debt securities, summarized by type of security, consisted of the following:

	As of March 31, 2024			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Short-term:				
U.S. treasury securities	22,513,084	238	(48,601)	22,464,721
Total	22,513,084	238	(48,601)	22,464,721
Long-term:				
U.S. treasury securities	1,242,848	—	(7,698)	1,235,150
Total	1,242,848	—	(7,698)	1,235,150

There were 14 securities in an unrealized loss position at March 31, 2024, all of which have been in a continuous unrealized loss position for less than 12 months. The unrealized losses on the Company's available-for-sale debt securities as of March 31, 2024 were caused by fluctuations in market value and interest rates as a result of the economic environment. The Company concluded that an allowance for credit losses was unnecessary as of March 31, 2024 because the decline in the market value was attributable to changes in market conditions and not credit quality, and that it is neither management's intention to sell nor is it more likely than not that the Company will be required to sell these investments prior to recovery.

Accrued interest receivable, related to the above investment securities amounted to $193 thousand for the three months ended March 31, 2024 and are included within accrued interest receivable on the condensed consolidated balance sheet. There were no interest receivables as of December 31, 2023.

(15) Income Taxes

The effective income tax rate for the first quarter of 2024 is 0.0%, compared with an effective tax rate of 0.0% for the year ending December 31, 2023. The prior year tax rate reflects a tax provision on a pre-tax loss.

The Company continues to record a valuation allowance on its net deferred tax assets. The valuation increased by approximately $2.2 million during the three months ended March 31, 2024. The Company has not recognized any reserves for uncertain tax positions.

(16) Related Party Transactions

For the three months ended March 31, 2024 and 2023, there were no related party transactions with beneficial owners of 5% or more of any class of the Company's voting securities, immediate family members of any of the foregoing persons, and any entities in which any of the foregoing is an executive officer or is an owner of 5% or more ownership interest.

(17) Employee Benefit Plan

The Company sponsors a defined contribution retirement plan. All the Company's employees are eligible to be enrolled in the employer-sponsored contributory retirement savings plan, which include features under Section 401(k) of the Internal Revenue Code of 1986, as amended, and provides for Company matching contributions. The Company's contributions to the plan are determined by its Board of Directors, subject to certain minimum requirements specified in the plan. The Company has historically made matching contributions of 100% on 3% of the employee contributions, with an additional 50% match on the next 2% of employee contributions. The Company made contributions of approximately $157 thousand and $76 thousand, respectively, during the three months ended March 31, 2024 and 2023.

(18) Commitments and Contingencies

The Company is not a party to any litigation, and, to its best knowledge, no action, suit, or proceeding has been threatened against the Company which are expected to have a material adverse effect on its financial condition, results of operations or liquidity.

(19) Subsequent Events

On April 1, 2024, the Company entered into a lease for 1,272 square feet of office space, representing the Company's principal executive offices, in Miami Beach, Florida (the "Miami Lease"). The initial term of the Miami Lease is 62 months, with a monthly rent of $6,572.

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations.

You should read the following discussion and analysis of our financial condition and results of operations together with our consolidated financial statements and the accompanying notes included in Part I, Item 1 of this Form 10-Q. Some of the information contained in this discussion and analysis contains forward-looking statements that involve risks, uncertainties, and assumptions. As a result of many factors, including those factors set forth in the section titled "Risk Factors," our actual results could differ materially from those discussed in or implied by these forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those discussed in the section titled "Risk Factors." Please also refer to the section titled "Special Note Regarding Forward Looking Statements."

Special Note Regarding Forward-Looking Statements

This Quarterly Report on Form 10-Q (this "Quarterly Report" or "Form 10-Q") includes "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act") and Section 21E of the Exchange Act of 1934, as amended (the "Exchange Act"), as amended, that are not historical facts and involve risks and uncertainties that could cause actual results to differ materially from those expected and projected. All statements, other than statements of historical fact included in this Form 10-Q including, without limitation, statements in this "Management's Discussion and Analysis of Financial Condition and Results of Operations" regarding our financial position, business strategy and the plans and objectives of management for future operations, are forward-looking statements. Words such as "expect," "believe," "anticipate," "intend," "estimate," "seek" and variations and similar words and expressions are intended to identify such forward-looking statements. Such forward-looking statements involved known and unknown risks, relate to future events or future performance, but reflect management's current beliefs, based on information currently available. A number of factors could cause actual events, performance or results to differ materially from the events, performance and results discussed in the forward-looking statements. In addition, historic results, including but not limited to those related to IND enabling GLP safety/toxicology of SAB-142; and Phase 1 & Phase 2a results of SAB-176; do not guarantee that future research or trials will suggest the same conclusions, nor that historic results referred to herein will be interpreted in the same manner due to future preclinical and clinical trial results or otherwise. For information identifying important factors that could cause actual results to differ materially from those anticipated in the forward-looking statements, please refer to the sections entitled "Risk Factors" in this Quarterly Report, our most recent Annual Report on Form 10-K, subsequent Quarterly Reports on Form 10-Q, and other periodic reports filed with the Securities and Exchange Commission (the "SEC") and available at https://www.sec.gov/. Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date hereof. Except as expressly required by applicable law, we disclaim any intention or obligation to update or revise any forward-looking statements whether as a result of new information, future events or otherwise. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee future results, levels of activity, performance, or achievements.

Company Overview

We are a clinical-stage biopharmaceutical company focused on the development of human polyclonal immunotherapeutic antibodies, or hIgG, to address immune system disorders and infectious diseases. Our antibodies are both target-specific and polyclonal, meaning they are comprised of multiple hIgGs and can bind to multiple sites on specific immunogens, making them ideally suited to address the complexities associated with many immune-mediated disorders. Our lead candidate, SAB-142 is a human ATG focused on preventing or delaying the progression of T1D. We recently initiated a Phase 1 trial of SAB-142 to establish its safety and pharmacokinetic profiles in human subjects.

In addition to SAB-142, we also have clinical stage assets targeting infectious diseases that have significant mortality and morbidity in the general population and in high-risk patients. To date, we have conducted seven clinical trials, including Phase 1, Phase 2 and Phase 3, totaling more than 700 individuals dosed with our proprietary hIgGs. In May of 2023, we received Fast Track Designation and Breakthrough Therapy Designation from the U.S. Food and Drug Administration (the "FDA") Center for Biologics Evaluation and Research ("CBER") for our SAB-176 immunoglobulin targeting multiple strains of influenza based upon positive clinical data from a Phase 2a trial.

More broadly, we believe that our proprietary platform, referred to as DiversitAb,™ holds the potential to generate additional novel therapeutic candidates to expand our pipeline. DiversitAb,™ utilizes the human immune response to generate the optimal repertoire of IgGs for drug targets of interest. We believe it is the only technology capable of producing disease-targeted, hIgG in large quantities without the need for human plasma donors. We have optimized genetic engineering in the development of transchromosomic cattle, or Tc Bovine, which produce hIgGs. Our engineering of the DiversitAb production system drives IgG1 production across our pipeline. As our lead program SAB-142 advances, we intend to expand our pipeline in complimentary indications through strategic utilization of our platform.

Recent Developments

SAB continues to execute its corporate strategy through building partnerships and expertise that advance its program focus on T1D. Additionally, the SAB executive team recently transitioned corporate headquarters of SAB to Miami Beach, FL, while retaining its Research and Development Campus in South Dakota.

