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 June 30, 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: **001-34949**

ARBUTUS BIOPHARMA CORPORATION

(Exact Name of Registrant as Specified in Its Charter)

British Columbia, Canada	**98-0597776**
(State or Other Jurisdiction of Incorporation or Organization)	(I.R.S. Employer Identification No.)

701 Veterans Circle, Warminster, PA 18974

(Address of Principal Executive Offices and Zip Code)

267-469-0914

(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, without par value	ABUS	The Nasdaq Stock Market LLC

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

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

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

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

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

Yes ☐ No ☒

As of August 1, 2023, the registrant had 167,556,661 common shares, without par value, outstanding.

ARBUTUS BIOPHARMA CORPORATION

PART I. FINANCIAL INFORMATION

ITEM 1. FINANCIAL STATEMENTS (UNAUDITED)

ARBUTUS BIOPHARMA CORPORATION

Condensed Consolidated Balance Sheets
(Unaudited)
(In thousands of U.S. Dollars, except share and per share amounts)

	June 30, 2023	December 31, 2022
Assets		
Current assets:		
Cash and cash equivalents	$ 27,197	$ 30,776
Investments in marketable securities, current	125,287	116,137
Accounts receivable	2,614	1,352
Prepaid expenses and other current assets	3,702	2,874
Total current assets	158,800	151,139
Property and equipment, net of accumulated depreciation of $11,477 (December 31, 2022: $10,801)	5,370	5,070
Investments in marketable securities, non-current	11,057	37,363
Right of use asset	1,585	1,744
Other non-current assets	11	103
Total assets	$ 176,823	$ 195,419
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable and accrued liabilities	$ 8,805	$ 16,029
Deferred license revenue, current	15,327	16,456
Lease liability, current	397	372
Total current liabilities	24,529	32,857
Liability related to sale of future royalties	8,787	10,365
Deferred license revenue, non-current	—	5,999
Contingent consideration	7,168	7,531
Lease liability, non-current	1,646	1,815
Total liabilities	42,130	58,567
Stockholders' equity		
Common shares		
Authorized: unlimited number without par value		
Issued and outstanding: 166,922,739 (December 31, 2022: 157,455,363)	1,344,195	1,318,737
Additional paid-in capital	77,202	72,406
Deficit	(1,237,236)	(1,203,803)
Accumulated other comprehensive loss	(49,468)	(50,488)
Total stockholders' equity	134,693	136,852
Total liabilities and stockholders' equity	$ 176,823	$ 195,419

See accompanying notes to the condensed consolidated financial statements.

ARBUTUS BIOPHARMA CORPORATION

Condensed Consolidated Statements of Operations and Comprehensive Loss
(Unaudited)
(In thousands of U.S. Dollars, except share and per share amounts)

	Three Months Ended June 30,		Six Months Ended June 30, 2023	
	2023	2022	2023	2022
Revenue				
Collaborations and licenses	$ 3,885	$ 12,556	9,394	23,774
Non-cash royalty revenue	766	1,685	1,944	3,048
Total Revenue	4,651	14,241	11,338	26,822
Operating expenses				
Research and development	17,692	22,942	35,967	41,404
General and administrative	5,980	5,200	11,532	10,092
Change in fair value of contingent consideration	(636)	208	(363)	409
Total operating expenses	23,036	28,350	47,136	51,905
Loss from operations	(18,385)	(14,109)	(35,798)	(25,083)
Other income (loss)				
Interest income	1,461	396	2,729	555
Interest expense	(171)	(482)	(369)	(988)
Foreign exchange (gain) loss	1	3	5	3
Total other income (loss)	1,291	(83)	2,365	(430)
Loss before income taxes	(17,094)	(14,192)	(33,433)	(25,513)
Income tax expense	—	—	—	(4,444)
Net loss	$ (17,094)	$ (14,192)	(33,433)	(29,957)
Loss per share				
Basic and diluted	$ (0.10)	$ (0.10)	(0.20)	(0.20)
Weighted average number of common shares				
Basic and diluted	166,063,284	148,750,048	163,855,661	148,589,711
Comprehensive loss				
Unrealized gain (loss) on available-for-sale securities	$ 166	$ (691)	1,020	(1,762)
Comprehensive loss	$ (16,928)	$ (14,883)	(32,413)	(31,719)

See accompanying notes to the condensed consolidated financial statements.

ARBUTUS BIOPHARMA CORPORATION

Condensed Consolidated Statements of Stockholders' Equity
(Unaudited)
(In thousands of U.S. Dollars, except share and per share amounts)

	Common Shares		Additional Paid-In Capital	Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Number of Shares	Share Capital				
Balance December 31, 2022	157,455,363	$ 1,318,737	$ 72,406	$ (1,203,803)	$ (50,488)	$ 136,852
Stock-based compensation expense	—	—	2,131	—	—	2,131
Issuance of common shares pursuant to the Open Market Sale Agreement	7,423,622	19,862	—	—	—	19,862
Issuance of common shares pursuant to exercise of options	101,356	457	(198)	—	—	259
Issuance of common shares pursuant to ESPP	151,852	397	(101)	—	—	296
Unrealized gain on available-for-sale securities	—	—	—	—	854	854
Net loss	—	—	—	(16,339)	—	(16,339)
Balance March 31, 2023	165,132,193	$ 1,339,453	$ 74,238	$ (1,220,142)	$ (49,634)	$ 143,915
Stock-based compensation expense	—	—	2,964	—	—	2,964
Issuance of common shares pursuant to the Open Market Sale Agreement	1,790,546	4,742	—	—	—	4,742
Unrealized gain on available-for-sale securities	—	—	—	—	166	166
Net loss	—	—	—	(17,094)	—	(17,094)
Balance June 30, 2023	166,922,739	$ 1,344,195	$ 77,202	$ (1,237,236)	$ (49,468)	$ 134,693

See accompanying notes to the condensed consolidated financial statements.

ARBUTUS BIOPHARMA CORPORATION

Condensed Consolidated Statements of Stockholders' Equity
(Unaudited)
(In thousands of U.S. Dollars, except share and per share amounts)

	Common Shares		Additional Paid-In Capital	Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Number of Shares	Share Capital				
Balance December 31, 2021	144,987,736	$ 1,286,636	$ 65,485	$ (1,134,347)	$ (48,335)	$ 169,439
Stock-based compensation expense	—	—	1,736	—	—	1,736
Certain fair value adjustments to liability stock option awards	—	—	21	—	—	21
Issuance of common shares pursuant to the Open Market Sale Agreement	69,048	268	—	—	—	268
Issuance of common shares pursuant to exercise of options	5,000	18	(10)	—	—	8
Issuance of common shares pursuant to ESPP	86,501	317	(81)	—	—	236
Issuance of common shares pursuant to Share Purchase Agreement	3,579,952	10,973	—	—	—	10,973
Unrealized loss on available-for-sale securities	—	—	—	—	(1,071)	(1,071)
Net loss	—	—	—	(15,765)	—	(15,765)
Balance March 31, 2022	148,728,237	$ 1,298,212	$ 67,151	$ (1,150,112)	$ (49,406)	$ 165,845
Stock-based compensation expense	—	—	2,064	—	—	2,064
Certain fair value adjustments to liability stock option awards	—	—	3	—	—	3
Issuance of common shares pursuant to exercise of options	66,025	197	(84)	—	—	113
Unrealized loss on available-for-sale securities	—	—	—	—	(691)	(691)
Net loss	—	—	—	(14,192)	—	(14,192)
Balance June 30, 2022	148,794,262	$ 1,298,409	$ 69,134	$ (1,164,304)	$ (50,097)	$ 153,142

See accompanying notes to the condensed consolidated financial statements.

