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

FORM 10-Q

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

For the Quarterly Period Ended March 31, 2023

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: 1-32001

APTOSE BIOSCIENCES INC.

(Exact Name of Registrant as Specified in Its Charter)

Canada	**98-1136802**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
251 Consumers Road, Suite 1105 **Toronto, Ontario, Canada**	**M2J 4R3**
(Address of principal executive offices)	(Zip Code)

647-479-9828
(Registrant's telephone number, including area code)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Shares, no par value	APTO	Nasdaq Capital Market

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

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

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

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

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

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

As of May 8, 2023, the registrant had 93,653,662 common shares outstanding.

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CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Report contains forward-looking statements within the meaning of the United States Private Securities Litigation Reform Act of 1995 and "forward-looking information" within the meaning of applicable Canadian securities law, which we collectively refer to as "forward-looking statements". Such forward-looking statements reflect our current beliefs and are based on information currently available to us. In some cases, forward-looking statements can be identified by terminology such as "may," "would," "could,, "will," "should," "expect," "plan," "intend," "anticipate," "believe," "estimate," "predict," "potential," "continue," "hope," "foresee" or the negative of these terms or other similar expressions concerning matters that are not historical facts.

Many factors could cause our actual results, performance or achievements to be materially different from any future results, performance, or achievements that may be expressed or implied by such forward-looking statements, including, among others:

•our lack of product revenues and net losses and a history of operating losses;

•our early stage of development, particularly the inherent risks and uncertainties associated with (i) developing new drug candidates generally, (ii) demonstrating the safety and efficacy of these drug candidates in clinical studies in humans, and (iii) obtaining regulatory approval to commercialize these drug candidates;

•our need to raise substantial additional capital in the future and our ability to raise such funds when needed and on acceptable terms;

•further equity financing, which may substantially dilute the interests of our existing shareholders;

•clinical studies and regulatory approvals of our drug candidates are subject to delays, and may not be completed or granted on expected timetables, if at all, and such delays may increase our costs and could substantially harm our business;

•our reliance on external contract research/manufacturing organizations for certain activities and if we are subject to quality, cost, or delivery issues with the preclinical and clinical grade materials supplied by contract manufacturers, our business operations could suffer significant harm;

•clinical studies are long, expensive and uncertain processes and the FDA, or other similar foreign regulatory agencies that we are required to report to, may ultimately not approve any of our product candidates;

•our ability to comply with applicable governmental regulations and standards;

•our inability to achieve our projected development goals in the time frames we announce and expect;

•difficulties in enrolling patients for clinical trials may lead to delays or cancellations of our clinical trials;

•our reliance on third parties to conduct and monitor our preclinical studies;

•our ability to attract and retain key personnel, including key executives and scientists;

•any misconduct or improper activities by our employees;

•our exposure to exchange rate risk;

•our ability to commercialize our business attributed to negative results from clinical trials;

•the marketplace may not accept our products or product candidates due to the intense competition and technological change in the biotechnical and pharmaceuticals, and we may not be able to compete successfully against other companies in our industries and achieve profitability;

•our ability to obtain and maintain patent protection;

•our ability to afford substantial costs incurred with defending our intellectual property;

•our ability to protect our intellectual property rights and not infringe on the intellectual property rights of others;

•our business is subject to potential product liability and other claims;

•potential exposure to legal actions and potential need to take action against other entities;

•commercialization limitations imposed by intellectual property rights owned or controlled by third parties;

•our ability to maintain adequate insurance at acceptable costs;

•our ability to find and enter into agreements with potential partners;

•extensive government regulation;

•data security incidents and privacy breaches could result in increased costs and reputational harm;

•our share price has been and is likely to continue to be volatile;

•future sales of our common shares by us or by our existing shareholders could cause our share price to drop;

•changing global market and financial conditions;

•changes in an active trading market in our common shares;

•difficulties by non-Canadian investors to obtain and enforce judgments against us because of our Canadian incorporation and presence;

•potential adverse U.S. federal tax consequences for U.S. shareholders because we are a "passive foreign investment company";

•our "smaller reporting company" status;

•any failures to maintain an effective system of internal controls may result in material misstatements of our financial statements, or cause us to fail to meet our reporting obligations or fail to prevent fraud;

•our ability to issue and sell common shares under the 2022 ATM Facility (as defined below) or the 2022 Base Shelf (as defined below);

•our broad discretion in how we use the proceeds of the sale of common shares; and

•our ability to expand our business through the acquisition of companies or businesses.

More detailed information about risk factors and their underlying assumptions are included in our Annual Report on Form 10-K for the year ended December 31, 2022, under Item 1A – Risk Factors. Except as required under applicable securities legislation, we undertake no obligation to publicly update or revise forward-looking statements, whether as a result of new information, future events or otherwise.

ITEM 1 – FINANCIAL STATEMENTS

Condensed Consolidated Interim Financial Statements

(Unaudited)

APTOSE BIOSCIENCES INC.

For the three months ended March 31, 2023 and 2022

APTOSE BIOSCIENCES INC.
Condensed Consolidated Interim Statements of Financial Position
(Expressed in thousands of US dollars)
(unaudited)

	March 31, 2023	December 31, 2022
Assets		
Current assets:		
Cash and cash equivalents	$ 22,762	$ 36,970
Investments	12,958	9,989
Prepaid expenses	2,047	2,303
Other current assets	162	257
Total current assets	37,929	49,519
Non-current assets:		
Property and equipment	183	211
Right-of-use assets, operating leases	1,218	1,297
Total non-current assets	1,401	1,508
Total assets	$ 39,330	$ 51,027
Liabilities and Shareholders' Equity		
Current liabilities:		
Accounts payable	$ 5,519	$ 6,326
Accrued liabilities	6,594	5,657
Current portion of lease liability, operating leases	306	301
Total current liabilities	12,419	12,284
Non-current liabilities:		
Lease liability, operating leases	918	1,002
Total liabilities	13,337	13,286
Shareholders' equity:		
Share capital:		
Common shares, no par value, unlimited authorized shares, 93,005,278 and 92,367,275 shares issued and outstanding as of March 31, 2023 and December 31, 2022, respectively	437,946	437,520
Additional paid-in capital	70,367	68,869
Accumulated other comprehensive loss	(4,314)	(4,318)
Deficit	(478,006)	(464,330)
Total shareholders' equity	25,993	37,741
Total liabilities and shareholders' equity	$ 39,330	$ 51,027

The accompanying notes are an integral part of these condensed consolidated interim financial statements (unaudited).
Going concern, see Note 2.
Commitments, see Note 9.
Subsequent events, see Note 12.

APTOSE BIOSCIENCES INC.
Condensed Consolidated Interim Statements of Loss and Comprehensive Loss
(Expressed in thousands of US dollars, except for per common share data)
(unaudited)

	Three months ended March 31,	
	2023	**2022**
Revenue	$ —	$ —
Expenses:		
Research and development	8,811	7,393
General and administrative	5,285	4,107
Operating expenses	14,096	11,500
Other income/(expense):		
Interest income	422	22
Foreign exchange loss	(2)	(3)
Total other income	420	19
Net loss	$ (13,676)	$ (11,481)
Other comprehensive income:		
Unrealized gain on available-for-sale securities	4	—
Total comprehensive loss	$ (13,672)	$ (11,481)
Basic and diluted loss per common share	$ (0.15)	$ (0.12)
Weighted average number of common shares outstanding used in the calculation of (in thousands)		
Basic and diluted loss per common share	92,562	92,226

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

APTOSE BIOSCIENCES INC.
Condensed Consolidated Interim Statements of Changes in Shareholders' Equity
(Expressed in thousands of US dollars, except for per common share data)
(unaudited)

	Common Shares		Additional paid-in capital	Accumulated other comprehensive loss	Deficit	Total
	Shares (in thousands)	Amount				
Balance, December 31, 2022	92,368	$ 437,520	$ 68,869	$ (4,318)	$ (464,330)	$ 37,741
Common shares issued in exchange for RSUs	570	376	(376)	-	-	-
Common shares issued under the 2022 ATM Facility	46	34	-	-	-	34
Common shares issued under the ESPP plan	21	16	-	-	-	16
Stock-based compensation	-	-	1,874	-	-	1,874
Other comprehensive gain	-	-	-	4	-	4
Net loss	-	-	-	-	(13,676)	$ (13,676)
Balance, March 31, 2023	93,005	$ 437,946	$ 70,367	$ (4,314)	$ (478,006)	$ 25,993
Balance, December 31, 2021	92,215	$ 437,386	$ 63,673	$ (4,316)	$ (422,507)	$ 74,236
Common shares issued upon exercise of stock options	14	26	(11)	-	-	15
Stock-based compensation	-	-	2,514	-	-	2,514
Net loss	-	-	-	-	(11,481)	(11,481)
Balance, March 31, 2022	92,229	$ 437,412	$ 66,176	$ (4,316)	$ (433,988)	$ 65,284

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

APTOSE BIOSCIENCES INC.
Condensed Consolidated Interim Statements of Cash Flows
(Expressed in thousands of US dollars)
(unaudited)