In April, 2024, we announced our partnership with INNODIA, an international non-profit organization and the largest European network dedicated to the prevention of T1D ("INNODIA"). This partnership was highlighted at INNODIA's annual meeting on April 11, 2024 in Belgium, where our executive team was invited to present the latest updates on SAB-142 to global T1D partners.

In addition to our INNODIA T1D partnership, our clinical development continues track. On April 16, 2024, SAB disclosed a Phase 1 update for SAB-142 noting that the third cohort of SAB-142 has been fully enrolled and dosed with no observed serum sickness.

Corporate Strategy

We are focused on developing product candidates for disease targets where a differentiated approach has the greatest potential to be either first-in-class against novel targets or best-in-class against complex targets to treat diseases with significant unmet medical needs, including immune and autoimmune disorders including T1D. Our business strategy is focused on SAB-142 as a first-in-class, human, multi-target antibody treatment designed to provide superior efficacy and safety in delaying the onset or progression of T1D.

DiversitAb,™ represents the first technology of its kind to produce large-scale human high-titer and high-avidity antibodies across multiple modalities.

Leveraging our proprietary production system will help us advance a robust pipeline of differentiated hIgG-based therapies for the treatment of immune system disorders and infectious diseases. Our hIgGs have been safely demonstrated up through Phase 3 clinical trials with a patient safety database that includes over 700 patients who were safely administered our hIgG therapeutics.

We have a demonstrated regulatory pathway through each of the FDA, CBER, UK Medicines and Healthcare products Regulatory Agency ("MHRA"), and Australian Therapeutic Goods Administration ("TGA"). These organizations understand our science and are familiar with the multivalent and multitarget properties of our single vial drug products. This further streamlines our ability to develop new and novel drug products rapidly and efficiently where single target monoclonal antibodies ("mAbs") cannot replicate or duplicate our drug product attributes.

Our Product Pipeline

SAB-142: Human Anti-Thymocyte Globulin for Type 1 Diabetes

The following table summarizes our drug candidate, SAB-142 and its existing clinical plan and proposed stages of development**.**

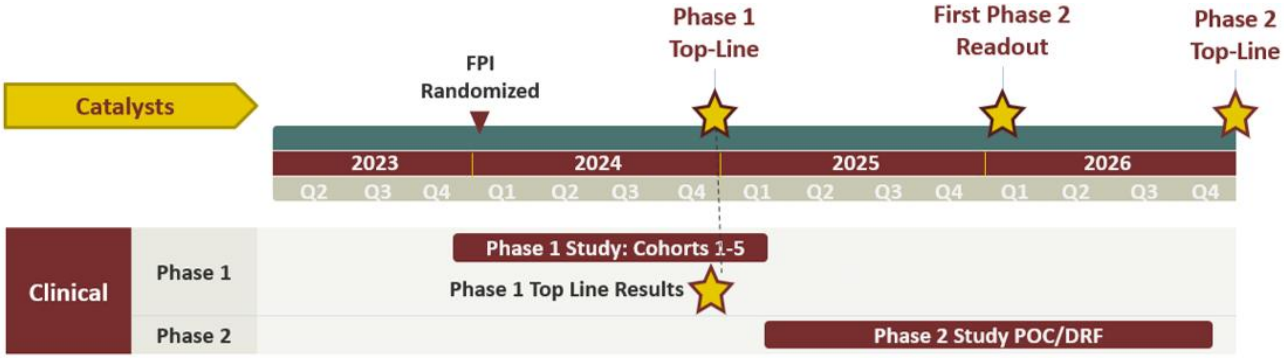

Figure 1. An overview of phased milestones for SAB-142, starting with Phase 1 study cohorts 1-5 starting end of 2023 through beginning of 2025, with Phase 1 topline results anticipated in late 2024. Phase 2 study POC/DRF is anticipated to begin in early 2025 with Phase 2 topline results expected at the end of 2026.

SAB-142 is a first-in-class, human, multi-target anti-thymocyte globulin treatment designed to provide superior efficacy and safety in delaying the onset or progression of T1D. SAB-142 is expected to reduce autoimmune β-cell destruction and delay progression or onset of T1D in patients with Stage 3 or Stage 2 T1D respectively.

In addition to potentially preserving beta cell function in early T1D patients, SAB-142 offers the potential of re-dosing when examining clinically meaningful indicators such as C-peptide levels and glycosylated hemoglobin (HbA1c), without the potential risk of inducing major immune reactions of analogous animal derived IgGs. The overall long-term safety profile of a low-dose ATG is

supportive of the vision to use SAB-142 as a lifelong disease-modifying treatment without a risk of immunosuppression associated with clinically significant effects such as infections, malignancies or suppressed humoral response.

Mechanism of Action

Maintenance of the level of connecting peptide, a short 31 amino acid polypeptide that connects insulin's A chain to its B chain in the proinsulin molecule, commonly referred to as C-peptide, is a validated surrogate endpoint for endogenous insulin production, essential for the prevention of progression of T1D. Placebo controlled trials with low-dose rabbit ATG, defined as a single dose of 2.5 milligram per kilogram (mg/kg), have shown statistically significant maintenance of C-peptide levels and thus a delay in progression of recent onset T1D.

Based on the results of a Phase 2 clinical trial conducted at the University of Florida, a single dose of rabbit ATG showed sustained benefit in T1D over a two-year period by maintaining significantly higher C-peptide levels than a placebo control. However, more than 65% of treated patients in this study acquired serum sickness due to the infusion of a non-human antibody, with symptoms that included rash, malaise, fever, and joint swelling. The symptoms often required treatment with steroids that control serum sickness but impair diabetes management and reduces the capacity to re-dose rabbit ATG when C-peptide levels begin to drop.

While the mechanism of action of our compound closely resembles rabbit ATG, SAB-142 has clear advantages that are fundamental for safe and reliable re-dosing required to delay disease progression. Data from more than 700 human subjects treated with antibodies produced by our platform support expectation of a zero serum sickness rate and zero incidence of neutralizing anti-drug antibodies ("ADA") within the upcoming SAB-142 trials. There is an established regulatory path for T1D indications using the SAB-142 modality. We initiated the Phase 1 clinical study with the first patient dosed November 2023. Finally, our next steps will be to file a clinical trial application ("CTA") in the European Union, and an investigational new drug ("IND") application in the United States to expand the clinical trials to global jurisdictions.

Rabbit ATG shows therapeutic promise but offers problematic potential for adverse events that could inhibit long term disease modification and redosing; we believe those issues are resolved by SAB-142. SAB-142 represents an opportunity to offer a novel human alternative to rabbit- or equine-derived ATG IgGs with potential for safe and reliable re-dosing while avoiding the risk factors observed with currently available therapies.

Clinical Strategy

Immunological processes resulting in the breakdown of self-tolerance and gradual destruction of pancreatic beta cells by the patient's own immune system preceding the clinical onset of disease oftentimes starts very early in patients' lives, sometimes as early as in utero. The average age of clinical onset of T1D is 13 years old. Stage 1 is the start of T1D, marked by individuals having two or more diabetes-related autoantibodies and still normal blood sugar concentrations. In Stage 2, individuals have dysglycemia but without symptoms. Stage 3 is the time of a full clinical diagnosis. Unfortunately, when an individual is first diagnosed with clinical stage T1D, 50- 90% of pancreatic insulin-producing beta cells are already destroyed. Hence, it is critical to start therapy that preserves the remaining fully functional beta cells as soon as possible as it may provide the highest benefit throughout the patient's lifetime.