ARBUTUS BIOPHARMA CORPORATION

Condensed Consolidated Statements of Cash Flows
(Unaudited)
(In thousands of U.S. Dollars)

	Six Months Ended June 30,	
	2023	**2022**
OPERATING ACTIVITIES		
Net loss	$ (33,433)	$ (29,957)
Non-cash items:		
Depreciation	676	777
Gain on sale of property and equipment	—	(20)
Stock-based compensation expense	5,095	3,800
Change in fair value of contingent consideration	(363)	409
Non-cash royalty revenue	(1,944)	(3,048)
Non-cash interest expense	366	985
Net accretion and amortization of investments in marketable securities	(919)	251
Net change in operating items:		
Accounts receivable	(1,262)	(1,071)
Prepaid expenses and other assets	(577)	(1,126)
Accounts payable and accrued liabilities	(7,224)	1,660
Change in deferred license revenue	(7,128)	27,815
Other liabilities	(147)	(149)
Net cash (used in) provided by operating activities	(46,860)	326
INVESTING ACTIVITIES		
Purchase of investments in marketable securities	(49,405)	(84,619)
Disposition of investments in marketable securities	68,500	11,000
Proceeds from sale of property and equipment	—	20
Acquisition of property and equipment	(976)	(287)
Net cash provided by (used in) investing activities	18,119	(73,886)
FINANCING ACTIVITIES		
Issuance of common shares pursuant to Share Purchase Agreement	—	10,973
Issuance of common shares pursuant to the Open Market Sale Agreement	24,604	268
Issuance of common shares pursuant to exercise of stock options	259	121
Issuance of common shares pursuant to exercise of ESPP	296	236
Net cash provided by financing activities	25,159	11,598
Effect of foreign exchange rate changes on cash and cash equivalents	3	—
Decrease in cash and cash equivalents	(3,579)	(61,962)
Cash and cash equivalents, beginning of period	30,776	109,282
Cash and cash equivalents, end of period	$ 27,197	$ 47,320

See accompanying notes to the condensed consolidated financial statements.

1. Nature of business and future operations

Description of the Business

Arbutus Biopharma Corporation ("Arbutus" or the "Company") is a clinical-stage biopharmaceutical company leveraging its extensive virology expertise to develop novel therapeutics that target specific viral diseases. The Company's current focus areas include hepatitis B virus ("HBV"), SARS-CoV-2 and other coronaviruses. To address HBV, the Company is developing an RNA interference ("RNAi") therapeutic, imdusiran (AB-729), an oral PD-L1 inhibitor, AB-101, and an oral RNA destabilizer, AB-161, to potentially identify a combination regimen with the aim of providing a functional cure for patients with chronic HBV infection ("cHBV") by suppressing viral replication, reducing surface antigen and reawakening the immune system. The Company believes its lead compound, imdusiran, is the only RNAi therapeutic with evidence of immune re-awakening. Imdusiran is currently being evaluated in multiple phase 2 clinical trials. In addition, a Phase 1 clinical trial with AB-161 was recently initiated. The Company also has an ongoing drug discovery and development program directed to identifying novel, orally active agents for treating coronaviruses, including SARS-CoV-2, where the Company has nominated a compound and has begun IND-enabling preclinical studies. In addition, the Company is also exploring oncology applications for its internal PD-L1 portfolio.

Liquidity

At June 30, 2023, the Company had an aggregate of $163.5 million in cash, cash equivalents and investments in marketable securities. The Company had no outstanding debt as of June 30, 2023. The Company believes it has sufficient cash resources to fund its operations for at least the next 12 months.

The success of the Company is dependent on obtaining the necessary regulatory approvals to bring its products to market and achieve profitable operations. The Company's research and development activities and the commercialization of its products are dependent on its ability to successfully complete these activities and to obtain adequate financing through a combination of financing activities and operations. It is not possible to predict either the outcome of the Company's existing or future research and development programs or the Company's ability to continue to fund these programs in the future.

2. Significant accounting policies

Basis of presentation and principles of consolidation

These unaudited condensed consolidated financial statements have been prepared in accordance with United States generally accepted accounting principles for interim financial statements and accordingly, do not include all disclosures required for annual financial statements. These statements should be read in conjunction with the Company's audited consolidated financial statements and notes thereto for the year ended December 31, 2022 included in the Company's Annual Report on Form 10-K for the year ended December 31, 2022. These unaudited condensed consolidated financial statements include the accounts of Arbutus Biopharma Corporation and its one wholly-owned subsidiary, Arbutus Biopharma, Inc., and reflect, in the opinion of management, all adjustments and reclassifications necessary to fairly present the Company's financial position as of June 30, 2023 and December 31, 2022, the Company's results of operations for the three and six months ended June 30, 2023 and 2022, and the Company's cash flows for the six months ended June 30, 2023 and 2022. Such adjustments are of a normal recurring nature. The results of operations for the three and six months ended June 30, 2023 are not necessarily indicative of the results for the full year. These unaudited condensed consolidated financial statements follow the same significant accounting policies as those described in the notes to the audited consolidated financial statements of the Company for the year ended December 31, 2022, except as described below under Recent Accounting Pronouncements.

All intercompany balances and transactions have been eliminated. Certain prior year amounts have been reclassified to conform to the current year presentation.

Net loss per share

Net loss per share is calculated based on the weighted average number of common shares outstanding. Diluted net loss per share does not differ from basic net loss per share for the three and six months ended June 30, 2023 and 2022, since the effect of including potential common shares would be anti-dilutive. For the six months ended June 30, 2023, potential common shares of 20.2 million pertaining to outstanding stock options and unvested restricted stock units were excluded from the calculation of net loss per share. A total of approximately 15.9 million outstanding stock options were excluded from the calculation for the six months ended June 30, 2022.

Revenue from collaborations and licenses

The Company generates revenue through certain collaboration agreements and license agreements. Such agreements may require the Company to deliver various rights and/or services, including intellectual property rights or licenses and research and development services. Under such agreements, the Company is generally eligible to receive non-refundable upfront payments, funding for research and development services, milestone payments and royalties.

The Company's collaboration agreements fall under the scope of Accounting Standards Codification ("ASC") Topic 808, *Collaborative Arrangements* ("ASC 808"), when both parties are active participants in the arrangement and are exposed to significant risks and rewards. For certain arrangements under the scope of ASC 808, the Company analogizes to ASC Topic 606, *Revenue from Contracts with Customers* ("ASC 606"), for some aspects, including for the delivery of a good or service (i.e., a unit of account).

ASC 606 requires an entity to recognize the amount of revenue to which it expects to be entitled for the transfer of promised goods or services to customers under a five-step model: (i) identify contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when or as a performance obligation is satisfied.

In contracts where the Company has more than one performance obligation to provide its customer with goods or services, each performance obligation is evaluated to determine whether it is distinct based on whether (i) the customer can benefit from the good or service either on its own or together with other resources that are readily available and (ii) the good or service is separately identifiable from other promises in the contract. The consideration under the contract is then allocated between the distinct performance obligations based on their respective relative stand-alone selling prices. The estimated stand-alone selling price of each deliverable reflects the Company's best estimate of what the selling price would be if the deliverable was regularly sold on a stand-alone basis and is determined by reference to market rates for the good or service when sold to others or by using an adjusted market assessment approach if the selling price on a stand-alone basis is not available.

The consideration allocated to each distinct performance obligation is recognized as revenue when control is transferred to the customer for the related goods or services. Consideration associated with at-risk substantive performance milestones, including sales-based milestones, is recognized as revenue when it is probable that a significant reversal of the cumulative revenue recognized will not occur. Sales-based royalties received in connection with licenses of intellectual property are subject to a specific exception in the revenue standards, whereby the consideration is not included in the transaction price and recognized in revenue until the customer's subsequent sales or usages occur.