	Three months ended March 31,	
	2023	**2022**
Cash flows used in operating activities:		
Net loss for the period	$ (13,676)	$ (11,481)
Items not involving cash:		
Stock-based compensation	1,874	2,514
Depreciation and amortization	28	32
Loss on disposal of property and equipment	—	4
Amortization of right-of-use assets	103	114
Interest on lease liabilities	25	7
Unrealized foreign exchange loss	(4)	(2)
Accrued interest on investments	(5)	(11)
Changes in non-cash operating assets and liabilities:		
Prepaid expenses	256	214
Other current assets	95	32
Operating lease liabilities	(128)	(143)
Accounts payable	(807)	(555)
Accrued liabilities	937	(370)
Cash used in operating activities	(11,302)	(9,645)
Cash flows from financing activities:		
Issuance of common shares under 2022 ATM Facility	34	—
Issuance of common shares under ESPP plan	16	—
Issuance of common shares upon exercise of stock options	—	15
Cash from financing activities	50	15
Cash flows from/(used in) investing activities:		
Maturity (acquisition) of investments, net	(2,960)	7,505
Cash from/(used in) investing activities	(2,960)	7,505
Effect of exchange rate fluctuations on cash and cash equivalents	4	2
Decrease in cash and cash equivalents	$ (14,208)	$ (2,123)
Cash and cash equivalents, beginning of period	$ 36,970	$ 39,114
Cash and cash equivalents, end of period	$ 22,762	$ 36,991

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

1.Reporting entity:

Aptose Biosciences Inc. ("Aptose," the "Company," "we," "us," or "our") is a science-driven clinical stage biotechnology company committed to the development and commercialization of precision medicines addressing unmet clinical needs in oncology, with an initial focus on hematology. The Company's small molecule cancer therapeutics pipeline includes products designed to provide single agent efficacy and to enhance the efficacy of other anti-cancer therapies and regimens without overlapping toxicities. The Company's executive offices are located in San Diego, California, and our head office is located in Toronto, Canada.

We are advancing targeted agents to treat life-threatening hematologic cancers that, in most cases, are not elective for patients and require immediate treatment. We have two clinical-stage investigational products for hematological malignancies: tuspetinib, an oral, potent myeloid kinase inhibitor, and luxeptinib, an oral, dual lymphoid and myeloid kinase inhibitor.

Since our inception, we have financed our operations and technology acquisitions primarily from equity financing, proceeds from the exercise of warrants and stock options, and interest income on funds held for future investment. Our uses of cash for operating activities have primarily consisted of salaries and wages for our employees, facility and facility-related costs for our offices and laboratories, fees paid in connection with preclinical and clinical studies, licensing fees, drug manufacturing costs, laboratory supplies and materials, and professional fees.

Management recognizes that in order for us to meet our capital requirements, and continue to operate, additional financing will be necessary. We plan to raise additional funds to fund our business operations but there is no assurance that such additional funds will be available for us to finance our operations on acceptable terms, if at all. These conditions raise substantial doubt about the Company's ability to continue as a going concern, see Note 2(a). The financial statements do not include any adjustments that might result from the outcome of this uncertainty.

Our ability to raise additional funds could be affected by adverse market conditions, the status of our product pipeline, possible delays in enrollment in our trial, and various other factors and we may be unable to raise capital when needed, or on terms favorable to us. If necessary funds are not available, we may have to delay, reduce the scope of, or eliminate some of our development programs, potentially delaying the time to market for any of our product candidates.

We do not expect to generate positive cash flow from operations for the foreseeable future due to the early stage of our clinical trials. It is expected that negative cash flow will continue until such time, if ever, that we receive regulatory approval to commercialize any of our products under development and/or royalty or milestone revenue from any such products exceeds expenses.

Our cash needs for the next twelve months include estimates of the number of patients and rate of enrollment of our clinical trials, the amount of drug product that we will require to support our clinical trials, and our general corporate overhead costs to support our operations, and our reliance on our manufacturers. We have based these estimates on assumptions and plans which may change and which could impact the magnitude and/or timing of operating expenses and our cash runway, See Note 2(a).

The Company's financial statements are prepared using generally accepted accounting principles in the United States of America applicable to a going concern which contemplates the realization of assets and liquidation of liabilities in the normal course of business. As of March 31, 2023, the Company had an accumulated deficit of approximately $478.0 million (December 31, 2022, $464.3 million); cash and cash equivalents and investment balances of approximately $35.7 million (December 31, 2022, $47.0 million); and working capital of approximately $25.5 million (December 31, 2022, $37.2 million).

On July 18, 2022, we received a letter from the Nasdaq Stock Market, LLC ("Nasdaq") indicating that, for the last 30 consecutive business days, the bid price for our Common Shares had closed below the minimum $1.00 per share required for continued inclusion on the Nasdaq Capital Market under the Nasdaq Listing Rules. Under Nasdaq Listing Rule 5810(c)(3)(A), if during the 180 calendar day period following the date of the notice the closing bid price of our Common Shares is at or above $1.00 for a minimum of 10 consecutive business days, we would regain compliance with the Minimum Bid Price requirement and our Common Shares would continue to be eligible for listing on the Nasdaq Capital Market, absent noncompliance with any other requirement for continued listing.

On January 18, 2023, we qualified for a 180-day extension to July 18, 2023. If we are unable to meet the minimum closing bid price requirement under Nasdaq Listing Rule 5810(c)(3)(A) by then, Nasdaq will provide notice that our securities will be subject to

delisting. In order to regain compliance with such rule, we are considering a reverse stock split of the Company's outstanding Common Shares at a ratio in the range of 1-for-10 to 1-for-20 (the Reverse Stock Split"). The Reverse Stock Split is conditional upon the approval of the shareholders of the Company at the annual and special meeting of shareholders to be held on May 23, 2023 and upon the approval of the Board of Directors of the Company which, if it determines to proceed with the Reverse Stock Split, will also determine its exact ratio and date.

2.Significant accounting policies

a.Basis of presentation - Going concern

These unaudited consolidated condensed financial statements have been prepared in conformity with generally accepted accounting principles in the United States, or GAAP and the rules and regulations of the Securities and Exchange Commission, or SEC, related to quarterly reports filed on Form 10-Q, assuming the Company will continue as a going concern. The going concern assumption contemplates the realization of assets and satisfaction of liabilities in the normal course of business. However, substantial doubt about the Company's ability to continue as a going concern exists.

As of March 31, 2023, the Company had an accumulated deficit of approximately $478.0 million (December 31, 2022, $464.3 million); cash and cash equivalents and investment balances of approximately $35.7 million (December 31, 2022, $47.0 million); and working capital of approximately $25.5 million (December 31, 2022, $37.2 million). In order for the Company to meet its capital requirements, and continue to operate, additional financing will be necessary. The Company is evaluating strategies to obtain the required additional funding for future operations. These strategies may include, but are not limited to, obtaining equity financing, debt financing, committed equity facilities or other financing instruments and restructuring of operations to decrease expenses. However, given the impact of the economic downturn on the U.S. and global financial markets, the Company may be unable to access further equity when needed. As such, there can be no assurance that the Company will be able to obtain additional liquidity when needed or under acceptable terms, if at all. The consolidated financial statements do not reflect any adjustments to the carrying amounts and classification of assets, liabilities, and reported expenses that may be necessary if the Company were unable to continue as a going concern. Such adjustments may be material.

b.Basis of consolidation:

These condensed consolidated interim financial statements include the accounts of the Company and its subsidiaries. All intercompany transactions, balances, revenue, and expenses are eliminated on consolidation.

c.Significant accounting policies, estimates and judgments:

During the three months ended March 31, 2023, there have been no changes to our significant accounting policies as described in our Annual Report on Form 10-K for the fiscal year ended December 31, 2022 filed with the SEC on March 23, 2023.

The preparation of the condensed consolidated interim financial statements requires management to make judgments, estimates and assumptions that affect the application of accounting policies and reported amounts of assets and liabilities at the date of the consolidated financial statements and reported amounts of revenue and expenses during the reporting period. Actual outcomes could differ from those estimates. The condensed consolidated interim financial statements include estimates, which, by their nature, are uncertain.

The impacts of such estimates are pervasive throughout the condensed consolidated interim financial statements and may require accounting adjustments based on future occurrences.

The estimates and underlying assumptions are reviewed on a regular basis. Revisions to accounting estimates are recognized in the period in which the estimate is revised and in any future periods affected.

d.Recent Accounting Pronouncements

We have adopted no new accounting pronouncements during the three months ended March 31, 2023. There were various accounting standards and interpretations issued recently, none of which are expected to have a material impact on our financial position, operations or cash flows.

e.Foreign currency:

The functional and presentation currency of the Company is the US dollar.

f.Concentration of risk:

The Company is subject to credit risk from the Company's cash and cash equivalents and investments. The carrying amount of the financial assets represents the maximum credit exposure. The Company manages credit risk associated with its cash and cash equivalents and investments by maintaining minimum standards of R1-low or A-low investments and the Company invests only in highly rated corporations and treasury bills, which are capable of prompt liquidation.