In addition to the currently approved and ongoing Phase 1, we plan to bring this program to IND and CTA filings with global regulatory authorities by the mid-2024. As there are unmet medical needs globally for disease-modifying treatments of T1D, we plan to work with global health authorities and file clinical trial applications and clinical trial notifications in other countries to have a global footprint and reach patients with T1D worldwide. We anticipate topline results by the end of 2024. Topline data will include the safety data to support re-dosing along with proof of biological activity. Topline data will further enable global Phase 2 clinical proof of concept and dose-range finding trials in adults and even more importantly, in adolescent T1D population, another critical milestone for 2024 as T1D onset most often occurs in pediatric and adolescent patient populations.

SAB-176: Human Anti-Influenza Globulin for High-Risk Influenza

SAB-176 represents a comprehensive approach to treatment and prophylaxis (PreP and PEP) of high-risk patients with influenza as a broadly neutralizing - human polyclonal immunoglobulin therapeutic with several anti-viral mechanisms. SAB-176 was evaluated in an ascending dose, double-blind, randomized, placebo-controlled Phase 1 safety trial in 27 healthy volunteers in 2020. The FDA allowed us to initiate a Phase 1 trial in healthy adults based on the safety profile in the preclinical data set. A Safety Review Committee ("SRC") monitored adverse events after each cohort was infused and recommended that each later cohort could be infused with the next highest dose according to the study protocol. Although anticipated adverse events were noted among the SAB-176 and placebo participants, no drug related serious adverse events ("SAEs") were identified by the SRC.

In March 2024, SAB announced that the Navy Medical Research Command ("NMRC") would be moving forward with a safety and tolerability study to evaluate SAB-176 pursuant to the Cooperative Research and Development Agreement governing the relationship between SAB and the NMRC, with funding for the study provided by the Henry Jackson Foundation.

Key Factors Affecting Our Results of Operations and Future Performance

We believe that our financial performance has been, and in the foreseeable future will continue to be, primarily driven by multiple factors as described throughout our analysis within *Components of Results of Operations* below, each of which presents growth opportunities for our business. These factors also pose important challenges that we must successfully address in order to sustain our growth and improve our results of operations. Our ability to successfully address these challenges is subject to various risks and uncertainties, including those described in the section captioned "Part I, Item 1A, Risk Factors" in our Annual Report on Form 10-K for the fiscal year ended December 31, 2023, and supplemented with the following revised or additional risk factors in "Part II, Item 1A, Risk Factors" included herein.

Components of Results of Operations

Revenue

Our revenue has historically been generated through grants from government and other (non-government) organizations. We currently have no commercially approved products.

Grant revenue is recognized for the period that the research and development services occur, as qualifying expenses are incurred or conditions of the grants are met. We concluded that payments received under these grants represent conditional, nonreciprocal contributions, as described in ASC 958, *Not-for-Profit Entities*, and that the grants are not within the scope of ASC 606, *Revenue from Contracts with Customers*, as the organizations providing the grants do not meet the definition of a customer. Expenses for grants are tracked by using a project code specific to the grant, and the employees also track hours worked by using the project code.

Government grants

Total revenue recognized from government grants was approximately $945 thousand and $581 thousand for the three months ended March 31, 2024 and 2023, respectively.

National Institute of Health – National Institute of Allergy and Infectious Disease ("NIH-NIAID") (Federal Award #1R41AI131823-02) – this grant was for approximately $1.5 million and had an original term of April 2019 through March 2021. The grant was subsequently amended to extend the end date to March 2023. No grant income was recognized for this grant for the three months ended March 31, 2024 and approximately $192 thousand of grant income was recognized for the three months ended March 31, 2023. This grant was completed as of June 30, 2023.

NIH-NIAID through Geneva Foundation (Federal Award #1R01AI132313-01, Subaward #S-10511-01) – this grant was for approximately $2.7 million and had an original term of August 2017 through July 2021. The grant was subsequently amended to extend the end date to July 2023. No grant income was recognized for the three months ended March 31, 2024, and approximately $236 thousand of grant income was recognized for the three months ended March 31, 2023. This grant was completed as of June 30, 2023.

US Department of Defense ("DoD"), Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense Enabling Biotechnologies ("JPEO") through Advanced Technology International – this grant was for a potential of $25 million, awarded in stages starting in August 2019 and with potential stages running through February 2023. Additional contract modifications were added to this contract in 2020 and 2021 for work on a COVID therapeutic, bringing the contract total to $203.6 million. Deferred grant income recognized was approximately $945 thousand and $153 thousand for the three months ended March 31, 2024 and 2023, respectively. This grant was terminated in 2022.

The grants for our Rapid Response contract with JPEO (the "JPEO Rapid Response Contract") are cost reimbursement agreements, with reimbursement of qualified direct research and development expense (labor and consumables) with an overhead charge (based on actual, reviewed quarterly) and a fixed fee (9%).

On August 3, 2022, we received notice from the DoD terminating the JPEO Rapid Response contract (the "JPEO Rapid Response Contract Termination"). We engaged in negotiations with the DoD to compensate us for services provided prior to the JPEO Rapid Response Contract Termination and costs we would be expected to bear in future periods. A termination and settlement proposal was submitted the DoD on September 9, 2022; we submitted a final invoice on December 15, 2022; and received payment from the DoD on or about January 12, 2023. The terms of the arrangement provide for a cost-reimbursable structure, and state that the parties will work in good faith equitable reimbursement for work performed toward accomplishment of the tasks provided in the agreement. At this time, other than certain deferred obligations (presented within deferred grant income within our condensed consolidated unaudited balance sheet) potentially payable to the DoD solely due to subsequent negotiations with third-party vendors, we believe and have been advised there is a reasonable, good faith basis for the position that no present or future obligations exist. Revenue recognized subsequent to the JPEO Rapid Response Contract Termination relates to satisfaction of residual obligations under the termination and settlement agreement—see Note 2, *Summary of Significant Accounting Policies* in our condensed consolidated financial statements for further information about our established revenue recognition process.

Operating Expenses

Research and Development Expenses

Research and development expenses primarily consist of salaries, benefits, incentive compensation, stock-based compensation, laboratory supplies and materials for employees and contractors engaged in research and product development, licensing fees to use certain technology in our research and development projects, fees paid to consultants and various entities that perform certain research and testing on our behalf. Research and development expenses are tracked by target/project code. Indirect general and administrative costs are allocated based upon a percentage of direct costs. We expense all research and development costs in the period in which they are incurred.

Research and development activities consist of discovery research for our platform development and the various indications we are working on. We have not historically tracked our research and development expenses on a product candidate-by-product candidate basis.

For the three months ended March 31, 2024 and 2023, we had contracts with multiple CROs to conduct and complete clinical studies. In the case of SAB-185, the CRO was contracted and paid by the US government. For SAB-176, PPD Development, LP, acting as CRO oversaw the Phase 1 safety study. The terms of that agreement are subject to confidentiality, and the status of the agreement is that it is current, in good standing and 100% of the contract has been paid as of March 31, 2024. SAB has also contracted with hVIVO Services Limited to conduct the Phase 2a influenza study on SAB-176. The terms of that agreement are subject to confidentiality, and the status of the agreement is that it is current, in good standing and 100% of the contract has been paid as of March 31, 2024. For SAB-142, Avance Clinical PTY, Ltd ("Avance"), acting as CRO oversaw Phase 1 safety study. This study started in December 2023 and the terms of that agreement are subject to confidentiality and the status of the agreement is that it is current.