Deferred Revenue

When consideration is received or is unconditionally due from a customer, collaborator or licensee prior to the Company completing its performance obligation to the customer, collaborator or licensee under the terms of a contract, deferred revenue is recorded. Deferred revenue expected to be recognized as revenue within the 12 months following the balance sheet date is classified as a current liability. Deferred revenue not expected to be recognized as revenue within the 12 months following the balance sheet date is classified as a long-term liability. In accordance with ASC Topic 210-20, *Balance Sheet - Offsetting* ("ASC 210-20") the Company's deferred revenue is offset by a contract asset as further discussed in Note 9.

Segment information

The Company operates as a single segment.

Recent accounting pronouncements

In June 2016, the Financial Accounting Standards Board issued Accounting Standards Update 2016-13, Financial Instruments - Credit Losses: Measurement of Credit Losses in Financial Instruments ("ASC 326"). The guidance is effective for the Company beginning January 1, 2023 and it changes how entities account for credit losses on the financial assets and other instruments that are not measured at fair value through net income, including available-for-sale debt securities. The adoption of ASC 326 did not have a material impact on the consolidated financial statements.

The Company has reviewed all other recently issued standards and has determined that such standards will not have a material impact on the Company's financial statements or do not otherwise apply to the Company's operations.

3. Fair value measurements

The Company measures certain financial instruments and other items at fair value.

To determine the fair value, the Company uses the fair value hierarchy for inputs used in measuring fair value that maximize the use of observable inputs and minimize the use of unobservable inputs by requiring that the most observable inputs be used when available. Observable inputs are inputs market participants would use to value an asset or liability and are developed based on market data obtained from independent sources. Unobservable inputs are inputs based on assumptions about the factors market participants would use to value an asset or liability. The three levels of inputs that may be used to measure fair value are as follows:

- Level 1 inputs are quoted market prices for identical instruments available in active markets.
- Level 2 inputs are inputs other than quoted prices included within Level 1 that are observable for the asset or liability either directly or indirectly. If the asset or liability has a contractual term, the input must be observable for substantially the full term. An example includes quoted market prices for similar assets or liabilities in active markets.
- Level 3 inputs are unobservable inputs for the asset or liability and will reflect management's assumptions about market assumptions that would be used to price the asset or liability.

Assets and liabilities are classified based on the lowest level of input that is significant to the fair value measurements. Changes in the observability of valuation inputs may result in a reclassification of levels for certain securities within the fair value hierarchy.

The carrying values of cash and cash equivalents, accounts receivable, accounts payable and accrued liabilities approximate their fair values due to the immediate or short-term maturity of these financial instruments.

To determine the fair value of the contingent consideration (Note 8), the Company uses a probability weighted assessment of the likelihood the milestones would be met and the estimated timing of such payments, and then the potential contingent payments are discounted to their present value using a probability adjusted discount rate that reflects the early stage nature of the development program, the time to complete the program development, and overall biotech indices. The Company determined the fair value of the contingent consideration was $7.2 million as of June 30, 2023 and the decrease of $0.4 million from December 31, 2022 has been recorded as a component of total operating expenses in the statements of operations and comprehensive loss for the six months ended June 30, 2023. The assumptions used in the discounted cash flow model are level 3 inputs as defined above. The Company assessed the sensitivity of the fair value measurement to changes in these unobservable inputs, and determined that changes within a reasonable range would not result in a materially different assessment of fair value.

The following tables present information about the Company's assets and liabilities that are measured at fair value on a recurring basis, and indicates the fair value hierarchy of the valuation techniques used to determine such fair value:

As of June 30, 2023	Level 1	Level 2	Level 3	Total
	(in thousands)			
Assets				
Cash and cash equivalents	$ 27,197	$ —	$ —	$ 27,197
Investments in marketable securities, current	—	125,287	—	125,287
Investments in marketable securities, non-current	—	11,057	—	11,057
Total	$ 27,197	$ 136,344	$ —	$ 163,541
Liabilities				
Contingent consideration	—	—	7,168	7,168
Total	$ —	$ —	$ 7,168	$ 7,168

As of December 31, 2022	Level 1	Level 2	Level 3	Total
	(in thousands)			
Assets				
Cash and cash equivalents	$ 30,776	$ —	$ —	$ 30,776
Investments in marketable securities, current	—	116,137	—	116,137
Investments in marketable securities, non-current	—	37,363	—	37,363
Total	$ 30,776	$ 153,500	$ —	$ 184,276
Liabilities				
Contingent consideration	—	—	7,531	7,531
Total	$ —	$ —	$ 7,531	$ 7,531

The following table presents the changes in fair value of the Company's contingent consideration:

	Liability at beginning of the period	Change in fair value of liability	Liability at end of the period
		(in thousands)	
Six Months Ended June 30, 2023	$ 7,531	$ (363)	$ 7,168
Six Months Ended June 30, 2022	$ 5,298	$ 409	$ 5,707

See Note 4 for additional information regarding the fair value of the Company's investments in marketable securities.

4. Investments in marketable securities

Investments in marketable securities consisted of the following:

As of June 30, 2023	Amortized Cost	Gross Unrealized Gain[1]	Gross Unrealized Loss[1]	Fair Value
	(in thousands)			
Cash equivalents				
Money market	$ 21,816	$ —	$ —	$ 21,816
Total	$ 21,816	$ —	$ —	$ 21,816
Investments in marketable short-term securities				
US government agency bonds	$ 35,624	$ —	$ (314)	$ 35,310
US corporate bonds	56,066	—	(507)	55,559
US treasury bills	7,834	—	(4)	7,830
US government bonds	26,944	—	(356)	26,588
Total	$ 126,468	$ —	$ (1,181)	$ 125,287
Investments in marketable long-term securities				
US corporate bonds	9,161	—	(66)	9,095
Yankee bonds	1,999	—	(37)	1,962
Total	$ 11,160	$ —	$ (103)	$ 11,057

[1] Gross unrealized gain (loss) is pre-tax and is reported in accumulated other comprehensive loss.

As of December 31, 2022	Amortized Cost	Gross Unrealized Gain[1]	Gross Unrealized Loss[1]	Fair Value
	(in thousands)			
Cash equivalents				
Money market	$ 23,218	$ —	$ —	$ 23,218
Total	$ 23,218	$ —	$ —	$ 23,218
Investments in marketable short-term securities				
US government agency bonds	$ 26,686	$ —	$ (424)	$ 26,262
US corporate bonds	27,144	—	(303)	26,841
US treasury bills	8,483	—	(16)	8,467
US government bonds	$ 55,361	$ —	$ (794)	$ 54,567
Total	$ 117,674	$ —	$ (1,537)	$ 116,137
Investments in marketable long-term securities				
US government agency bonds	$ 3,724	$ —	$ (130)	$ 3,594
US treasury bills	25,433	—	(336)	25,097
US government bonds	8,972	—	(300)	8,672
Total	$ 38,129	$ —	$ (766)	$ 37,363

[1] Gross unrealized gain (loss) is pre-tax and is reported in accumulated other comprehensive loss.

The contractual term to maturity of the $125.3 million of short-term marketable securities held by the Company as of June 30, 2023 is less than one year. As of June 30, 2023, the Company held $11.1 million of long-term marketable securities with contractual maturities of more than one year, but less than five years. As of December 31, 2022, the Company's $116.1 million of short-term marketable securities had contractual maturities of less than one year, while the Company's $37.4 million of long-term marketable securities had maturities of more than one year, but less than five years.