3.Cash and cash equivalents:

Cash and cash equivalents as of March 31, 2023, consist of cash of $1.132 million (December 31, 2022 - $596 thousand), deposits in high interest savings accounts, money market funds and accounts and other term deposits with maturities of less than 90 days totaling of $21.630 million (December 31, 2022 - $36.374 million).

4.Prepaid expenses:

	March 31, 2023	December 31, 2022
Prepaid research and development expenses	$ 1,208	$ 1,271
Prepaid insurance	684	893
Other prepaid expenses	155	139
Total	$ 2,047	$ 2,303

5.Right-of-use assets:

	March 31, 2023	December 31, 2022
Right-of-use assets, beginning of period	$ 3,100	$ 1,860
Additions to right-of-use assets	24	1,240
Right-of-use assets, end of period	3,124	3,100
Accumulated amortization	(1,906)	(1,803)
Right-of use assets, NBV	$ 1,218	$ 1,297

6.Investments:

Investments consisted of the following as of March 31, 2023 and December 31, 2022:

	March 31, 2023		
	Cost	Unrealized gain/(loss)	Market value
United States Treasury Bills	$ 9,984	$ 1	$ 9,985
Commercial Notes	2,972	1	$ 2,973
Total	$ 12,956	$ 2	$ 12,958

	December 31, 2022		
	Cost	Unrealized gain/(loss)	Market value
United States Treasury Bills	$ 9,991	$ (2)	$ 9,989
Total	$ 9,991	$ (2)	$ 9,989

7. Fair value measurements and financial instruments:

The fair value hierarchy establishes three levels to classify the inputs to valuation techniques used to measure fair value.

Level 1 - inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities;

Level 2 - inputs are quoted prices in markets that are not active, quoted prices for similar assets or liabilities in active markets, inputs other than quoted prices that are observable for the asset or liability, or inputs that are derived principally from or corroborated by observable market data or other means; and

Level 3 - inputs are unobservable (supported by little or no market activity).

The fair value hierarchy gives the highest priority to Level 1 inputs and the lowest priority to Level 3 inputs.

The following table presents the fair value of Company's assets that are measured at fair value on a recurring basis for the periods presented:

	March 31, 2023	Level 1	Level 2	Level 3
Assets				
Money Market funds	$ 14,126	$ —	$ 14,126	$ —
High interest savings account	1,537	—	1,537	—
United States Treasury Bills, classified as cash equivalents	5,967	—	5,967	—
United States Treasury Bills, classified as short-term investments	9,985	—	9,985	—
Commercial Note	2,973	—	2,973	—
Total	$ 34,588	$ —	$ 34,588	$ —

	December 31, 2022	Level 1	Level 2	Level 3
Assets				
Money Market accounts	$ 165	$ —	$ 165	$ —
Money Market funds	22,343	—	22,343	—
High interest savings accounts	13,866	—	13,866	—
United States Treasury Bills	9,989	—	9,989	—
Total	$ 46,363	$ —	$ 46,363	$ —

8.Accrued liabilities:

Accrued liabilities as of March 31, 2023 and December 31, 2022 consisted of the following:

	March 31, 2023	December 31, 2022
Accrued personnel related costs	$ 1,180	$ 2,302
Accrued research and development expenses	5,005	3,122
Other accrued expenses	409	233
Total	$ 6,594	$ 5,657

9.Lease liability

Aptose leases office space in San Diego, California and Toronto, Canada. The lease for the San Diego office space was scheduled to expire on March 31, 2023. On November 4, 2022, this lease was extended through May 31, 2026 (the "Third Amendment"). Management has determined that the Third Amendment represents a lease modification, as defined by ASC 842, *Leases*, does not meet the requirements for accounting as a separate contract and continues to meet the definition of an operating lease. Accordingly, the Company has accounted for the Third Amendment prospectively, via remeasurements, on the Modification Date, to the lease liability and corresponding right-of-use asset. Aptose previously leased lab space in San Diego, which we exited prior to the expiration of the lease on February 28, 2023. The costs incurred in exiting this laboratory space were not material. We lease office space in Toronto, Ontario, Canada, with this lease previously scheduled to expire on June 30, 2023. This lease was extended for one year on February 23, 2023, with this extension expiring on June 30, 2024. The Company has not included any extension periods in calculating its right-to-use assets and lease liabilities. The Company also enters into leases for small office equipment.

Minimum payments, undiscounted, under our operating leases are as follows:

Years ending December 31,		
2023	$	277
2024		459
2025		462
2026		197
Total	$	1,395

The following table presents the weighted average remaining term of the leases and the weighted average discount rate:

	March 31, 2023	December 31, 2022
Weighted-average remaining term – operating leases (years)	3.1	3.3
Weighted-average discount rate – operating leases	7.38 %	6.62 %

Lease liability, current portion	$	306	$	301
Lease liability, long-term portion		918		1,002
Total	$	1,224	$	1,303

Operating lease costs and operating cash flows from our operating leases are as follows:

	Three months ended March 31,			
		2023		2022
Operating lease cost	$	128	$	121
Operating cash flows from operating leases	$	128	$	143

10.Share capital:

The Company has authorized share capital of an unlimited number of common voting shares.

a.Equity issuances:

(i)2022 At-The-Market ("ATM") Facility

On December 9, 2022, the Company entered into an equity distribution agreement with Jones Trading acting as the agent under which the Company may, from time to time, sell Common Shares having an aggregate offering value of up to $50 million through Jones Trading on Nasdaq (the "2022 ATM Facility"). During the year ended December 31, 2022, the Company issued 72,541 shares under this 2022 ATM Facility at an average price of $0.72 for gross proceeds of $52 thousand ($51 thousand net of share issuance costs). Costs associated with the proceeds consisted of 3% cash commission. During the three months ended March 31, 2023, the Company issued 46,427 shares under this 2022 ATM Facility at an average price of $0.75 for gross proceeds of $35 thousand ($34 thousand net of share issuance costs). Costs associated with the proceeds consisted of 3% cash commission. On a cumulative basis to March 31, 2023, the Company has raised a total of $87 thousand gross proceeds ($85 thousand, net of share issue costs) under the 2022 ATM Facility.

(ii)2020 ATM Facility

On May 5, 2020, the Company entered an “at-the-market” equity distribution agreement with Piper Sandler & Co. (“Piper Sandler”) and Canaccord Genuity LLC (“Canaccord Genuity”) acting as co-agents (the “2020 ATM Facility”). Under the terms of the 2020 ATM Facility, the Company could, from time to time, sell Common Shares having an aggregate offering value of up to $75 million through Piper Sandler and Canaccord Genuity on Nasdaq. During the year ended December 31, 2022, the Company issued 54,687 shares under the 2020 ATM Facility at an average price of $0.95 for gross proceeds of $52 thousand ($50 thousand net of share issue costs). Costs associated with the proceeds consisted of a 3% cash commission. During the year ended December 31, 2021, the Company issued 15,315 shares under the 2020 ATM Facility at an average price of $2.446 for gross proceeds of $37 thousand ($36 thousand net of share issue costs). As of October 31, 2022, the date the Agreement was terminated, the Company had raised a total of $89 thousand gross proceeds ($86 thousand net of share issuance costs) under the 2020 ATM Facility. Costs associated with the proceeds consisted of a 3% cash commission. During the three-month period ended March 31, 2022, the Company did not issue any shares under the 2020 ATM Facility.

b.Loss per share:

Loss per common share is calculated using the weighted average number of common shares outstanding and is presented in the table below:

	Three months ended March 31,	
	2023	2022
Net loss	$ (13,676)	$ (11,481)
Weighted-average common shares – basic and diluted (in thousands)	92,562	92,226
Net loss per share – basic and diluted	$ (0.15)	$ (0.12)

The effect of any potential exercise of the Company's stock options outstanding during the three-month periods ended March 31, 2023, and March 31, 2022 has been excluded from the calculation of diluted loss per common share, since such securities would be anti-dilutive.

11.Stock-based compensation:

a.Stock option plan and employee stock purchase plan

Effective June 1, 2021, the Company adopted a new stock incentive plan ("New Incentive Plan") and an employee stock purchase plan ("ESPP").

The New Incentive Plan authorizes the Board of Directors to administer the New Incentive Plan to provide equity-based compensation in the form of stock options, stock appreciation rights, restricted stock, restricted stock units and dividend equivalents.

The Company currently maintains its existing Share Option Plan and 2015 Stock Incentive Plan ("2015 SIP"). Since June 1, 2021, no further grants have been made under the Share Option Plan or 2015 SIP, though existing grants under the Share Option Plan remain in effect in accordance with their terms.

The aggregate number of our common shares, no par value, that may be issued under all awards under the New Incentive Plan is (i) 9,343,242, plus (ii) any of our common shares subject to any outstanding award under our prior plans that, after June 1, 2021, are not purchased or are forfeited or reacquired by us, or otherwise not delivered to the participant due to termination, cancellation or cash settlement of such award subject to the share counting provisions of the New Incentive Plan.

Under both the Share Option Plan and the New Incentive Plan, the exercise price of each option equals the closing trading price of the Company's stock on the day prior to the grant if the grant is made during the trading day or the closing trading price on the day of grant if the grant is issued after markets have closed. Vesting is provided for at the discretion of the Board of Directors and the expiration of options is to be no greater than ten years from the date of grant.