We expect to continue to incur substantial research and development expenses as we conduct discovery research to enhance our platform and work on our indications. We expect to hire additional employees and continue research and development and manufacturing activities. As a result, we expect that our research and development expenses will continue to increase in future periods and vary from period to period as a percentage of revenue.

Major components within our research and development expenses are salaries and benefits (laboratory & farm), laboratory supplies, animal care, contract manufacturing, clinical trial expense, outside laboratory services, project consulting, and facility expense. Our platform allows us to work on multiple projects with the same resources, as the research and development process of each product is very similar (with minimal differences in the manufacturing process).

Research and development expenses by component for the three months ended March 31, 2024 and 2023:

	Three Months Ended March 31,	
	2024	2023
Salaries & benefits	$ 2,293,789	$ 1,716,030
Laboratory supplies	336,353	389,627
Animal care	113,389	582,068
Contract manufacturing	1,533	—
Clinical trial expense	806,060	47,608
Outside laboratory services	1,663,155	163,206
Project consulting	280,199	228,099
Facility expense	2,605,051	1,338,188
Other expenses	46,541	70,895
Total research and development expenses	$ 8,146,070	$ 4,535,721

General and Administrative Expenses

General and administrative expenses primarily consist of salaries, benefits, and stock-based compensation costs for employees in our executive, accounting and finance, project management, corporate development, office administration, legal and human resources functions as well as professional services fees, such as consulting, audit, tax and legal fees, general corporate costs and allocated overhead expenses. General and administrative expenses also include rent and facilities expenses allocated based upon total direct costs. We expect that our general and administrative expenses will continue to increase in future periods, primarily due to increased headcount to support anticipated growth in the business and due to incremental costs associated with operating as a public company, including costs to comply with the rules and regulations applicable to companies listed on a securities exchange and costs related to compliance and reporting obligations pursuant to the rules and regulations of the SEC and stock exchange listing standards, public relations, insurance and professional services. We expect these expenses to vary from period to period in absolute terms and as a percentage of revenue.

Nonoperating (Expense) Income

Gain (loss) on change in fair value of warrant liabilities

Gain (loss) on change in fair value of warrant liabilities consists of the changes in the fair value of the warrant liabilities.

Other Income (expense)

Other income primarily consists of income associated with the refundable portion of Australian research and development tax credits.

Interest income

Interest income consists of interest earned on our investments in debt securities, cash, and cash equivalents.

Interest expense

Interest expense consists primarily of interest related to borrowings under notes payable for equipment, abated rent, and insurance financing.

Results of Operations

The following tables set forth our results of operations for the three months ended March 31, 2024 and 2023:

	Three Months Ended March 31,	
	2024	2023
Revenue		
Grant revenue	$ 944,575	$ 581,101
Total revenue	944,575	581,101
Operating expenses		
Research and development	8,146,070	4,535,721
General and administrative	4,189,121	3,447,389
Total operating expenses	12,335,191	7,983,110
Loss from operations	(11,390,616)	(7,402,009)
Other income (expense)		
Changes in fair value of warrant liabilities	5,468,219	82,586
Interest expense	(76,371)	(92,385)
Interest income	497,893	57,988
Other income	475,130	—
Total other income (expense)	6,364,871	48,189
Loss before income taxes	(5,025,745)	(7,353,820)
Income tax expense (benefit)	—	—
Net loss	$ (5,025,745)	$ (7,353,820)

Comparison of the three months ended March 31, 2024 and 2023

Revenue

	Three Months Ended March 31,			
	2024	2023	Change	% Change
Revenue	$ 944,575	$ 581,101	$ 363,474	62.5%
Total revenue	$ 944,575	$ 581,101		

Revenue increased by $363 thousand, or 62.5%, in the three months ended March 31, 2024 as compared to the three months ended March 31, 2023, primarily due to the JPEO Rapid Response Contract Termination. Included in revenues for the three months ended March 31, 2024, are closeout activities and charges of $945 thousand due to outside services for laboratory supply disposal, as compared to $52 thousand for supplies, $151 thousand for labor, and $378 thousand for contract manufacturing for the three months ended March 31, 2023.

As a result of the JPEO Rapid Response Contract Termination, we expect future revenues to be lower as our primary pipeline development target of Type 1 diabetes remains independently financed as we explore potential partnerships, co-development opportunities, and licensing arrangements.

Research and Development

	Three Months Ended March 31,			
	2024	2023	Change	% Change
Research and development	$ 8,146,070	$ 4,535,721	$ 3,610,349	79.6%
Total research and development expenses	$ 8,146,070	$ 4,535,721		

Research and development expenses increased by $3.6 million, or 79.6%, for the three months ended March 31, 2024 as compared to the three months ended March 31, 2023, primarily due to increases in outside lab services (year-over-year increase of $1.5 million, 919.1%), salaries and benefits (year-over-year increase of $0.6 million, 33.7%), an out-of-period adjustment of $0.9 million of amortization expense, overhead (year-over-year increase of $0.6 million, 29.4%), project consulting (year-over-year increase of $0.1 million, 22.8%) offset by a decrease in laboratory supplies (year-over-year decrease of $0.1 million, 13.7%).

General and Administrative

	Three Months Ended March 31,			
	2024	2023	Change	% Change
General and administrative	$ 4,189,121	$ 3,447,389	$ 741,732	21.5%
Total general and administrative expenses	$ 4,189,121	$ 3,447,389		

General and administrative expenses increased by $0.7 million, or 21.5%, in the three months ended March 31, 2024 as compared to the three months ended March 31, 2023, primarily due to salaries and benefits (year-over-year increase of $0.9 million, 76.1%), project consulting (year-over-year increase of $0.1 million, 63.6%), offset by a decrease in other administrative support fees relating to IT, human resources, and legal (year-over-year decrease of $0.2 million, 14.5%) and insurance costs (year-over-year decrease of $0.1 million, 27.9%). We anticipate that our general and administrative expenses will increase in the future as we increase our headcount to support our continued research activities and development of our product candidates. We also anticipate that we will incur increased accounting, audit, legal, regulatory, compliance, director and officer insurance costs as well as investor and public relations expenses associated with being a public company.

Non-operating Income

	Three Months Ended March 31,			
	2024	2023	Change	% Change
Changes in fair value of warrant liabilities	$ 5,468,219	$ 82,586	$ 5,385,633	6521.2%
Other income	475,130	—	475,130	N/M
Total non-operating income	$ 5,943,349	$ 82,586		

Total non-operating income increased by $5.9 million, or 7096.6% in the three months ended March 31, 2024 as compared to the three months ended March 31, 2023, primarily due to the change in fair value of warrant liabilities (year-over-year increase of $5.4 million, 6521.2%), and Australian research and development tax credit (year-over-year increase of $0.5 million).

Interest Expense

	Three Months Ended March 31,			
	2024	2023	Change	% Change
Interest expense	$ 76,371	$ 92,385	$ (16,014)	(17.3)%
Total interest expense	$ 76,371	$ 92,385		

Interest expense in the three months ended March 31, 2024 was consistent with interest expense in the three months ended March 31, 2023, with the added interest expense on the 8% Unsecured Convertible Note in the current fiscal period offset by lower interest expenses associated with our finance leases in the same period of the prior year.