At June 30, 2023 and December 31, 2022, respectively, the Company had 45 and 53 available-for-sale investment debt securities in an unrealized loss position without an allowance for credit losses. Unrealized losses on the Company's investments in debt securities have not been recognized into income as the issuers' bonds are of high credit quality and the decline in fair value is largely due to market conditions and/or changes in interest rates. The Company does not intend to sell and it is more likely than not that the Company will not be required to sell the securities prior to the anticipated recovery of their amortized cost basis. The issuers continue to make timely interest payments on the bonds. The fair value is expected to recover as the bonds approach maturity.

Accrued interest receivable on investments in marketable securities of $0.6 million at both June 30, 2023 and December 31, 2022 is included in Prepaid expenses and other current assets.

The Company had realized gains of less than $0.1 million for the three and six months ended June 30, 2023 and no unrealized gains in 2022.

See Note 3 for additional information regarding the fair value of the Company's investments in marketable securities.

5. Investment in Genevant

In April 2018, the Company entered into an agreement with Roivant Sciences Ltd., its largest shareholder, to launch Genevant Sciences Ltd. ("Genevant"), a company focused on the discovery, development, and commercialization of a broad range of RNA-based therapeutics enabled by the Company's lipid nanoparticle ("LNP") and ligand conjugate delivery technologies. The Company licensed exclusive rights to its LNP and ligand conjugate delivery platforms to Genevant for RNA-based applications outside of HBV, except to the extent certain rights had already been licensed to other third parties (the "Genevant License"). The Company retained all rights to its LNP and conjugate delivery platforms for HBV.

Under the Genevant License, as amended, if a third party sublicensee of intellectual property licensed by Genevant from the Company commercializes a sublicensed product, the Company becomes entitled to receive a specified percentage of certain revenue that may be received by Genevant for such sublicense, including royalties, commercial milestones and other sales-related revenue, or, if less, tiered low single-digit royalties on net sales of the sublicensed product. The specified percentage is 20% in the case of a mere sublicense (i.e., naked sublicense) by Genevant without additional contribution and 14% in the case of a bona fide collaboration with Genevant.

Additionally, if Genevant receives proceeds from an action for infringement by any third parties of the Company's intellectual property licensed to Genevant, the Company would be entitled to receive, after deduction of litigation costs, 20% of the proceeds received by Genevant or, if less, tiered low single-digit royalties on net sales of the infringing product (inclusive of the proceeds from litigation or settlement, which would be treated as net sales).

The Company accounts for its interest in Genevant as equity securities without readily determinable fair values. Accordingly, an estimate of the fair value of the securities is based on the original cost less previously recognized equity method losses, less impairments, plus or minus changes resulting from observable price changes in orderly transactions for identical or a similar Genevant securities. As of June 30, 2023, the carrying value of the Company's investment in Genevant was zero and the Company owned approximately 16% of the common equity of Genevant.

6. Accounts payable and accrued liabilities

Accounts payable and accrued liabilities are comprised of the following:

	June 30, 2023	December 31, 2022
	(in thousands)	
Trade accounts payable	$ 1,044	$ 3,520
Research and development accruals	4,387	8,261
Professional fee accruals	683	512
Payroll accruals	2,691	3,730
Other accrued liabilities	—	6
Total accounts payable and accrued liabilities	$ 8,805	$ 16,029

7. Sale of future royalties

On July 2, 2019, the Company entered into a Purchase and Sale Agreement (the "Agreement") with the Ontario Municipal Employees Retirement System ("OMERS"), pursuant to which the Company sold to OMERS part of its royalty interest on future global net sales of ONPATTRO® (Patisiran) ("ONPATTRO"), an RNA interference therapeutic currently being sold by Alnylam Pharmaceuticals, Inc. ("Alnylam").

ONPATTRO utilizes the Company's LNP technology, which was licensed to Alnylam pursuant to the Cross-License Agreement, dated November 12, 2012, by and between the Company and Alnylam (the "LNP License Agreement"). Under the terms of the LNP License Agreement, the Company is entitled to tiered royalty payments on global net sales of ONPATTRO ranging from 1.00% to 2.33% after offsets, with the highest tier applicable to annual net sales above $500 million. This royalty interest was sold to OMERS, effective as of January 1, 2019, for $20 million in gross proceeds before advisory fees. OMERS will retain this entitlement until it has received $30 million in royalties, at which point 100% of such royalty interest on future global net sales of ONPATTRO will revert to the Company. OMERS has assumed the risk of collecting up to $30 million of future royalty payments from Alnylam and the Company is not obligated to reimburse OMERS if they fail to collect any such future royalties.

The $30 million in royalties to be paid to OMERS is accounted for as a liability, with the difference between the liability and the gross proceeds received accounted for as a discount. The discount, as well as $1.5 million of transaction costs, will be amortized as interest expense based on the projected balance of the liability as of the beginning of each period. As of June 30, 2023, the Company estimated an effective annual interest rate of approximately 7.2%. Over the course of the Agreement, the actual interest rate will be affected by the amount and timing of royalty revenue recognized and changes in the timing of forecasted royalty revenue. On a quarterly basis, the Company will reassess the expected timing of the royalty revenue, recalculate the amortization and effective interest rate and adjust the accounting prospectively as needed.

The Company recognizes non-cash royalty revenue related to the sales of ONPATTRO during the term of the Agreement. As royalties are remitted to OMERS from Alnylam, the balance of the recognized liability is effectively repaid over the life of the Agreement. From the inception of the royalty sale through June 30, 2023, the Company has recorded an aggregate of $20.8 million of non-cash royalty revenue for royalties earned by OMERS. There are a number of factors that could materially affect the amount and timing of royalty payments from Alnylam, none of which are within the Company's control.

During the six months ended June 30, 2023, the Company recognized non-cash royalty revenue of $1.9 million and related non-cash interest expense of $0.4 million. During the six months ended June 30, 2022, the Company recognized non-cash royalty revenue of $3.0 million and related non-cash interest expense of $1.0 million.
The table below shows the activity related to the net liability for the six months ended June 30, 2023 and 2022:

	Six Months Ended June 30,	
	2023	2022
	(in thousands)	
Net liability related to sale of future royalties - beginning balance	$ 10,365	$ 16,296
Non-cash royalty revenue	(1,944)	(3,048)
Non-cash interest expense	366	985
Net liability related to sale of future royalties - ending balance	$ 8,787	$ 14,233

In addition to the royalty from the LNP License Agreement, the Company is also receiving a second royalty interest ranging from 0.75% to 1.125% on global net sales of ONPATTRO, with 0.75% applying to sales greater than $500 million, originating from a settlement agreement and subsequent license agreement with Acuitas Therapeutics, Inc. ("Acuitas"). The royalty from Acuitas has been retained by the Company and was not part of the royalty sale to OMERS.

8. Contingencies and commitments

Stock Purchase Agreement with Enantigen

In October 2014, Arbutus Inc., the Company's wholly-owned subsidiary, acquired all of the outstanding shares of Enantigen Therapeutics, Inc. ("Enantigen") pursuant to a stock purchase agreement. The amount paid to Enantigen's selling shareholders could be up to an additional $102.5 million in sales performance milestones in connection with the sale of the first commercialized product by the Company for the treatment of HBV, regardless of whether such product is based upon assets acquired under this agreement, and a low single-digit royalty on net sales of such first commercialized HBV product, up to a maximum royalty payment of $1.0 million that, if paid, would be offset against the Company's milestone payment obligations. Certain other development milestones related to the acquisition were tied to programs which are no longer under development by the Company, and therefore the contingency related to those development milestones is zero.