The Company uses the fair value-based method of accounting for employee awards granted under both plans. The Company calculates the fair value of each stock option grant using the Black-Scholes option pricing model at the grant date. The stock-based compensation cost of the options is recognized as stock-based compensation expense over the relevant vesting period of the stock options using an estimate of the number of options that will eventually vest.

The ESPP allows eligible employees of the Company to purchase Common Shares through accumulated payroll deductions up to a maximum 15% of eligible compensation. The ESPP was implemented by consecutive offering periods with a new offering period commencing on the first trading day on or after February 1 and August 1 each year, or on such other date as the Board of Directors will determine and continuing thereafter until terminated in accordance with the Plan. Unless the Board of Directors provides otherwise, the purchase price will be equal to eighty-five percent (85%) of the fair market value of a Common Share on the offering date or the exercise date, whichever is lower. The maximum number of Common Shares available for sale under the ESPP is 1,700,000 Common Shares. The first six-month offering period began on February 1, 2022, and ended on August 1, 2022. There were 10,858 Common Shares issued under the ESPP as of December 31, 2022. The second six-month period began on August 1, 2022, and ended on February 1, 2023. There were 21,576 Common Shares issued under the ESPP during the three months ended March 31, 2023 (three months ended March 31, 2022 - nil).

Stock option transactions for the three months ended March 31, 2023, and March 31, 2022, are summarized as follows:

	Three months ended March 31, 2023		
	Options (in thousands)	Weighted average exercise price	Weighted average remaining contractual life (years)
Outstanding, beginning of period	16,503	$ 3.48	
Granted	3,220	0.56	
Exercised	—	—	
Forfeited	(884)	1.20	
Outstanding, end of the period	18,839	$ 3.11	7.01
Exercisable, end of the period	11,002	4.17	5.54
Vested and expected to vest, end of period	17,426	$ 3.22	6.84

	Three months ended March 31, 2022		
	Options (in thousands)	Weighted average exercise price	Weighted average remaining contractual life (years)
Outstanding, beginning of period	15,112	$ 4.61	
Granted	3,870	1.34	
Exercised	(14)	1.08	
Forfeited	(349)	4.77	
Outstanding, end of the period	18,619	3.97	7.0
Exercisable, end of the period	10,736	4.68	5.5
Vested and expected to vest, end of period	17,344	$ 4.03	6.9

As of March 31, 2023, there was $2.83 million of total unrecognized compensation cost related to non-vested stock options, which is expected to be recognized over an estimated weighted-average period of 1.62 years. As of March 31, 2023, total compensation cost not yet recognized related to grants under the ESPP was approximately $5 thousand, which is expected to be recognized over four months.

The following table presents the weighted average assumptions that were used in the Black-Scholes option pricing model to determine the fair value of stock options granted during the period, and the resulting weighted-average fair values:

	Three months ended March 31, 2023	Three months ended March 31, 2022
Risk-free interest rate	3.41 %	1.70 %
Expected dividend yield	—	—
Expected volatility	80.3 %	83.3 %
Expected life of options	5 years	5 years
Grant date fair value	$ 0.44	$ 0.89

The Company uses historical data to estimate the expected dividend yield and expected volatility of its Common Shares in determining the fair value of stock options. The expected life of the options represents the estimated length of time the options are expected to remain outstanding.

The following table presents the vesting terms of options granted in the period:

	Three months ended March 31, 2023 Number of options (in thousands)	Three months ended March 31, 2022 Number of options (in thousands)
3-year vesting (50%-25%-25%)	725	425
4-year vesting (50%-16 2/3%-16 2/3%-16 2/3%)	2,495	3,445
Total stock options granted in the period	3,220	3,870

The Company has a stock incentive plan (SIP) pursuant to which the Board may grant stock-based awards comprised of restricted stock units or dividend equivalents to employees, officers, consultants, independent contractors, advisors and non-employee directors of the Company. Each restricted unit is automatically redeemed for one common share of the Company upon vesting. During the three-month period ended March 31, 2023, the Company granted 570,000 restricted stock units ("RSUs") with immediate vesting and an exercise price of $0.66. On February 6, 2023, all of these RSUs were redeemed for 570,000 Common Shares. No RSUs were granted in the three months ended March 31, 2022. The following table presents the vesting and redemption of the RSUs granted in the three months ended March 31, 2023.

	Three months ended March 31, 2023		Three months ended March 31, 2022	
	Number of options (in thousands)	Weighted average grant date fair value	Number of options (in thousands)	Weighted average grant date fair value
Outstanding, beginning of period	—	$ —	—	$ —
Granted	570	0.66	—	—
Vested and redeemed	(570)	0.66	—	—
Outstanding, ending of period	—	$ —	—	$ —

b.Share-based payment expense

The Company recorded share-based payment expense related to stock options and RSUs as follows:

	Three months ended March 31,	
	2023	2022
Research and development	$ 652	$ 946
General and administrative	1,222	1,568
	$ 1,874	$ 2,514

12.Subsequent events

Subsequent to March 31, 2023, the Company issued 648,384 shares under the 2022 ATM Facility at an average price of $0.51 for gross proceeds of $329 thousand ($319 thousand net of share issuance costs). Costs associated with the proceeds consisted of 3% cash commission. On a cumulative basis to May 8, 2023, the Company has issued 767,352 shares under the 2022 ATM Facility at an average price of $0.54 for gross proceeds of $416 thousand ($404 thousand, net of share issue costs).

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

This Quarterly Report on Form 10-Q contains certain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, and is subject to the safe harbor created by those sections. For more information, see "*Cautionary Note Regarding Forward-Looking Statements.*" *When reviewing the discussion below, you should keep in mind the substantial risks and uncertainties that impact our business. In particular, we encourage you to review the risks and uncertainties described in* "*Risk Factors*" *in our Annual Report on Form 10-K for the year ended December 31, 2022. These risks and uncertainties could cause actual results to differ materially from those projected or implied by our forward-looking statements contained in this report. These forward-looking statements are made as of the date of this management's discussion and analysis, and we do not intend, and do not assume any obligation, to update these forward-looking statements, except as required by law.*

The following discussion should be read in conjunction with our condensed consolidated financial statements and accompanying notes thereto contained in this Quarterly Report on Form 10-Q for the quarter ended March 31, 2023, and with our audited consolidated financial statements and accompanying notes thereto included in our Annual Report on Form 10-K for the year ended December 31, 2022.

All amounts are expressed in United States dollars unless otherwise stated.

OVERVIEW

Aptose Biosciences Inc. ("Aptose," the "Company," "we," "us," or "our") is a science-driven clinical stage biotechnology company committed to the development and commercialization of precision medicines addressing unmet clinical needs in oncology, with an initial focus on hematology. The Company's small molecule cancer therapeutics pipeline includes products designed to provide single agent efficacy and to enhance the efficacy of other anti-cancer therapies and regimens without overlapping toxicities. The Company's executive offices are located in San Diego, California, and our head office is located in Toronto, Canada.

Aptose Programs

Aptose is advancing oral targeted agents to treat life-threatening hematologic cancers that, in most cases, are not elective for patients and require immediate treatment. We have two clinical-stage investigational products under active development for the treatment of hematologic malignancies: tuspetinib (HM43239), an oral, potent myeloid kinase inhibitor, and luxeptinib (CG-806), an oral, dual lymphoid and myeloid kinase inhibitor.

Tuspetinib is an orally administered, highly potent myeloid kinome inhibitor that selectively targets a constellation of kinases operative in myeloid malignancies and known to be involved in tumor proliferation, resistance to therapy, and differentiation. This small molecule anticancer agent is currently being evaluated in an international Phase 1/2 clinical trial in patients with relapsed or refractory acute myeloid leukemia (R/R AML).

Luxeptinib is an orally administered, highly potent dual lymphoid and myeloid kinome inhibitor that selectively targets defined clusters of kinases that are operative in hematologic malignancies. This small molecule anticancer agent is currently being evaluated in a Phase 1a/b study for the treatment of patients having B-cell malignancies including classic CLL, SLL and certain NHL that are resistant/refractory/intolerant to other therapies, and in a Phase 1 a/b study for the treatment of patients with R/R AML and high risk myelodysplastic syndromes (HR MDS).

PROGRAM UPDATES

Tuspetinib

Indication and Clinical Trials:

Tuspetinib is an oral, highly potent, small molecule inhibitor of kinases operative in myeloid malignancies and known to be involved in tumor proliferation, resistance to therapy and differentiation. Preclinical in vitro and in vivo studies suggest that Tuspetinib may be an effective monotherapy and combination therapy in patients with hematologic malignancies including AML. An international Phase 1/2 clinical trial in patients with R/R AML is ongoing. The dose escalation and exploration portions of this study have been completed and evidence of robust clinical activity has been observed, including multiple complete responses in R/R AML patients with various disease genotypes, and a favorable safety profile.