Interest Income

	Three Months Ended March 31,			
	2024	2023	Change	% Change
Interest income	$ 497,893	$ 57,988	$ 439,905	758.6%
Total interest income	$ 497,893	$ 57,988		

Interest income increased by $0.4 million, or 758.6%, during the three months ended March 31, 2024 as compared to the three months ended March 31, 2023, primarily due to interest earned on our investments in debt securities, and higher interest earning cash, and cash equivalent balances.

Liquidity and Capital Resources

As of March 31, 2024 and December 31, 2023, we had $14.0 million and $56.6 million, respectively, of cash and cash equivalents.

Our standard repayment terms for accounts receivable are thirty days from the invoice date. As a majority of our accounts receivable is from work performed under government grants, we have not had an uncollectible accounts receivable amount in over 5 years.

We intend to continue to invest in our business and, as a result, may incur operating losses in future periods. We expect to continue to invest in research and development efforts towards expanding our capabilities and expertise along our platform and the primary pipeline development targets we are working on, as well as building our business development team and marketing our solutions to partners in support of the growth of the business.

We anticipate that we will continue to generate losses for the foreseeable future, and we expect the losses to increase as we continue the development of, and seek regulatory approvals for, our product candidates, and begin commercialization of our products. As a result, we will require additional capital to fund our operations in order to support our long-term plans.

We have incurred operating losses for the past several years. While we intend to continue to keep operating expenses at a reduced level there can be no assurance that our current level of operating expenses will not increase or that other uses of cash will not be necessary. Based on our current level of operating expenses, existing resources will be sufficient to cover operating cash needs through the twelve months following the date these financials are made available for issuance. We intend to seek additional capital through equity and/or debt financings, collaborative or other funding arrangements. Should we seek additional financing from outside sources, we may not be able to raise such financing on terms acceptable to us or at all. If we are unable to raise additional capital when required or on acceptable terms, we may be required to scale back or discontinue the advancement of product candidates, reduce headcount, liquidate our assets, file for bankruptcy, reorganize, merge with another entity, or cease operations.

Sources of Liquidity

Since our inception, we have financed our operations primarily from revenue in the form of government grants and from equity financings.

Equity Financings and Option Exercises

As of March 31, 2024, we have raised approximately $157.4 million since our inception from the issuance and sale of convertible preferred shares, net of issuance costs associated with such financings, the business combination that was consummated on October 22, 2021, proceeds from private placements of securities, and exercises of employee stock options.

Notes payable

8% Unsecured Convertible Note

Pursuant to the fourth amendment to our lease with Sanford Health, we agreed to a period of abated rent (the "Abated Rent") from October 1, 2022 to September 30, 2023 pertaining to our leased laboratory bay at the Sanford Research Center. In exchange for the Abated Rent, effective as of October 1, 2022, we issued to Sanford Health an 8% unsecured, convertible promissory note (the "8% Unsecured Convertible Note").

Pursuant to the 8% Unsecured Convertible Note, we shall pay the sum of approximately $542 thousand (the "Principal") plus accrued and unpaid interest thereon on September 30, 2024 (the "Maturity Date"). Simple interest shall accrue on the outstanding Principal from and after the date of the 8% Unsecured Convertible Note and shall be payable on the Maturity Date. Sanford Health shall have the right, but not the obligation, to convert all or any part of the outstanding Principal of the 8% Unsecured Convertible Note, together with any accrued and unpaid interest thereon to the date of such conversion, into such number of fully paid and non-assessable shares of our common stock, at any time and from time to time, prior to the later of the Maturity Date and the date on which the 8% Unsecured Convertible Note is paid in full, subject to certain restrictions, at a conversion price per share of common stock equal to greater of (x) $15.00 and (y) the price at which the we sells shares of common stock in any bona fide private or public equity financing prior to the Maturity Date.

Insurance Financing

We obtained financing for certain Director & Officer liability insurance policy premiums. The agreement assigns First Insurance Funding (the "Lender") a first priority lien on and security interest in the financed policies and any additional premium required in the financed policies including (a) all returned or unearned premiums, (b) all additional cash contributions or collateral amounts assessed by the insurance companies in relation to the financed policies and financed by Lender, (c) any credits generated by the financed policies, (d) dividend payments, and (e) loss payments which reduce unearned premiums. If any circumstances exist in which premiums related to any financed policy could become fully earned in the event of loss, Lender shall be named a loss-payee with respect to such policy.

The total premiums, taxes and fees financed is approximately $765 thousand with an annual interest rate of 7.96%. In consideration of the premium payment by Lender to the insurance companies or the agent or broker, we unconditionally promises to pay Lender the amount financed plus interest and other charges permitted under the agreement. We paid the insurance financing through installment payments with the last payment for the current note being September 22, 2024. At March 31, 2024 and December 31, 2023, we recognized approximately $294 thousand and $509 thousand, respectively, as an insurance financing note payable in our condensed consolidated balance sheets.

Please refer to Note 9, *Notes Payable*, in our condensed consolidated unaudited financial statements for additional information on our debt.

Cash Flows

The following table summarizes our cash flows for the three months ended March 31, 2024 and 2023:

	Three Months Ended March 31,	
	2024	2023
Net cash used in operating activities	$ (10,750,009)	$ (1,605,717)
Net cash used in investing activities	(31,359,207)	(21,300)
Net cash used in financing activities	(394,418)	(359,790)
Effect of exchange rate changes on cash and cash equivalents	(28,270)	—
Net decrease in cash and cash equivalents	$ (42,531,904)	$ (1,986,807)

Operating Activities

Net cash used by operating activities increased by $9.1 million in the three months ended March 31, 2024 as compared to the three months ended March 31, 2023, primarily due to a increase in cash used in operating activities related to change in our operating assets and liabilities of $7.0 million and a increase in our net loss adjusted for non-cash items of $2.2 million. Year-over-year changes in cash used by operating activities is explained by shifts in the non-cash working capital balances as we continue to invest in the development of our lead product candidate, SAB-142.

Investing Activities

Net cash used by investing activities increased by $31.3 million in the three months ended March 31, 2024 as compared to the three months ended March 31, 2023, primarily due to an increase in purchases of investment securities.

Financing Activities

Net cash used by financing activities remained steady in the three months ended March 31, 2024 as compared to the three months ended March 31, 2023, primarily due a decrease in payments on financing agreements for our insurance agreements offset by an increase in payment for deferred issuance costs.

Contractual Obligations and Commitments

We enter into contracts in the normal course of business with third parties, including CROs. These payments are not included in the table above, as the amount and timing of such payments are not known.

As of March 31, 2024, there were no material changes outside of the ordinary course of business to our commitments and contractual obligations.

Income Taxes

The effective income tax rate for the first quarter of 2024 is 0.0%, compared with an effective tax rate of 0.0% for the year ending December 31, 2023. The prior year tax rate reflects a tax provision on a pre-tax loss.

We continue to record a valuation allowance on its net deferred tax assets. The valuation increased by approximately $2.2 million during the three months ended March 31, 2024. We have not recognized any reserves for uncertain tax positions.

Off-Balance Sheet Arrangements

We did not have, for the periods presented, and we do not currently have, any off-balance sheet financing arrangements or any relationships with unconsolidated entities or financial partnerships, including entities sometimes referred to as structured finance or special purpose entities, that were established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes.