The contingent consideration is a financial liability and is measured at its fair value at each reporting period, with any changes in fair value from the previous reporting period recorded in the statements of operations and comprehensive loss (see Note 3).

The fair value of the contingent consideration was $7.2 million as of June 30, 2023.

9. Collaborations, contracts and licensing agreements

Collaborations

Qilu Pharmaceutical Co., Ltd.

In December 2021, the Company entered into a technology transfer and licensing agreement (the "License Agreement") with Qilu Pharmaceutical Co., Ltd. ("Qilu"), pursuant to which the Company granted Qilu a sublicensable, royalty-bearing license, under certain intellectual property owned by the Company, which is non-exclusive as to development and manufacturing and exclusive with respect to commercialization of imdusiran, including pharmaceutical products that include imdusiran, for the treatment or prevention of hepatitis B in China, Hong Kong, Macau and Taiwan (the "Territory").

In partial consideration for the rights granted by the Company, Qilu paid the Company a one-time upfront cash payment of $40.0 million, net of withholding taxes, on January 5, 2022, and agreed to pay the Company milestone payments totaling up to $245.0 million, net of withholding taxes, upon the achievement of certain technology transfer, development, regulatory and commercialization milestones. Qilu paid $4.4 million of withholding taxes to the Chinese taxing authority on the Company's behalf, related to the upfront cash payment. In addition, Qilu agreed to pay the Company double-digit royalties into the low twenties percent based upon annual net sales of imdusiran in the Territory. The royalties are payable on a product-by-product and region-by-region basis, subject to certain limitations.

Qilu is responsible for all costs related to developing, obtaining regulatory approval for, and commercializing imdusiran for the treatment or prevention of hepatitis B in the Territory. Qilu is required to use commercially reasonable efforts to develop, seek regulatory approval for, and commercialize at least one imdusiran product candidate in the Territory. A joint development committee has been established between the Company and Qilu to coordinate and review the development, manufacturing and commercialization plans. Both parties also have entered into a supply agreement and related quality agreement pursuant to which the Company will manufacture or have manufactured and supply Qilu with all quantities of imdusiran necessary for Qilu to develop and commercialize in the Territory until the Company has completed manufacturing technology transfer to Qilu and Qilu has received all approvals required for it or its designated contract manufacturing organization to manufacture imdusiran in the Territory.

Concurrent with the execution of the License Agreement, the Company entered into a Share Purchase Agreement (the "Share Purchase Agreement") with Anchor Life Limited, a company established pursuant to the applicable laws and regulations of Hong Kong and an affiliate of Qilu (the "Investor"), pursuant to which the Investor purchased 3,579,952 of the Company's common shares at a purchase price of USD $4.19 per share, which was a 15% premium on the thirty-day average closing price of the common shares as of the close of trading on December 10, 2021 (the "Share Transaction"). The Company received $15.0 million of gross proceeds from the Share Transaction on January 6, 2022. The common shares sold to the Investor in the Share Transaction represented approximately 2.5% of the common shares outstanding immediately prior to the execution of the Share Purchase Agreement.

The License Agreement falls under the scope of ASC 808 as both parties are active participants in the arrangement and are exposed to significant risks and rewards. While this arrangement is in the scope of ASC 808, the Company analogizes to ASC 606 for some aspects of this arrangement, including for the delivery of a good or service (i.e., a unit of account). In accordance with the guidance, the Company identified the following commitments under the arrangement: (i) rights to develop, use, sell, have sold, offer for sale and import any product comprised of Licensed Product (the "Qilu License") and (ii) drug supply obligations and manufacturing technology transfer (the "Manufacturing Obligations"). The Company determined that these two commitments are not distinct performance obligations for purposes of recognizing revenue as the manufacturing process is highly specialized and Qilu would not be able to benefit from the Qilu License without the Company's involvement in the manufacturing activities until the transfer of the manufacturing know-how is complete. As such, the Company will combine these commitments into one performance obligation to which the transaction price will be allocated to and will recognize this transaction price associated with the bundled performance obligation over time using an inputs method based on labor hours expended by the Company on its Manufacturing Obligations.

The Company determined the initial transaction price of the combined performance obligation to be $49.3 million, which includes the $40.0 million upfront fee, $4.4 million of withholding taxes paid by Qilu on behalf of the Company, the premium paid for the Share Transaction of $4.1 million, and $0.8 million associated with certain manufacturing costs expected to be reimbursed by Qilu. The Company determined the Milestone Payments to be variable consideration subject to constraint at inception. At the end of each subsequent reporting period, the Company will reevaluate the probability of achievement of the future development, regulatory, and sales milestones subject to constraint and, if necessary, will adjust its estimate of the overall transaction price. Any such adjustments will be recorded on a cumulative catch-up basis, which would affect revenues and earnings in the period of adjustment. The following table outlines the transaction price and the changes to the related asset and liability balances during the six months ended June 30, 2023:

	Six Months Ended June 30, 2023		
	Transaction Price	Cumulative Collaboration Revenue Recognized	Deferred License Revenue
	(in thousands)		
Combined performance obligation	$ 49,270	$ 33,143	$ 16,127
Less contract asset			(800)
Total deferred license revenue			15,327
Less current portion of deferred license revenue			15,327
Non-current deferred license revenue			$ —

The Company recognized $3.0 million and $7.1 million of revenue based on labor hours expended by the Company on its Manufacturing Obligations during the three and six months ended June 30, 2023, respectively, and $11.0 million and $20.7 million during the three and six months ended June 30, 2022, respectively.

As of June 30, 2023, the balance of the deferred license revenue was $16.1 million, which, in accordance with ASC 210-20, was partially offset by the contract asset associated with the manufacturing cost reimbursement of $0.8 million, resulting in a net deferred license revenue liability of $15.3 million. The $4.4 million of withholding taxes paid by Qilu on behalf of the Company was recorded as income tax expense during the twelve months ended December 31, 2022.

The Company incurred $0.6 million of incremental costs in obtaining the Qilu License, which the Company capitalized in other current assets and other assets and amortizes as a component of general and administrative expense commensurate with the recognition of the combined performance obligation. The Company recognized amortization expense of less than $0.1 million and $0.1 million for the three and six months ended June 30, 2023, respectively, and $0.1 million and $0.3 million for the three and six months ended June 30, 2022, respectively.

The Company reevaluates the transaction price and the total estimated labor hours expected to be incurred to satisfy the performance obligations and adjusts the deferred revenue at the end of each reporting period. Such changes will result in a change to the amount of collaboration revenue recognized and deferred revenue.

Vaccitech plc

In July 2021, the Company entered into a clinical collaboration agreement with Vaccitech plc ("Vaccitech") to evaluate

imdusiran followed by Vaccitech's VTP-300, a proprietary T-cell stimulating HBV antigen-specific immunotherapeutic, in nucleos(t)ide reverse transcriptase inhibitor ("NrtI")-suppressed patients with cHBV.

The Company is responsible for managing this Phase 2a proof-of-concept clinical trial, subject to oversight by a joint development committee comprised of representatives from the Company and Vaccitech. The Company and Vaccitech retain full rights to their respective product candidates and will split all costs associated with the clinical trial. The Company incurred $0.3 million and $0.8 million of expenses, net of reimbursements from Vaccitech, related to the collaboration during the three and six months ended June 30, 2023, respectively, and reflected those costs in research and development in the statements of operations and comprehensive loss. The Company incurred $0.2 million and $0.4 million of such costs for the same respective periods in 2022.

Assembly Biosciences, Inc.