The FDA granted orphan drug designation to tuspetinib for the treatment of patients with AML in October 2018. Orphan drug designation is granted by the FDA to encourage companies to develop therapies for the treatment of diseases that affect fewer than 200,000 individuals in the United States. Orphan drug status provides research and development tax credits, an opportunity to obtain grant funding, exemption from FDA application fees and other benefits. The orphan drug designation also provides us with seven additional years of marketing exclusivity in this indication. On May 3, 2022, the FDA granted Fast Track designation to tuspetinib for the treatment of patients with relapsed or refractory (R/R) acute myeloid leukemia (AML) with FLT3 mutation. Fast Track is a process designed to facilitate the development and expedite the review of drugs to treat serious conditions and fill an unmet medical need.

Manufacturing*:*

Following the tuspetinib licensing agreement between Aptose and Hanmi Pharmaceutical ("Hanmi") on November 4, 2021, Aptose received from Hanmi an existing inventory of drug product expected to support continuation of the current Phase 1/2 study. The Company and Hanmi also entered into a separate supply agreement in 2022 for additional production of new drug substance (API) and drug product to support further clinical development. Additional batches of API and drug product have been produced by other companies during 2022.

Program Updates at Recent Scientific Forums:

On March 23, 2023, Aptose announced the APTIVATE Phase 1/2 expansion trial with tuspetinib had been initiated and already had treated several R/R AML patients in the monotherapy arm, and that patient enrollment had been initiated in the doublet combination treatment arm of the APTIVATE trial with tuspetinib and venetoclax (TUS/VEN). Since then, patients have continued to enroll and receive tuspetinib on the monotherapy arm. Plus, enrollment and dosing of patients on the doublet arm (TUS/VEN) have been brisk. Clinical investigator interest for tuspetinib is evident, and early signs of antileukemic activity during the APTIVATE trial has fueled the level of excitement for the trial.

Clinical responses to monotherapy with tuspetinib have been observed in a broad range of mutationally-defined populations, including those with mutated forms of NPM1, MLL, TP53, DNMT3A, RUNX1, wild-type FLT3, ITD or TKD mutated FLT3, various splicing factors, and other genes. In the March 23, 2023, announcement, Aptose also highlighted an unexpected observation of a 29% CR/CRh response rate with tuspetinib monotherapy in R/R AML patients having mutations in the RAS gene or other genes in the RAS pathway. Responses in RAS-mutated patients are important because the RAS pathway is often mutated in response to therapy by other agents as the AML cells mutate toward resistance to those other agents. Collectively, these observations of broad clinical activity of tuspetinib, along with its favorable safety profile, position tuspetinib for potential accelerated development paths, as well as for doublet, triplet and maintenance therapy indications.

On January 30, 2023, Aptose announced dosing of patients in the APTIVATE Phase 1/2 clinical trial of tuspetinib, and that another clinical response has been achieved by a R/R AML patient receiving 40 mg tuspetinib once daily orally in the original dose exploration trial, the second response at the recently launched low-dose 40 mg cohort. In addition, Aptose elucidated a rationale for the superior safety profile of tuspetinib. While several kinase inhibitors require high exposures that exert near complete suppression of a single target to elicit responses, those agents often cause additional toxicity because they also cause extensive inhibition of that target in normal cells. In contrast, tuspetinib simultaneously suppresses a small suite of kinase-driven pathways critical for leukemogenesis. Consequently, tuspetinib achieves clinical responses at lower exposures with less overall suppression of each pathway, thereby avoiding many of the toxicities observed with competing agents.

In December 2022, clinical data from an international Phase 1/2 study of tuspetinib in patients with R/R AML across clinical centers in the United States and South Korea were presented at the American Society of Hematology (ASH) Annual Meeting and presented during a Corporate Comprehensive Clinical Update Call held December 11, 2022. Data presented demonstrated that tuspetinib delivers single agent responses without prolonged myelosuppression or life-threatening toxicities in these very ill and heavily pretreated R/R AML patients. Responses were observed in a broad range of mutationally-defined populations, including those with mutated forms of NPM1, MLL, TP53, NRAS, KRAS, DNMT3A, RUNX1, wild-type FLT3, ITD or TKD mutated FLT3, various splicing factors, and other genes As of October 6, 2022, 60 heavily pretreated R/R AML patients were enrolled at multiple centers and treated at doses escalating from 20 mg to 200 mg, with further dose exploration at the 40 mg, 80 mg, 120 mg and 160 mg dose levels. Tuspetinib delivered multiple complete responses (CR) at 40 mg, 80 mg, 120 mg and 160 mg dose levels in which no dose limiting toxicities ("DLT") were observed. Tuspetinib demonstrated clinically meaningful benefit in all responders, by either bridging successfully to hematopoietic stem cell transplant (HSCT) or leading to a durable response, as well as a favorable safety profile. In addition to 5 CRc and 1 PR reported at ASH 2021, 4 new CRc and 3 new PR had been generated during 2022. New responses during 2022 were achieved with 160 mg,120 mg, 80 mg, and 40 mg. Among efficacy evaluable patients treated with 80 mg, 120 mg, or 160mg, the following response rates ranging from 19% to 75% were achieved in specific genotypic subpopulations of r/r AML patients. Significant bone marrow leukemic blast reductions were observed broadly in FLT3+ and FLT3 wildtype patients across multiple dose levels, comparable

to reported gilteritinib data, but in more heavily pre-treated relapsed and refractory AML patients. Vignettes of patient experiences highlight the potency and breadth of tuspetinib to deliver complete remissions among several mutationally-defined populations with a diversity of adverse mutations. Tuspetinib continued to show a favorable safety profile with only mild AEs and no DLTs up to 160 mg per day, and no drug discontinuations from drug related toxicity. No drug related SAE, drug related deaths, differentiation syndrome, AE of QT prolongation or DLT were observed through the 160 mg level. Tuspetinib avoids many of the typical toxicities observed with other tyrosine kinase inhibitors. Aptose identified a safe therapeutic range with a broad therapeutic window, spanning the dose levels of 40, 80, 120 and 160 milligrams. Aptose also announced that enrollment had been initiated in the APTIVATE expansion trial for monotherapy and drug combination therapy with tuspetinib. For the APTIVATE expansion trial, Aptose selected 120 mg as the initiating single agent expansion dose and 80 mg as the initiating dose selected for combination with venetoclax.

At the European Hematology Association Annual Congress 2022 held June 9-12, 2022, Aptose presented preclinical data from tuspetinib in a poster entitled “Myeloid Kinome Inhibitor HM43239 Overcomes Acquired Resistance in Acute Myeloid Leukemia Models.” Oral HM43239 potently inhibits kinases that drive AML, including SYK, diverse forms of the FLT3, JAK1 and JAK2, and mutant forms of the c-KIT kinases. The SYK and JAK1/2 intracellular kinases and the FLT3 (mutated and wildtype) and cKIT (mutated) receptor kinases mediate oncogenic signaling pathways in AML that can drive malignant proliferation and promote drug resistance to certain drugs. Tuspetinib was developed to overcome shortcomings of other drugs, such as simple SYK inhibitors and approved inhibitors of FLT3. These preclinical findings support the continued clinical development of tuspetinib for the treatment of multiple AML populations, particularly those who have failed by other therapies.

Major conclusions include

•Tuspetinib inhibits wild type and mutant forms of FLT3 at low nM concentrations

•Tuspetinib inhibits SYK, JAK1, JAK2 and mutant forms of c-KIT at low nM concentrations

•Tuspetinib inhibits phospho-FLT3, phospho-SYK, phospho-EKR1/2 and phospho-JAK/STAT5 that participate in signaling and rescue pathways

•Tuspetinib has potential to kill cells and tumors resistant to other FLT3 inhibitors

•Tuspetinib, at doses that are well tolerated, demonstrates *in vivo* efficacy on tumors resistant to other FLT3 inhibitors

Luxeptinib

Indication and Clinical Trials:

Luxeptinib is being developed with the intent to deliver the agent as an oral therapeutic for the treatment of R/R AML and for the treatment of a spectrum of B cell malignancies (including but not limited to CLL, SLL and NHL).

Luxeptinib is a novel, oral, highly potent lymphoid and myeloid kinase inhibitor that selectively targets defined clusters of kinases operative in myeloid and lymphoid hematologic malignancies. This small molecule anticancer agent is currently being evaluated in a Phase 1a/b study for the treatment of patients having B-cell malignancies including classic CLL, small lymphocytic lymphoma (“SLL”) and certain non-Hodgkin’s lymphomas (“NHL”) that are resistant/refractory/intolerant to other therapies. Under a separate Investigational New Drug (“IND”), luxeptinib is being evaluated in a Phase 1a/b study for the treatment of patients with R/R AML or high risk MDS. It is hoped luxeptinib can serve patients across lymphoid and myeloid malignancies and combine well with other agents to extend its application to multiple lines of therapy.