Critical Accounting Policies and Estimates

We have prepared our condensed consolidated financial statements in accordance with U.S. GAAP. Our preparation of these condensed consolidated financial statements requires us to make estimates, assumptions and judgments that affect the reported amounts of assets, liabilities, revenue, expenses, and related disclosures. We evaluate our estimates and judgments on an ongoing basis. We base our estimates on historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results could therefore differ materially from these estimates under different assumptions or conditions.

While our significant accounting policies are described in more detail in Note 2, *Summary of Significant Accounting Policies,* in our condensed consolidated financial statements we believe the following accounting policies to be critical to the judgments and estimates used in the preparation of our condensed consolidated financial statements.

Cash, cash equivalents, and restricted cash

Cash and cash equivalents are comprised of cash and highly liquid investments with original maturities of 90 days or less at the date of purchase. Cash equivalents consist primarily of exchange-traded money market funds.

The Company is exposed to credit risk in the event of default by the financial institutions or the issuers of these investments to the extent the amounts on deposit or invested are in excess of amounts that are insured.

Short and long-term investments

Our accounts for short-term investments in accordance with Accounting Standard Codification (ASC) Topic 320, Investments - Debt and Equity Securities. Management determines the appropriate classification of its investments at the time of purchase and reevaluates such determinations at each reporting period.

At March 31, 2024, our short and long-term investments consisted of U.S. treasury securities with original maturity exceeding 90 days and investments in exchange traded mutual funds. We classify these securities as both current and non-current depending on their time to maturity.

Trading securities are measured at fair value with unrealized gains and losses reported within other income in our condensed consolidated statement of operations. Available-for-sale debt securities are measured at fair value with unrealized gains and losses reported in accumulated other comprehensive income (loss) in our condensed consolidated statement of operations. We consider all of

its securities for which there is a determinable fair market value, and there are no restrictions on our ability to sell within the next twelve months, as available-for-sale securities.

We review its investments at each reporting date to identify and evaluate whether a decline in fair value below the amortized cost basis of available-for-sale securities is due to credit-related factors and determines if such unrealized losses are the result of credit losses that require impairment. Factors considered in determining whether an unrealized loss is the result of a credit loss or other factors include the extent to which the fair value is less than the cost basis, any changes to the rating of the security by a rating agency, the financial condition and near-term prospects of the issuer, any historical failure of the issuer to make scheduled interest or principal payments, any adverse legal or regulatory events affecting the issuer or issuer's industry, any significant deterioration in economic condition and our intent and ability to hold the investment for a period of time sufficient to allow for any anticipated recovery in market value.

We did not recognize any credit losses on its short-term or long-term investments during the three months ended March 31, 2024 and 2023.

Research and development expenses

Expenses incurred in connection with research and development activities are expensed as incurred. These include licensing fees to use certain technology in our research and development projects, fees paid to consultants and various entities that perform certain research and testing on our behalf, and expenses related to animal care, research-use equipment depreciation, salaries, benefits, and stock-based compensation granted to employees in research and development functions.

During the three months ended March 31, 2024 and 2023, we had contracts with multiple contract research organizations ("CRO") to complete studies as part of research grant agreements. These costs include upfront, milestone and monthly expenses as well as reimbursement for pass through costs. All research and development costs are expensed as incurred except when we are accounting for nonrefundable advance payments for goods or services to be used in future research and development activities. In these cases, these payments are capitalized at the time of payment and expensed in the period the research and development activity is performed. As actual costs become known, we will adjust the accrual; such changes in estimate may be a material change in our clinical study accrual, which could also materially affect reported results of operations. For the three months ended March 31, 2024 and 2023, there were no material adjustments to our prior period estimates of accrued expenses for clinical trials.

Revenue Recognition

Our revenue is primarily generated through grants from government and other (non-government) organizations.

Grant revenue is recognized during the period that the research and development services occur, as qualifying expenses are incurred, or conditions of the grants are met. Deferred grant income represents grant proceeds received by us prior to the period in which the research and development services occur, as qualifying expenses are incurred, or conditions of the grants are met. We concluded that payments received under these grants represent conditional, nonreciprocal contributions, as described in ASC 958, *Not-for-Profit Entities*, and that the grants are not within the scope of ASC 606, *Revenue from Contracts with Customers*, as the organizations providing the grants do not meet the definition of a customer. Expenses for grants are tracked by using a project code specific to the grant, and the employees also track hours worked by using the project code.

Stock-based compensation

FASB ASC Topic 718, *Compensation– Stock Compensation*, prescribes accounting and reporting standards for all share-based payment transactions in which employee and non-employee services are acquired. We recognize compensation cost relating to stock-based payment transactions using a fair-value measurement method, which requires all stock-based payments to employees, directors, and non-employee consultants, including grants of stock options, to be recognized in operating results as compensation expense based on fair value over the requisite service period of the awards. We determine the fair value of common stock based on the closing market price at closing on the date of the grant.

In determining the fair value of stock-based awards, we utilize the Black-Scholes option-pricing model, which uses both historical and current market data to estimate fair value. The Black-Scholes option-pricing model incorporates various assumptions, such as the value of the underlying common stock, the risk-free interest rate, expected volatility, expected dividend yield, and expected life of the options. For awards with performance-based vesting criteria, we estimate the probability of achievement of the performance criteria and recognizes compensation expense related to those awards expected to vest. No awards may have a term in excess of ten years. Forfeitures are recorded when they occur. Stock-based compensation expense is classified in the condensed consolidated statements of operations based on the function to which the related services are provided. We recognize stock-based compensation expense over the vesting period.

See Note 11, *Stock Option Plan,* in our condensed consolidated financial statements for information concerning certain specific assumptions we used in applying the Black-Scholes option pricing model to determine the estimated fair value of our stock options granted for the three months ended March 31, 2024 and 2023.

Deferred Issuance Costs

The Company capitalizes certain legal, professional accounting and other third-party fees that are directly associated with in-process equity financings as deferred issuance costs until such financings are consummated. After consummation of the equity financing, these costs are recorded in shareholders' equity as a reduction of additional paid-in capital generated as a result of the issuance.

As of March 31, 2024, the Company had $236 thousand in deferred issuance costs related to the Company's sales agreement with Cantor Fitzgerald & Co. The sales agreement is discussed further in Note 10, *Stockholders' Equity*. The Company had no deferred issuance costs as of December 31, 2023.

Foreign Currency Translations and Transactions

Assets and liabilities of the Company's foreign subsidiary are translated at the year-end exchange rate. Operating results of the Company's foreign subsidiary are translated at average exchange rates during the period. Translation adjustments have no effect on net loss and are included in "Accumulated other comprehensive loss, net" in the accompanying Consolidated Balance Sheets.

Warrant Liabilities Valuations

Liability Classified Warrants

We are required to periodically estimate the fair value of our Private Placement Warrant liabilities with the assistance of an independent third-party valuation firm. The assumptions underlying these valuations represented our best estimates, which involved inherent uncertainties and the application of significant levels of our judgment. The fair value of our Public Warrant liability is determined by reference to the quoted market price.

The warrants are accounted for as liabilities in accordance with ASC 815-40, *Derivatives and Hedging—Contracts in Entity's Own Equity*, and were presented within warrant liabilities on the condensed consolidated balance sheets as of March 31, 2024 and December 31, 2023. The initial fair value of the warrant liabilities were measured at fair value on the closing date of our business combination, and changes in the fair value of the warrant liabilities were presented within changes in fair value of warrant liabilities in the condensed consolidated statements of operations for the three months ended March 31, 2024 and 2023.