In August 2020, the Company entered into a clinical collaboration agreement with Assembly Biosciences, Inc. ("Assembly") to evaluate imdusiran in combination with Assembly's first-generation HBV core inhibitor (capsid inhibitor) candidate vebicorvir ("VBR") and standard-of-care NA therapy for the treatment of patients with HBV infection. After completing enrollment in the Phase 2a proof-of-concept clinical trial, in July 2022, Assembly announced its plan to discontinue development of VBR. In consultation with Assembly, the Company continued dosing patients in this clinical trial in order to fully and accurately assess the results. Based on preliminary data reported in late 2022, both parties have mutually agreed to discontinue the clinical trial following completion of the final, on-treatment visit at week 48. The Company and Assembly are sharing in the costs of the collaboration. The Company incurred $0.6 million and $1.3 million of expenses related to the collaboration during the three and six months ended June 30, 2023, respectively, and $0.8 million and $1.4 million during the three and six months ended June 30, 2022, respectively. Those costs are reflected in research and development in the statements of operations and comprehensive loss. Except to the extent necessary to carry out Assembly's responsibilities with respect to the collaboration trial, the Company has not provided any license grant to Assembly for use of its imdusiran compound.

X-Chem, Inc. and Proteros biostructures GmbH

In March 2021, the Company entered into a discovery research and license agreement, as amended, with X-Chem, Inc. ("X-Chem") and Proteros biostructures GmbH ("Proteros") to focus on the discovery of novel inhibitors targeting the SARS-CoV-2 nsp5 main protease (Mpro). The agreement is designed to accelerate the development of pan-coronavirus agents to treat COVID-19 and potential future coronavirus outbreaks. This collaboration brought together the Company's expertise in the discovery and development of antiviral agents with X-Chem's industry leading DNA-encoded library (DEL) technology and Proteros' protein sciences, biophysics and structural biology capabilities and provides important synergies to potentially identify safe and effective therapies against coronaviruses including SARS-CoV-2. The collaboration allows for the rapid screening of one of the largest small molecule libraries against Mpro (an essential protein required for the virus to replicate itself) and the use of state-of-the-art structure guided methods to rapidly optimize Mpro inhibitors to progress to clinical candidates. Through this collaboration, the Company has identified and obtained a worldwide exclusive license to several molecules that inhibit Mpro, a validated target for the treatment of COVID-19 and potential future coronavirus outbreaks. In the fourth quarter of 2022, the Company nominated AB-343 as its lead candidate that inhibits Mpro and the Company is also continuing lead optimization activities for an nsp12 viral polymerase candidate.

The agreement provides for payments by the Company to X-Chem and Proteros upon satisfaction of certain development, regulatory and commercial milestones, as well as royalties on sales. The agreement with X-Chem and Proteros was amended, effective March 31, 2022, primarily to extend the term of the collaboration and update the funding and fee structure. The Company incurred $0.5 million and $1.1 million of expenses related to the collaboration during the three and six months ended June 30, 2023, respectively, and less than $0.1 million and $0.3 million during the three and six months ended June 30, 2022, respectively. Those costs are reflected in research and development in the statements of operations and comprehensive loss.

Royalty Entitlements

Alnylam Pharmaceuticals, Inc. and Acuitas Therapeutics, Inc.

The Company has two royalty entitlements to Alnylam's global net sales of ONPATTRO.

In 2012, the Company entered into the LNP License Agreement with Alnylam that entitles Alnylam to develop and commercialize products with the Company's LNP technology. Alnylam launched ONPATTRO, the first approved application of the Company's LNP technology, in 2018. Under the terms of this license agreement, the Company is entitled to tiered royalty payments on global net sales of ONPATTRO ranging from 1.00% - 2.33% after offsets, with the highest tier applicable to annual net sales above $500 million. This royalty interest was sold to OMERS, effective as of January 1, 2019, for $20 million in gross proceeds before advisory fees. OMERS will retain this entitlement until it has received $30 million in royalties, at which point 100% of this royalty entitlement on future global net sales of ONPATTRO will revert back to the Company. OMERS has assumed the risk of collecting up to $30 million of future royalty payments from Alnylam and the Company is not obligated to reimburse OMERS if they fail to collect any such future royalties. If this royalty entitlement reverts to the Company, it has the potential to provide an active royalty stream or to be otherwise monetized again in full or in part. From the inception of the royalty sale through June 30, 2023, an aggregate of $20.8 million of royalties have been earned by OMERS.

The Company also is receiving a second royalty interest of 0.75% to 1.125% on global net sales of ONPATTRO, with 0.75% applying to sales greater than $500 million, originating from a settlement agreement and subsequent license agreement with Acuitas. This royalty entitlement from Acuitas has been retained by the Company and was not part of the royalty entitlement sale to OMERS.

Revenues are summarized in the following table:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
	(in thousands)		(in thousands)	
Revenue from collaborations and licenses				
Acuitas Therapeutics, Inc.	$ 861	$ 1,550	$ 2,266	$ 3,084
Qilu Pharmaceutical Co., Ltd.	3,024	11,024	7,128	20,655
Other milestone and royalty payments	—	(18)	—	35
Non-cash royalty revenue				
Alnylam Pharmaceuticals, Inc.	766	1,685	1,944	3,048
Total revenue	$ 4,651	$ 14,241	$ 11,338	$ 26,822

10. Shareholders' equity

Authorized share capital

The Company's authorized share capital consists of an unlimited number of common shares and preferred shares, without par value, and 1,164,000 Series A participating convertible preferred shares, without par value.

Open Market Sale Agreement

The Company has an Open Market Sale Agreement with Jefferies LLC dated December 20, 2018, as amended by Amendment No. 1, dated December 20, 2019, Amendment No. 2, dated August 7, 2020 and Amendment No. 3, dated March 4, 2021 (as amended, the "Sale Agreement"), under which the Company may issue and sell common shares, from time to time.

On December 23, 2019, the Company filed a shelf registration statement on Form S-3 with the Securities and Exchange Commission (the "SEC") (File No. 333-235674) and accompanying base prospectus, which was declared effective by the SEC on January 10, 2020 (the "January 2020 Registration Statement"), for the offer and sale of up to $150.0 million of the Company's securities. The January 2020 Registration Statement also contained a prospectus supplement for an offering of up to $50.0 million of the Company's common shares pursuant to the Sale Agreement. This prospectus supplement was fully utilized during 2020. On August 7, 2020, the Company filed a prospectus supplement with the SEC (the "August 2020 Prospectus Supplement") for an offering of up to an additional $75.0 million of its common shares pursuant to the Sale Agreement under the January 2020 Registration Statement. The August 2020 Prospectus Supplement was fully utilized during 2020.

On August 28, 2020, the Company filed a shelf registration statement on Form S-3 with the SEC (File No. 333-248467) and accompanying base prospectus, which was declared effective by the SEC on October 22, 2020 (the "October 2020 Registration Statement"), for the offer and sale of up to $200.0 million of the Company's securities. On March 4, 2021, the Company filed a prospectus supplement with the SEC (the "March 2021 Prospectus Supplement") for an offering of up to an additional $75.0 million of its common shares pursuant to the Sale Agreement under the October 2020 Registration Statement. The March 2021

Prospectus Supplement was fully utilized during 2021. On October 8, 2021, the Company filed a prospectus supplement with the SEC (the "October 2021 Prospectus Supplement") for an offering of up to an additional $75.0 million of its common shares pursuant to the Sale Agreement under the October 2020 Registration Statement.

On November 4, 2021, the Company filed a shelf registration statement on Form S-3 with the SEC (File No. 333-260782) and accompanying base prospectus, which was declared effective by the SEC on November 18, 2021 (the "November 2021 Registration Statement"), for the offer and sale of up to $250.0 million of the Company's securities.