During the fourth quarter of 2022, we completed dosing of the first, second, third, fourth, fifth, and sixth dose levels (150 mg, 300 mg, 450 mg, 600 mg, 750 mg, and 900 mg BID, respectively) of the original (Generation 1, G1) formulation in the Phase 1 a/b trial in patients with B-cell leukemias and lymphomas. Among enrolled patients at that time with an array of B-cell malignancies, we had had observed inhibition of phospho-BTK and “on-target” lymphocytosis in patients with classic CLL and modest tumor reductions in patients with different tumor types, indicating target engagement and pharmacologic activity of luxeptinib. During the ASH Annual Meeting in December 2022, we announced that a complete response (CR) was achieved with a diffuse large B-cell lymphoma patient at the 900 mg dose level of the original G1 formulation, demonstrating luxeptinib is active in certain B-cell malignancies.

We also are advancing luxeptinib into myeloid malignancies, with an initial focus on AML and MDS, in a separate Phase 1a/b trial. Our strategy was to identify a starting dose of luxeptinib that we believe could be therapeutically active in critically ill patients with R/R AML. In our Phase 1a/b study in patients with CLL and other B-cell malignancies, 450 mg BID luxeptinib (original G1 formulations) delivered plasma levels that potently inhibited phospho-FLT3 in a plasma inhibitory activity reporter cell assay, suggesting that the 450 mg BID dose may be active in patients with AML. On June 29, 2020, we announced that we had received allowance from the FDA to proceed with a study in R/R AML with a starting dose of 450 mg BID, and subsequently on October 19, 2020, we announced

that we had initiated dosing of the first patient with AML. As of the date of this report we have initiated multiple clinical sites for the Phase 1a/b trial, and we have completed all planned dose levels of the G1 formulation (450 mg, 600 mg, 750 mg and 900 mg BID. To date, we have reported blast reductions in patients carrying the FLT3-ITD mutation, and a durable MRD-negative CR in a patient carrying the FLT3-ITD mutation, demonstrating luxeptinib is active in certain AML patients.

As part of the ongoing dose escalation of the current formulation of luxeptinib in patients with B-cell malignancies and AML, Aptose has made significant progress in the development of a "third generation" ("G3") formulation that could reduce total API administered, reduce pill burden, improve absorption, and increase exposure. Aptose began testing this new G3 formulation of luxeptinib as a single dose with 72-hour PK analysis in the ongoing studies in patients with hematologic malignancies in the first half of fiscal 2022. On March 22, 2022, we announced that the preliminary pharmacokinetics ("PK") findings with the G3 formulation were encouraging, and the exploration of the G3 formulation was ongoing.

Exploration of the PK properties of single dose administration of 10mg, 20mg, 50mg, 100mg, and 200mg dose levels with the G3 formulation have been completed. On September 12, 2022 we announced that initial PK modeling studies predict up to an 18-fold improvement in plasma steady-state exposure by the G3 formulation relative to the original formulation, and that Aptose plans to move forward with the development of the G3 formulation in AML patients under continuous dosing conditions to determine if G3 can deliver desired exposures and clinical responses while continuing to demonstrate a favorable safety profile.

On March 23, 2023, Aptose announced that during the fourth quarter of 2022, continuous dosing had been initiated with the new G3 formulation of luxeptinib in the ongoing Phase 1 a/b clinical trial in patients with R/R AML. Initial pharmacokinetic (PK) data from continuous dosing of the 50 mg G3 formulation show plasma exposure levels roughly equivalent to the 900mg dose (18-fold greater dose) of the original G1 formulation. Aptose will be reviewing all data with the data monitoring committee and will make the determination to escalate and at what dose.

Research on luxeptinib continues, and a non-clinical article was published during 1Q 2023 in *PLoS One*, a highly respected online scientific publication. Titled, "Luxeptinib interferes with LYN-mediated activation of SYK and modulates BCR signaling in lymphoma," the article helps elucidate the mechanism by which luxeptinib suppresses the B-cell receptor pathway in a manner distinct from the BTK inhibitor ibrutinib. Luxeptinib was more effective than ibrutinib at reducing both steady state and anti-IgM-induced phosphorylation of the LYN and SYK kinases upstream of BTK where ibrutinib has little or no effect, suggesting luxeptinib can play a role in B-cell malignancies and inflammatory diseases distinct from ibrutinib and other BTK inhibitors.

Other corporate matters

Nasdaq notice

On July 18, 2022, we received a deficiency letter (the "Deficiency Letter") from the Nasdaq Listing Qualifications Department (the "Staff") notifying us that, for the preceding 30 consecutive business days, the closing bid price for our Common Shares was below the minimum $1.00 per share required for continued listing on Nasdaq pursuant to Nasdaq Listing Rule 5550(a)(2) (the "Minimum Bid Price Requirement"). The Deficiency Letter had no immediate effect on the listing of the Company's Common Shares, and our Common Shares will continue to trade on Nasdaq under the symbol "APTO" at this time. Our Common Shares continue to trade on the Toronto Stock Exchange ("TSX") under the symbol "APS." Our listing on the TSX is independent and will not be affected by the Nasdaq listing status. In accordance with Nasdaq Listing Rule 5810(c)(3)(A), we were given 180 calendar days, to regain compliance with the Minimum Bid Price Requirement. On January 18, 2023, we qualified for a 180-day extension to July 18, 2023. If we are unable to meet the minimum closing bid price requirement under Nasdaq Listing Rule 5810(c)(3)(A) by then, Nasdaq will provide notice that our securities will be subject to delisting.

We intend to monitor the closing bid price of our Common Shares and consider our available options if the closing bid price of our Common Shares remains below $1.00 per share, including effecting a reverse stock split. There can be no assurance that we will be able to regain compliance with the minimum bid price requirement during the additional 180-day compliance period with respect to the minimum bid price requirement, or maintain compliance with the other listing requirements.

We intend to monitor the closing bid price of our Common Shares and consider our available options if the closing bid price of our Common Shares remains below $1.00 per share. There can be no assurance that we will be able to regain compliance with the Minimum Bid Price Requirement during the additional 180-day compliance period with respect to the Minimum Bid Price Requirement, or maintain compliance with the other listing requirements. In order to regain compliance with the Minimum Bid Price Requirement, we are considering a Reverse Stock Split which is conditional upon the approval of the shareholders of the Company at the annual and special meeting of shareholders to be held on May 23, 2023 and upon the approval of the Board of Directors of the Company which, if it determines to proceed with the Reverse Stock Split, will also determine its exact ratio and date.

LIQUIDITY AND CAPITAL RESOURCES

Aptose is an early-stage development company, and we currently do not generate any revenues from our drug candidates. The continuation of our research and development activities and the commercialization of the targeted therapeutic products are dependent upon our ability to successfully finance and complete our research and development programs through a combination of equity financing and payments from strategic partners.

Sources of liquidity:

The following table presents our cash and cash equivalents, investments and working capital as of March 31, 2023 and December 31, 2022.

(in thousands)	Balances at March 31, 2023	Balances at December 31, 2022
Cash and cash equivalents	$ 22,762	$ 36,970
Investments	12,958	9,989
Total	$ 35,720	$ 46,959
Working capital	$ 25,510	$ 37,235

Working capital is a non-GAAP measure and represents primarily cash, cash equivalents, investments, prepaid expenses and other current assets less current liabilities. This financial measure provides a fuller understanding of the Company's capital available to fund future operations.

Management recognizes that in order for us to meet our capital requirements, and continue to operate, additional financing will be necessary. We plan to raise additional funds in order to fund our business operations. We will seek access to financing but there is no assurance that such additional funds will be available for us to finance our operations on acceptable terms, if at all. These conditions raise substantial doubt about the Company's ability to continue as a going concern. The financial statements do not include any adjustments that might result from the outcome of this uncertainty. Our ability to raise additional funds could be affected by adverse market conditions, the status of our product pipeline, possible delays in enrollment in our trial, and various other factors and we may be unable to raise capital when needed, or on terms favorable to us. If necessary funds are not available, we may have to delay, reduce the scope of, or eliminate some of our development programs, potentially delaying the time to market for any of our product candidates.

Our cash needs for the next twelve months include estimates of the number of patients and rate of enrollment of our clinical trials, the amount of drug product that we will require to support our clinical trials, and our general corporate overhead costs to support our operations, and our reliance on our manufacturers. We have based these estimates on assumptions and plans which may change and which could impact the magnitude and/or timing of operating expenses and our cash runway.

Since our inception, we have financed our operations and technology acquisitions primarily from equity financing, proceeds from the exercise of warrants and stock options, and interest income on funds held for future investment.

All our cash is maintained at high-credit quality institutions. We minimize the cash levels above the FDIC and CDIC insurance levels, with excess cash invested in short-term investments with leading financial institutions.

2022 Base Shelf

In October 2022, we filed a short form base shelf prospectus (the 2022 "Base Shelf") that allows us to distribute, upon the filing of prospectus supplements, up to $200,000,000 of Common Shares, warrants, or units comprising any combination of Common Shares and warrants. The Base Shelf was declared effective by the SEC on October 21, 2022 and expires on October 7, 2025.