Public Warrants and Private Placement Warrants

The fair value of the private placement warrants held by assignees of Big Cypress Holdings, LLC (the "Private Placement Warrants") was determined utilizing both the Black-Scholes Merton formula and a MCS analysis. Specifically, we considered a MCS to derive the implied volatility in the publicly listed price of the public warrants issued in connection with the closing of our initial public offering (the "Public Warrants"). We then considered this implied volatility in selecting the volatility for the application of a Black-Scholes Merton model for the Private Placement Warrants. We determined the fair value of the Public Warrants by reference to the quoted market price.

The Public Warrants were classified as a Level 1 fair value measurement, due to the use of the quoted market price, and the Private Placement Warrants held privately by assignees of Big Cypress Holdings LLC, were classified as a Level 3 fair value measurement, due to the use of unobservable inputs. See Note 12, *Warrants,* for further information regarding the Public Warrants and Private Placement Warrants.

The measurement as of March 31, 2024 and December 31, 2023 for the Private Placement Warrant liability was approximately $8 thousand and $6 thousand, respectively, and the change in fair value of the Private Placement Warrant liability was approximately $2 thousand the three months ended March 31, 2024.

September 2023 Purchase Agreement Warrants

We established fair value of the preferred warrants (the "Preferred Warrants") issued in connection with the September 2023 private placement offering of Company securities (the "September 2023 Offering") utilizing the Black-Scholes Merton formula. All tranches of the Preferred Warrants were classified as Level 3 fair value measurements, due to unobservable inputs. See Note 12, *Warrants*, for further information regarding the Preferred Warrants.

The measurement as of March 31, 2024 and the measurement as of December 31, 2023 for the Preferred Warrant liability was approximately $6.1 million and $11.6 million, respectively. The change in fair value of the Preferred Warrant liability was approximately $5.5 million for three months ended March 31, 2024.

Equity Classified Warrants

PIPE Warrants and PIPE Placement Agent Warrants

In December 2022, as a part of our December 2022 private placement (the "December 2022 Private Placement"), we issued warrants (the "PIPE Warrants") to investors to purchase up to 736,337 shares of common stock. The PIPE Warrants, including those purchased by the participating directors of SAB are exercisable beginning six months from the date of issuance at an exercise price equal to $10.80 per share, and are exercisable for five years from the date of issuance. We also issued our placement agent, Brookline Capital Markets, warrants (the "PIPE Placement Agent Warrants") to purchase up to an aggregate of 21,091 shares of common stock. The PIPE Placement Agent Warrants have an exercise price equal to $13.50 per share and are exercisable six months from the date of issuance and expires five years from the date of issuance.

2023 Ladenburg Agreement Warrants

On March 21, 2023, we entered into a settlement agreement with Ladenburg Thalmann & Co. Inc. ("Ladenburg"), effective March 23, 2023 (the "2023 Ladenburg Agreement"). In connection with the 2023 Ladenburg Agreement, on March 24, 2023, we issued to Ladenburg a warrant (the "Ladenburg Warrants") to purchase up to 30,000 shares of common stock, exercisable for three years from the date of issuance at $5.424 per share.

Preferred PIPE Placement Agent Warrants

On November 21, 2023 we issued to Chardan Capital Markets LLC, the placement agent for the September 2023 Offering, a warrant to purchase 850,119 shares (as adjusted following the 1 for 10 reverse stock split, effective January 5, 2024) of our common stock ("the Preferred PIPE Placement Agent Warrants"). The Preferred PIPE Placement Agent Warrants have an exercise price equal to $6.30 per share (subject to adjustment for stock dividends and splits) and are exercisable in whole or in part, at any time or times on or after the issuance date and on or before October 2, 2028. The Preferred PIPE Placement Agent Warrant was classified in equity in additional paid-in capital.

We determined the Ladenburg Warrants, PIPE Warrants, PIPE Placement Agent Warrants, and Preferred PIPE Placement Agent Warrant met all necessary criteria to be accounted for as equity in accordance with ASC 815-40, *Derivatives and Hedging—Contracts in Entity's Own Equity.* As such, they are presented within additional paid-in capital within our condensed consolidated statements of changes in stockholders' equity and condensed consolidated balance sheets.

Warrants classified as equity are initially measured at fair value. Subsequent changes in fair value are not recognized as long as the warrants continue to be classified as equity. See Note 12, *Warrants,* for further information regarding warrants classified as equity in our condensed consolidated financial statements.

Common Stock Valuations

Prior to becoming a public company, we were required to periodically estimate the fair value of our common stock with the assistance of an independent third-party valuation firm, as discussed above, when issuing stock options and computing our estimated stock-based compensation expense. The assumptions underlying these valuations represented our best estimates, which involved inherent uncertainties and the application of significant levels of our judgment. In order to determine the fair value of our common stock, we considered, among other items, previous transactions involving the sale of our securities, our business, financial condition and results of operations, economic and industry trends, the market performance of comparable publicly traded companies, and the lack of marketability of our common stock.

We determine the fair value of our common stock based on the closing market price at closing on the date of grant.

Compensation expense related to stock-based transactions is measured and recognized in the financial statements at fair value of our post-merger common stock based on the closing market price at closing on the date of grant. Stock-based compensation expense is measured at the grant date based on the fair value of the equity award and is recognized as expense over the requisite service period, which is generally the vesting period, on the straight-line method. We estimate the fair value of each stock option award on the date of grant using the Black-Scholes option-pricing model. Determining the fair value of stock option awards at the grant date requires judgment, including estimating the expected volatility, expected term, risk-free interest rate, and expected dividends.

Lease Liabilities and Right-of-Use Assets

We are party to certain contractual arrangements for equipment, lab space, and an animal facility, which meet the definition of leases under ASC 842. In accordance with ASC 842, we, as of January 1, 2018 (the date of adoption), recorded right-of-use assets and

related lease liabilities for the present value of the lease payments over the lease terms. We utilized the practical expedient regarding lease and non-lease components and have combined such items into a single combined component. Our incremental borrowing rate was used in the calculation of our right-of-use assets and lease liabilities.

Recently Issued Accounting Pronouncements

A description of recently issued accounting pronouncements that may potentially impact our financial position and results of operations is disclosed in Note 3, *New Accounting Standards,* in our condensed consolidated financial statements.

JOBS Act Accounting Election

We qualify as an "emerging growth company" as defined in the JOBS Act. An emerging growth company may take advantage of reduced reporting requirements that are not otherwise applicable to public companies. These provisions include, but are not limited to:

- being permitted to present only two years of audited financial statements and only two years of related Management's Discussion and Analysis of Financial Condition and Results of Operations in this Form 10-Q;
- not being required to comply with the auditor attestation requirements on the effectiveness of our internal controls over financial reporting;
- not being required to comply with any requirement that may be adopted by the PCAOB regarding mandatory audit firm rotation or a supplement to the auditor's report providing additional information about the audit and the financial statements (auditor discussion and analysis);
- reduced disclosure obligations regarding executive compensation arrangements; and
- exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved.

We may use these provisions until the last day of our fiscal year in which the fifth anniversary of the completion of our initial public offering occurred. However, if certain events occur prior to the end of such five-year period, including if we become a "large accelerated filer," our annual gross revenue exceeds $1.235 billion, or we issue more than $1.0 billion of non-convertible debt in any three-year period, we will cease to be an emerging growth company prior to the end of such five-year period.