On March 3, 2022, the Company filed a prospectus supplement with the SEC (the "March 2022 Prospectus Supplement") for an offering of up to an additional $100.0 million of its common shares pursuant to the Sale Agreement under: (i) the January 2020 Registration Statement; (ii) the October 2020 Registration Statement; and (iii) the November 2021 Registration Statement.

During the three and six months ended June 30, 2023, the Company issued 1,790,546 and 9,214,168 common shares pursuant to the Sale Agreement, respectively, resulting in net proceeds of approximately $4.7 million and $24.6 million, respectively. During the three and six months ended June 30, 2022, the Company issued 69,048 common shares pursuant to the Sale Agreement, resulting in net proceeds of $0.3 million. As of June 30, 2023, there was approximately $105.8 million of common shares remaining available in aggregate under the October 2021 Prospectus Supplement and the March 2022 Prospectus Supplement.

Stock-based compensation

The table below summarizes information about the Company's stock-based compensation for the three and six months ended June 30, 2023 and 2022 and the expense recognized in the condensed consolidated statements of operations:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
	(in thousands, except share and per share data)			
Stock options				
Options granted during period	547,600	362,280	4,298,400	4,734,575
Weighted average exercise price	$ 2.75	$ 2.33	$ 2.88	$ 2.78
Restricted stock units ("RSUs")				
Restricted stock units granted during period	—	—	1,344,550	—
Grant date fair value	$ —	$ —	$ 2.90	$ —
Stock compensation expense				
Research and development	$ 977	$ 696	$ 1,852	$ 1,454
General and administrative	1,987	1,369	3,243	2,346
Total stock compensation expense	$ 2,964	$ 2,065	$ 5,095	$ 3,800

The RSUs vest in three equal annual installments beginning one year from the grant date.

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

You should read the following discussion and analysis by our management of our financial position and results of operations in conjunction with our audited consolidated financial statements and related notes thereto included as part of our Annual Report on Form 10-K for the year ended December 31, 2022 and our unaudited condensed consolidated financial statements for the three and six months ended June 30, 2023. Our consolidated financial statements have been prepared in accordance with United States generally accepted accounting principles and are presented in U.S. dollars.

REFERENCES TO ARBUTUS BIOPHARMA CORPORATION

Throughout this Quarterly Report on Form 10-Q ("Form 10-Q"), the "Company," "Arbutus," "we," "us," and "our," except where the context requires otherwise, refer to Arbutus Biopharma Corporation and its consolidated subsidiaries, and "our board of directors" refers to the board of directors of Arbutus Biopharma Corporation.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Form 10-Q contains "forward-looking statements" or "forward-looking information" within the meaning of applicable United States and Canadian securities laws (we collectively refer to these items as "forward-looking statements"). Forward-looking statements are generally identifiable by use of the words "believes," "may," "plans," "will," "anticipates," "intends," "budgets," "could," "estimates," "expects," "forecasts," "projects" and similar expressions that are not based on historical fact or that are predictions of or indicate future events and trends, and the negative of such expressions. Forward-looking statements in this Form 10-Q, including the documents incorporated by reference, include statements about, among other things:

- our strategy, future operations, preclinical research, preclinical studies, clinical trials, prospects and the plans of management;
- the potential for our product candidates to achieve their desired or anticipated outcomes;
- the expected cost, timing and results of our clinical development plans and clinical trials, including our clinical collaborations with third parties;
- the discovery, development and commercialization of a curative combination regimen for chronic hepatitis B infection, a disease of the liver caused by the hepatitis B virus ("HBV");
- the potential of our product candidates to improve upon the standard of care and contribute to a functional curative combination treatment regimen;
- obtaining necessary regulatory approvals;
- obtaining adequate financing through a combination of financing activities and operations;
- the potential for us to discover and/or develop new molecular entities for treating coronaviruses, including COVID-19;
- the expected returns and benefits from strategic alliances, licensing agreements, and research collaborations with third parties, and the timing thereof;
- our expectations regarding our technology licensed to third parties, and the timing thereof;
- our anticipated revenue and expense fluctuation and guidance;
- our expectations regarding the timing of announcing data from our ongoing clinical trials;
- our expectations regarding current patent disputes and litigation;
- our expectation of a net cash burn between $90 million and $95 million in 2023, excluding any proceeds from our Open Market Sale Agreement; and
- our belief that we have sufficient cash resources to fund our operations into the first quarter of 2025,

as well as other statements relating to our future operations, financial performance or financial condition, prospects or other future events. Forward-looking statements appear primarily in the sections of this Form 10-Q entitled “Part I, Item 1-Financial Statements (Unaudited),” and “Part I, Item 2-Management’s Discussion and Analysis of Financial Condition and Results of Operations.”

Forward-looking statements are based upon current expectations and assumptions and are subject to a number of known and unknown risks, uncertainties and other factors that could cause actual results to differ materially and adversely from those expressed or implied by such statements. Factors that could cause or contribute to such differences include, but are not limited to, those discussed in this Form 10-Q and our Annual Report on Form 10-K for the year ended December 31, 2022 (the “Form 10-K”), and in particular the risks and uncertainties discussed under “Item 1A-Risk Factors” of this Form 10-Q and the Form 10-K. As a result, you should not place undue reliance on forward-looking statements.

Additionally, the forward-looking statements contained in this Form 10-Q represent our views only as of the date of this Form 10-Q (or any earlier date indicated in such statement). While we may update certain forward-looking statements from time to time, we specifically disclaim any obligation to do so, even if new information becomes available in the future. However, you are advised to consult any further disclosures we make on related subjects in the periodic and current reports that we file with the Securities and Exchange Commission.

The foregoing cautionary statements are intended to qualify all forward-looking statements wherever they may appear in this Form 10-Q. For all forward-looking statements, we claim protection of the safe harbor for the forward-looking statements contained in the Private Securities Litigation Reform Act of 1995.

This Form 10-Q also contains estimates, projections and other information concerning our industry, our business, and the markets for certain diseases, including data regarding the estimated size of those markets, and the incidence and prevalence of certain medical conditions. Information that is based on estimates, forecasts, projections, market research or similar methodologies is inherently subject to uncertainties and actual events or circumstances may differ materially from events and circumstances reflected in this information. Unless otherwise expressly stated, we obtained this industry, business, market and other data from reports, research surveys, studies and similar data prepared by market research firms and other third parties, industry, medical and general publications, government data and similar sources.

OVERVIEW

Arbutus Biopharma Corporation ("Arbutus", the "Company", "we", "us", and "our") is a clinical-stage biopharmaceutical company leveraging its extensive virology expertise to develop novel therapeutics that target specific viral diseases. Our current focus areas include hepatitis B virus ("HBV"), SARS-CoV-2, and other coronaviruses. To address HBV, we are developing an RNA interference ("RNAi") therapeutic, imdusiran (AB-729), an oral PD-L1 inhibitor, AB-101, and an oral RNA destabilizer, AB-161, to potentially identify a combination regimen with the aim of providing a functional cure for patients with chronic HBV infection ("cHBV") by suppressing viral replication, reducing surface antigen and reawakening the immune system. We believe our lead compound, imdusiran, is the only RNAi therapeutic with evidence of immune re-awakening. Imdusiran is currently being evaluated in multiple phase 2 clinical trials. In addition, a Phase 1 clinical trial with AB-161 was recently initiated. We also have an ongoing drug discovery and development program directed to identifying novel, orally active agents for treating coronaviruses, including SARS-CoV-2, where we have nominated a compound, AB-343, and have begun IND-enabling preclinical studies. In addition, we are also exploring oncology applications for our internal PD-L1 portfolio.