At-The-Market Facilities

On December 9, 2022, the Company entered into an "at-the-market" equity distribution agreement with Jones Trading acting as the agents in connection with the 2022 ATM Facility. Under the terms of the 2022 ATM Facility, the Company may, from time to time, sell Common Shares having an aggregate offering value of up to $50 million through Jones Trading on Nasdaq. During the year ended December 31, 2022, the Company issued 72,541 shares under the facility at an average price of $0.72 for gross proceeds of $52 thousand ($51 thousand net of share issuance costs). Costs associated with the proceeds consisted of 3% cash commission. During the three

months ended March 31, 2023, the Company issued 46,427 shares under the facility at an average price of $0.75 for gross proceeds of $35 thousand ($34 thousand net of share issuance costs). Costs associated with the proceeds consisted of 3% cash commission.

On May 5, 2020, the Company entered an "at-the-market" equity distribution agreement with Piper Sandler & Co. ("Piper Sandler") and Canaccord Genuity LLC ("Canaccord Genuity") acting as co-agents (the "2020 ATM Facility"). Under the terms of the 2020 ATM Facility, the Company could, from time to time, sell Common Shares having an aggregate offering value of up to $75 million through Piper Sandler and Canaccord Genuity on Nasdaq. During the year ended December 31, 2022, the Company issued 54,687 shares under the 2020 ATM Facility at an average price of $0.95 for gross proceeds of $52 thousand ($50 thousand net of share issue costs). Costs associated with the proceeds consisted of a 3% cash commission. During the year ended December 31, 2021, the Company issued 15,315 shares under the 2020 ATM Facility at an average price of $2.446 for gross proceeds of $37 thousand ($36 thousand net of share issue costs). As of October 31, 2022, the date the Agreement was terminated, the Company had raised a total of $89 thousand gross proceeds ($86 thousand net of share issuance costs) under the 2020 ATM Facility. Costs associated with the proceeds consisted of a 3% cash commission. During the three-month period ended March 31, 2022, the Company did not issue any shares under the 2020 ATM Facility.

Our ability to raise additional funds could be affected by adverse market conditions, the status of our product pipeline, possible delays in enrollment in our clinical trials, and various other factors and we may be unable to raise capital when needed, or on terms favorable to us. If the necessary funds are not available, we may need to delay, reduce the scope of, or eliminate some of our development programs, potentially delaying the time to market for any of our product candidates.

Cash flows:

The following table presents a summary of our cash flows for the three-month periods ended March 31, 2023 and 2022:

(in thousands)	Three months ended March 31,	
	2023	2022
Net cash provided by (used in):		
Operating activities	$ (11,302)	$ (9,645)
Investing activities	(2,960)	7,505
Financing activities	50	15
Effect of exchange rates changes on cash and cash equivalents	4	2
Net decrease in cash and cash equivalents	$ (14,208)	$ (2,123)

Cash used in operating activities:

Our cash used in operating activities for the three-month periods ended March 31, 2023, and 2022 was approximately $11.3 million and $9.6 million, respectively. Net cash used in operating activities was higher in the three-month period ended March 31, 2023, as compared to the three-month period ended March 31, 2022, due primarily to higher operating expenses, as discussed further below (see "Results of Operations"). Our uses of cash for operating activities for both periods consisted primarily of salaries and wages for our employees, facility and facility-related costs for our offices and laboratories, fees and pass-through expenses paid in connection with preclinical and clinical studies, drug manufacturing costs, laboratory supplies and materials, and professional fees.

We do not expect to generate positive cash flow from operations for the foreseeable future as we incur additional research and development costs, including costs related to drug discovery, preclinical testing, clinical trials and manufacturing, as well as operating expenses associated with supporting these activities, and potential milestone payments to our collaborators. It is expected that negative cash flows will continue until such time, if ever, that we receive regulatory approval to commercialize any of our products under development and/or royalty or milestone revenue from any such products exceeds expenses.

Cash flow from (used in) investing activities:

Our cash used by investing activities for the three-month period ended March 31, 2023, was $3.0 million, and consisted of net acquisition of investments. Our cash provided by investing activities for the three-month period ended March 31, 2022 was $7.5 million, and consisted of net maturities of investments.

The composition and mix of cash, cash equivalents and investments is based on our evaluation of conditions in financial markets and our near-term liquidity needs. We have exposure to credit risk, liquidity risk and market risk related to our investments. The Company manages credit risk associated with its cash and cash equivalents and investments by maintaining minimum standards of R1-low or A-low investments. The Company invests only in highly rated financial instruments which are capable of prompt liquidation.

The Company manages its liquidity risk by continuously monitoring forecasts and actual cash flows. The Company is subject to interest rate risk on its cash and cash equivalents and investments. The Company does not believe that the results of operations or cash flows would be affected to any significant degree by a sudden change in market interest rates relative to interest rates on the investments, owing to the relative short-term nature of the investments.

Cash flow from financing activities:

Our cash flow from financing activities for the three months ended March 31, 2023, was $50 thousand, and consisted of $34 thousand in proceeds from shares issued from the 2022 ATM Facility and $16 thousand in cash proceeds from the issuance of shares under the ESPP plan. Our cash flow from financing activities for the three months ended March 31, 2022, was $15 thousand from the exercise of stock options.

CONTRACTUAL OBLIGATIONS and commitments described under Item 7

There were no material changes to our contractual obligations and commitments described under Item 7 – Management's Discussion and Analysis of Financial Condition and Results of Operations in our Annual Report on Form 10-K for the fiscal year ended December 31, 2022, which can be found on EDGAR at www.sec.gov/edgar.shtml and on SEDAR at www.sedar.com.

RESULTS OF OPERATIONS

A summary of the results of operations for the three-month periods ended March 31, 2023 and 2022 is presented below:

	Three months ended March 31,	
(in thousands)	**2023**	**2022**
Revenues	$ —	$ —
Research and development expenses	8,811	7,393
General and administrative expenses	5,285	4,107
Other income, net	420	19
Net loss	$ 13,676	$ 11,481
Other comprehensive income	4	—
Comprehensive loss	$ 13,672	$ 11,481
Basic and diluted loss per common share	$ (0.15)	$ (0.12)

Net loss for the three-month period ended March 31, 2023 increased by $2.2 million to $13.7 million, as compared to $11.5 million for the comparable period in 2022. Components of net loss are presented below:

Research and Development

Research and development expenses consist primarily of costs incurred related to the research and development of our product candidates and include:

•External research and development expenses incurred under agreements with third parties, such as contract research organizations, consultants, members of our scientific advisory boards, external labs and contract manufacturing organizations; and

•Employee-related expenses, including salaries, benefits, travel, and stock-based compensation for personnel directly supporting our clinical trials, manufacturing and development activities.

We have ongoing clinical trials for our product candidates tuspetinib and luxeptinib. Tuspetinib was licensed to Aptose in the fourth quarter of 2021, and we assumed sponsorship, and the related costs, of the tuspetinib study effective January 1, 2022. In the fourth quarter of 2021, we discontinued the APTO-253 program.

We expect our research and development expenses to be higher than current period expenses for the foreseeable future as we advance tuspetinib into larger clinical trials.

The research and development expenses for the three-month periods ended March 31, 2023, and 2022 were as follows:

(in thousands)	Three months ended March 31, 2023	2022
Program costs – Tuspetinib	$ 4,774	$ 1,178
Program costs – Luxeptinib	1,289	2,830
Program costs – APTO-253	8	91
Personnel-related expenses	2,078	2,334
Stock-based compensation	652	946
Depreciation of equipment	10	14
Total	$ 8,811	$ 7,393

Research and development expenses increased by $1.4 million to $8.8 million for the three-month period ended March 31, 2023, as compared to $7.4 million for the comparative period in 2022. Changes to the components of our research and development expenses presented in the table above are primarily as a result of the following events:

•Program costs for tuspetinib were $4.8 million for the three-month period ended March 31, 2023. The Company in-licensed the development rights of tuspetinib in the fourth quarter of 2021 and assumed sponsorship, and the related costs, of the study effective January 1, 2022. The higher program costs for Tuspetinib in the current period represent the enrollment of patients in our APTIVATE clinical trial, our healthy volunteer trial, and related expenses.

•Program costs for luxeptinib decreased by approximately $1.5 million, primarily due to lower manufacturing costs as a result of the current formulation requiring less API than the prior formulation, partially offset by higher clinical trial costs, mostly related to higher contractor costs required to support the trials.

•Program costs for APTO-253 decreased by approximately $83 thousand, due to the Company's decision on December 20, 2021 to discontinue further clinical development of APTO-253.

•Personnel-related expenses decreased by $256 thousand, related to fewer employees in the current three-month period and partially offset by salary increases.

•Stock-based compensation decreased by approximately $294 thousand in the three months ended March 31, 2023, compared to the three months ended March 31, 2022, primarily due to stock options granted with lower grant date fair values, in the current period.

General and Administrative

General and administrative expenses consist primarily of salaries, benefits and travel, including stock-based compensation for our executive, finance, business development, human resources, and support functions. Other general and administrative expenses are professional fees for auditing and legal services, investor relations and other consultants, insurance and facility-related expenses.

We expect that our general and administrative expenses will increase for the foreseeable future as we incur additional costs to support the expansion of our pipeline of activities. We also expect our intellectual property related legal expenses to increase as our intellectual property portfolio expands.