We have elected to take advantage of certain of the reduced disclosure obligations in this Form 10-Q and may elect to take advantage of other reduced reporting requirements in future filings. As a result, the information that we provide to our shareholders may be different than the information you receive from other public companies in which you hold stock.

The JOBS Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards, until those standards apply to private companies. We have elected to take advantage of the benefits of this extended transition period and, therefore, we will not be subject to the same new or revised accounting standards as other public companies that are not emerging growth companies. Our financial statements may therefore not be comparable to those of companies that comply with such new or revised accounting standards. Until the date that we are no longer an emerging growth company or affirmatively and irrevocably opt out of the exemption provided by Section 7(a)(2)(B) of the Securities Act upon issuance of a new or revised accounting standard that applies to our financial statements and that has a different effective date for public and private companies, we will disclose the date on which we will adopt the recently issued accounting standard.

Item 3. Quantitative and Qualitative Disclosures About Market Risk.

Concentration of Credit Risk

We received 100% of our total revenue through grants from government organizations for the three months ended March 31, 2024 and 2023, respectively. To date, no receivables have been written off.

Interest Rate Risk

As of March 31, 2024 and December 31, 2023, we had a cash, cash equivalents and investments of $45.3 million and $56.6 million, respectively, all of which was maintained in bank accounts, money market funds, and U.S. treasury securities. Our primary exposure to market risk is to interest income volatility, which is affected by changes in the general level of interest rates. A 10% change in the market interest rates would not have a material effect on our business, financial condition, or results of operations.

Foreign Currency Risk

We conduct materially all of our business in U.S. dollars. We do not have any foreign currency or other derivative financial instruments. Our primary exposure to changes in foreign currency exchange rates relates mainly to SAB Australia. We do not currently hedge our foreign currency exchange rate risk. As of March 31, 2024 and December 31, 2023, our liabilities denominated in foreign currencies were not material. Accordingly, we do not believe a 10% increase or decrease in current exchange rates would have a material effect on our financial results.

Item 4. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer has evaluated the effectiveness of our disclosure controls and procedures. The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the Company's management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure.

Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost benefit relationship of possible controls and procedures. Based on the evaluation as of March 31, 2024, our Chief Executive Officer and Chief Financial Officer have concluded that the Company's disclosure controls and procedures were not effective as of March 31, 2024. Management has concluded that there is a material weakness in the design and operating effectiveness of the Company's control environment surrounding insufficient documentation of the formalized processes and procedures that are critical to the accomplishment of financial reporting objectives.

Plan for Remediation of Material Weakness

We continue to work to strengthen our internal control over financial reporting and are committed to ensuring that such controls are designed and operating effectively. We are implementing process and control improvements to address the above material weakness as follows:

- We have engaged with a third party firm to perform a complete risk assessment and provide advisory services for our required documented control attributes and necessary remediation efforts.
- We will soon complete the process of implementing a contract management platform that will integrate functions governing the initiation, authorization, and execution of contracts with enhancements for our existing contract review control. This tool will improve the ability of the finance organization to review new and renewed contracts for potential financial reporting implications.

We are committed to continuing to improve our internal control processes related to these matters and will continue to review our financial reporting controls and procedures. As we continue to evaluate and work to improve our internal control over financial reporting, we may take additional measures to address deficiencies or modify certain of the remediation measures described above.

Changes in Internal Control Over Financial Reporting

There were no changes, except for the remediation effort described above, in our internal control over financial reporting that occurred during the three months ended March 31, 2024, that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II—OTHER INFORMATION

Item 1. Legal Proceedings.

We are not currently a party to any material litigation, nor are we aware of any pending or threatened litigation against us that we believe would materially affect our business, operating results, financial condition, or cash flows. Participants in our industry face frequent claims and litigation, including securities litigation, claims regarding patent and other intellectual property rights, and other liability claims. As a result, we may be involved in various legal proceedings from time to time in the future.

Item 1A. Risk Factors.

Our business is subject to various risks, including those described in Item 1A of our Annual Report on Form 10-K for the fiscal year ended December 31, 2023, filed with the SEC on March 29, 2024 , which we strongly encourage you to review (the "2023 Annual Report"). There have been no material changes from the risk factors described in our 2023 Annual Report.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds.

None.

Item 3. Defaults Upon Senior Securities.

None.

Item 4. Mine Safety Disclosures.

Not Applicable.

Item 5. Other Information.

Not Applicable.

Item 6. Exhibits.

Exhibit Number	Description	Schedule/ Form	File No.	Exhibit	Filing Date
1.1	Controlled Equity Offering℠ Sales Agreement, dated as of January 26, 2024 by and between Cantor Fitzgerald & Co. and SAB Biotherapeutics, Inc.	8-K	001-39871	1.1	January 26, 2024
10.1	Executive Employment Agreement between SAB Biotherapeutics, Inc. and Eddie J. Sullivan, dated March 5, 2024.	8-K	001-39871	10.1	March 8, 2024
10.2	Executive Employment Agreement between SAB Biotherapeutics, Inc. and Christoph Bausch, dated March 5, 2024.	8-K	001-39871	10.2	March 8, 2024
31.1*	Certification of Principal Executive Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				
31.2*	Certification of Principal Financial Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				
32.1*	Certification of Principal Executive Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				
32.2*	Certification of Principal Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				
101.INS	Inline XBRL Instance Document – the instance document does not appear in the Interactive Data File because XBRL tags are embedded within the Inline XBRL document.				
101.SCH	Inline XBRL Taxonomy Extension Schema Document				
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document				
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document				
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document				
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document				
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)				

* Filed herewith.

¥ Denotes management contract or any compensatory plan, contract or arrangement.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended, the Registrant has duly caused this Report to be signed on its behalf by the undersigned, thereunto duly authorized**.**

SAB BIOTHERAPEUTICS, INC.

Date: May 20, 2024

By: */s/ Samuel J. Reich*

Samuel J. Reich
Chair and Chief Executive Officer
(Principal Executive Officer)

By: */s/ Michael G. King, Jr.*

Michael G. King, Jr.
Chief Financial Officer
(Principal Financial Officer and Principal Accounting Officer)

Exhibit 31.1

CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Samuel J. Reich, certify that:

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

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

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

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

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

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

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

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

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

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

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

Date: May 20, 2024

By: */s/ Samuel J. Reich*

Samuel J. Reich
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Michael G. King, Jr., certify that:

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

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

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

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

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

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

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

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

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

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

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

Date: May 20, 2024

By: /s/ *Michael G. King, Jr.*

Michael G. King, Jr.
Chief Financial Officer
(Principal Financial and Accounting Officer)

Exhibit 32.1

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report of SAB Biotherapeutics, Inc. (the "Company") on Form 10-Q for the period ending March 31, 2024 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

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

Date: May 20, 2024

By: */s/ Samuel J. Reich*

Samuel J. Reich
Chief Executive Officer
(Principal Executive Officer)

Exhibit 32.2

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report of SAB Biotherapeutics, Inc. (the "Company") on Form 10-Q for the period ending March 31, 2024 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

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

Date: May 20, 2024

By: /s/ *Michael G. King, Jr.*

Michael G. King, Jr.
Chief Financial Officer
(Principal Financial and Accounting Officer)