The general and administrative expenses for the three-month periods ended March 31, 2023, and 2022 were as follows:

(in thousands)	Three months ended March 31, 2023	2022
General and administrative, excluding items below	$ 4,045	$ 2,521
Stock-based compensation	1,222	1,568
Depreciation of equipment	18	18
	$ 5,285	$ 4,107

General and administrative expenses for the three-month period ended March 31, 2023 were $5.3 million, as compared to $4.1 million for the comparative period in 2022, an increase of approximately $1.2 million. The increase was primarily due the following:

•General and administrative expenses, other than stock-based compensation and depreciation of equipment, increased by approximately $1.5 million in the three months ended March 31, 2023, primarily as a result of higher salaries expenses and higher professional fees.

•Stock-based compensation decreased by approximately $346 thousand in the three months ended March 31, 2023, as compared to the three months ended March 31, 2022, mostly as a result of lower grant date fair values in the current period.

CRITICAL ACCOUNTING POLICIES

Critical Accounting Policies and Estimates

We periodically review our financial reporting and disclosure practices and accounting policies to ensure that they provide accurate and transparent information relative to the current economic and business environment. As part of this process, we have reviewed our selection, application and communication of critical accounting policies and financial disclosures. Management has discussed the development and selection of the critical accounting policies with the Audit Committee of the Board of Directors and the Audit Committee has reviewed the disclosure relating to critical accounting policies in this Management's Discussion and Analysis.

Significant accounting judgments and estimates

A "critical accounting policy" is one which is both important to the portrayal of our financial condition and results and requires management's most difficult, subjective or complex judgments, often as a result of the need to make estimates about the effect of matters that are inherently uncertain. For additional information, please see the discussion of our significant accounting policies in Note 2 to the Financial Statements included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2022, filed with the SEC on March 23, 2023. There were no material changes to our critical accounting policies and estimates during the three months ended March 31, 2023.

The Company records expenses for research and development activities based on management's estimates of services received and efforts expended pursuant to contracts with vendors that conduct research and development on the Company's behalf. The financial terms vary from contract to contract and may result in uneven payment flows as compared to services performed or products delivered. As a result, the Company is required to estimate research and development expenses incurred during the period, which impacts the amount of accrued expenses and prepaid balances related to such costs as of each balance sheet date. Management estimates the amount of work completed through discussions with internal personnel and the contract research and contract manufacturing organizations as to the progress or stage of completion of the services. The Company's estimates are based on a number of factors, including the Company's knowledge of the status of each of the research and development project milestones, and contract terms together with related executed change orders. Management makes significant judgments and estimates in determining the accrued balance at the end of each reporting period.

Although management does not expect our estimates to be materially different from amounts actually incurred, if the estimates of the status and timing of services performed differ from the actual status and timing of services performed, it could result in the Company reporting amounts that are too high or too low in any particular period. As of March 31, 2023, the Company has recorded $1.2 million in prepaid expenses and approximately $5.0 million in accrued liabilities related to its research and development activities. If the estimates are too high or too low by a factor of 10% this would mean that prepaid expenses would be over or understated by approximately $120 thousand, and accrued liabilities would be over or understated by approximately $500 thousand. On a combined basis, this could mean an increase or decrease in research and development expenses by approximately $620 thousand. To date, there have been no material differences between the estimates of such expenses and the amounts actually incurred.

Other important accounting policies and estimates made by management are the valuation of contingent liabilities, the valuation of tax accounts, and the assumptions used in determining the valuation of share-based compensation, as described in our Annual Report on Form 10-K for the fiscal year ended December 31, 2022.

Management's assessment of our ability to continue as a going concern involves making a judgment, at a particular point in time, about inherently uncertain future outcomes and events or conditions. Please see the "Liquidity and Capital Resources" section in this Quarterly Report on Form 10-Q for a discussion of the factors considered by management in arriving at its assessment.

Updated share information

As of May 8, 2023, we had 93,653,652 common shares issued and outstanding. In addition, there were 18,790,758 common shares issuable upon the exercise of outstanding stock options.

ITEM 3 – QUALITATIVE AND QUANTITATIVE DISCLOSURES ABOUT MARKET RISK

Under SEC rules and regulations, as a smaller reporting company, we are not required to provide this information.

ITEM 4 – CONTROLS AND PROCEDURES

As of the end of our fiscal quarter ended March 31, 2023, evaluation of the effectiveness of our "disclosure controls and procedures" (as such term is defined in Rules 13a-15(e) and 15d-15(e) under the United States Exchange Act of 1934, as amended (the "Exchange Act")), was carried out by our management, with the participation of our principal executive officer and principal financial officer. Based upon that evaluation, our principal executive officer and principal financial officer have concluded that as of the end of our fiscal quarter ended March 31, 2023, our disclosure controls and procedures are effective to ensure that information required to be disclosed by us in reports that we file or submit under the Exchange Act is (i) recorded, processed, summarized and reported within the time periods specified in the SEC rules and forms and (ii) accumulated and communicated to our management, including our principal executive officer and principal financial officer, to allow timely decisions regarding required disclosure.

It should be noted that while our principal executive officer and principal financial officer believe that our disclosure controls and procedures provide a reasonable level of assurance that they are effective, they do not expect that our disclosure controls and procedures or internal control over financial reporting will prevent all errors or fraud. A control system, no matter how well conceived or operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met.

CHANGES IN INTERNAL CONTROL OVER FINANCIAL REPORTING

There were no changes in our internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) during our fiscal quarter ended March 31, 2023 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 involved in any material active legal actions. However, from time to time, we may be subject to various pending or threatened legal actions and proceedings, including those that arise in the ordinary course of our business. Such matters are subject to many uncertainties and to outcomes that are not predictable with assurance and that may not be known for extended periods of time.

ITEM 1A – RISK FACTORS

FOR INFORMATION REGARDING FACTORS THAT COULD AFFECT APTOSE'S RESULTS OF OPERATIONS, FINANCIAL CONDITION AND LIQUIDITY, SEE THE RISK FACTORS DISCUSSED IN OUR ANNUAL REPORT ON FORM 10-K FOR THE YEAR ENDED DECEMBER 31, 2022, UNDER ITEM 1A – RISK FACTORS. THERE HAVE BEEN NO MATERIAL CHANGES TO THE RISK FACTORS DISCLOSED UNDER ITEM 1A – RISK FACTORS OF THE ANNUAL REPORT.

ITEM 6 – EXHIBITS

Exhibit Number	Description of Document
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**	The following consolidated financial statements from the Aptose Biosciences Inc. Quarterly Report on Form 10-Q for the quarter ended March 31, 2023, formatted in Inline Extensible Business Reporting Language (Inline XBRL): (i) statements of operations and comprehensive loss, (ii) balance sheets, (iii) statements of changes of shareholders' equity, (iv) statements of cash flows, and (v) the notes to the financial statements.
101.INS	Inline XBRL Instance Document (the instance document does not appear in the Interactive Data File because its 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 (formatted as Inline XBRL and contained in Exhibit 101)
*	Filed herewith.
**	In accordance with Rule 406T of Regulation S-T, the XBRL related information in Exhibit 101 to this Quarterly Report on Form 10-Q is deemed not filed or part of a registration statement or prospectus for purposes of Sections 11 or 12 of the Securities Act, is deemed not filed for purposes of Section 18 of the Exchange Act, and otherwise is not subject to liability under these sections.

SIGNATURES

Pursuant to the requirements of the Securities Act, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized, on the 8th day of May 2023.

APTOSE BIOSCIENCES INC.

By: /s/ William G. Rice, Ph.D.
William G. Rice, Ph.D.
President and Chief Executive Officer

Exhibit 31.1

Certification Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, William G. Rice, certify that:

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

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

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

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

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

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

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

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

5.The registrant's other certifying officer 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 8, 2023

/s/ William G. Rice
Name: William G. Rice, Ph.D.
Title: President and Chief Executive Officer

Exhibit 31.2

Certification Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Fletcher Payne, certify that:

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

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

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

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

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

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;

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

b)Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's fourth fiscal quarter that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5.The registrant's other certifying officer 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):

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 8, 2023

/s/ Fletcher Payne
Name: Fletcher Payne
Title: Senior Vice President and Chief Financial Officer

Exhibit 32.1

Certification Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002

Pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, I, William G. Rice, the President and Chief Executive Officer of Aptose Biosciences Inc. (the "Company"), hereby certify that, to my knowledge:

1.The Quarterly Report on Form 10-Q for the quarter ended March 31, 2023 (the "Report") of the Company fully complies with the requirements of Section 13(a) or Section 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 8, 2023

/s/ William G. Rice
Name: William G. Rice, Ph.D.
Title: President and Chief Executive Officer

Exhibit 32.2

Certification Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002

Pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, I, Fletcher Payne, the Senior Vice President and Chief Financial Officer of Aptose Biosciences Inc. (the "Company"), hereby certify that, to my knowledge:

1.The Quarterly Report on Form 10-Q for the quarter ended March 31, 2023 (the "Report") of the Company fully complies with the requirements of Section 13(a) or Section 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 8, 2023

/s/ Fletcher Payne
Name: Fletcher Payne
Title: Senior Vice President and Chief Financial Officer