Strategy

The core elements of our strategy include:

- **Developing a broad portfolio of compounds that target cHBV.** Our HBV product pipeline includes a subcutaneously-delivered RNAi therapeutic, an oral HBV RNA destabilizer compound and an oral PD-L1 inhibitor. We believe that a combination of compounds that can suppress HBV DNA replication and hepatitis B surface antigen ("HBsAg") expression as well as reawaken patients' HBV-specific immune response could address the most important elements to achieving a functional cure. We define a functional cure as unquantifiable plasma HBV DNA and HBsAg levels more than six months after discontinuation of all treatment, with or without quantifiable anti-HBsAg antibodies.

  Imdusiran is our proprietary subcutaneously-delivered RNAi therapeutic product candidate that suppresses all HBV antigens, including HBsAg expression, which is thought to be a key prerequisite to enable reawakening of a patient's immune system to respond to HBV. Imdusiran is currently in two Phase 2a proof-of-concept clinical trials in combination with other agents with potentially complementary mechanisms of action, and we are also continuing to follow patients from our Phase 1a/1b clinical trial ("AB-729-001"). Preliminary data from AB-729-001 has shown that treatment with imdusiran provided robust and comparable HBsAg declines regardless of dose, dosing interval or patient characteristics and was generally safe and well-tolerated after completing dosing in 41 patients. Preliminary data also suggests that treatment with imdusiran increased HBV-specific immune responses and, in a small number of patients who discontinued both imdusiran and nucleos(t)ide analogue ("NA") therapy, a sustained reduction in HBsAg and HBV DNA persisted after stopping imdusiran. The clinical data for imdusiran continues to support its development as a potential cornerstone agent for the treatment of cHBV infection.

  AB-161 is our next-generation oral HBV specific RNA destabilizer. We have conducted extensive non-clinical safety evaluations with AB-161 that gives us confidence in this molecule's ability to circumvent the peripheral neuropathy findings seen in non-clinical safety studies with our first-generation oral RNA destabilizer, AB-452. At the Global Hepatitis Summit in April 2023, we presented preclinical data showing that AB-161 provides robust anti-HBV activity, including suppression of HBV RNA and HBsAg production *in vitro* and *in vivo*. Our single-ascending Phase 1 clinical trial with AB-161 in healthy subjects is ongoing.

  AB-101 is our oral PD-L1 inhibitor that has the potential to reawaken patients' HBV-specific immune response by inhibiting PD-L1. Preclinical data in an HBV mouse model was presented at the 2022 AASLD Liver Meeting showing that combination treatment with AB-101 and an HBV-targeting GalNAc-siRNA agent resulted in activation and increased frequency of HBV-specific T-cells and greater anti-HBsAg antibody production. This favorable preclinical profile supports further development of AB-101 as a therapeutic modality for cHBV treatment. In April 2023, we received verbal communication from the U.S. Food and Drug Administration ("FDA") that the AB-101 Investigational New Drug ("IND") application has been placed on clinical hold. For purposes of clarity, the Phase 1 clinical trial had not been initiated and we had not dosed any patients with AB-101. In May 2023, we received the clinical hold letter from the FDA, which raised questions about certain preclinical data and aspects of the clinical trial design. We thus decided to pursue other regulatory pathways outside of the US while evaluating our path forward with the FDA. Based on the communications from the FDA, we no longer intend to report initial data from the single-ascending dose portion of a Phase 1 clinical trial in the second half of 2023. In July 2023, the New Zealand Medicine and Medical Device Safety Authority (Medsafe) approved our CTA application for a Phase 1 clinical trial in New Zealand for AB-101, and we believe the protocol approved by Medsafe adequately addresses the clinical trial design and safety

monitoring issues raised by the FDA. We included the clinical hold letter from the FDA as part of our CTA application with New Zealand. We are planning to initiate a Phase 1 clinical trial in the third quarter of 2023. We are also exploring potential oncology applications for our internal PD-L1 portfolio.

- **Combining therapeutic product candidates with complementary mechanisms of action to find a functional cure for people with cHBV.** We believe that our proprietary product candidates imdusiran, AB-101 and AB-161 may provide our first proprietary combination therapy for patients with cHBV. In-line with our strategy to position imdusiran as a potential cornerstone therapeutic in future HBV combination regimens, and to help guide future development of combination therapies of imdusiran with other compounds from our proprietary HBV portfolio, we are evaluating imdusiran in combination with other agents with potentially complementary mechanisms of action, including the following:

    - Imdusiran in combination with ongoing standard-of-care NA therapy and short courses of Peg-IFNα-2a in patients with cHBV in a Phase 2a proof-of-concept clinical trial ("AB-729-201"). Preliminary data from this clinical trial suggests that the addition of Peg-IFNα-2a to imdusiran treatment was generally well tolerated and appears to result in continued HBsAg declines in some patients.

    - Imdusiran in combination with Vaccitech plc's ("Vaccitech") VTP-300, a proprietary T-cell stimulating HBV antigen-specific immunotherapeutic, and NA therapy for the treatment of patients with cHBV in a Phase 2a proof-of-concept clinical trial ("AB-729-202"). We recently dosed the first patient in an additional treatment arm of this clinical trial that includes an approved PD-1 monoclonal antibody inhibitor, nivolumab (Opdivo®).

- **Advancing small molecule antiviral product candidates to treat COVID-19 and future coronavirus outbreaks.** This program is focused on the discovery and development of new molecular entities for treating coronaviruses, including COVID-19, that address specific viral targets including the nsp5 viral protease ("Mpro") and the nsp12 viral polymerase.

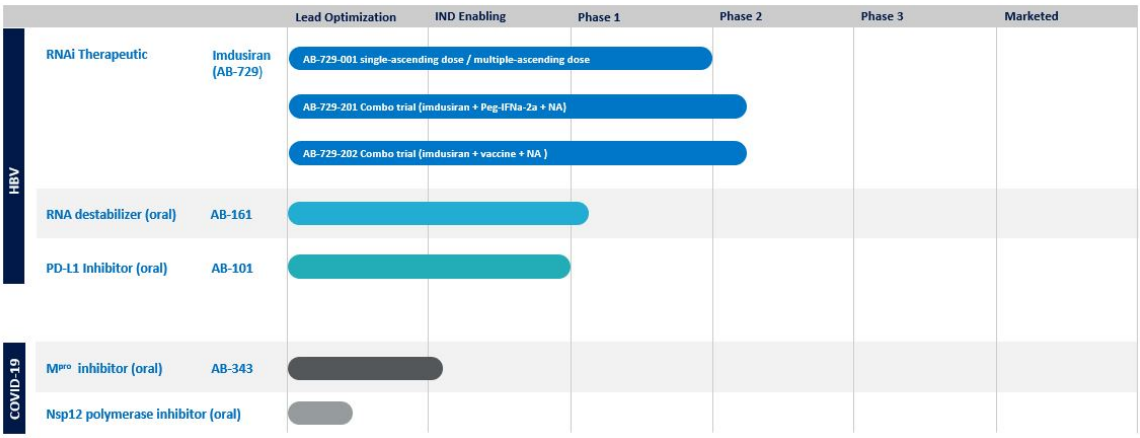
    - In the fourth quarter of 2022, we nominated AB-343 as our lead coronavirus drug candidate that inhibits the SARS-CoV-2 Mpro, a validated target for the treatment of COVID-19 and potential future coronavirus outbreaks. At the 36th International Conference on Antiviral Research in March 2023, we presented preclinical data that demonstrated the antiviral potency, selectivity and favorable pharmacokinetic profile of AB-343, which supports the further development of AB-343 as a potential ritonavir-free oral treatment for COVID-19 and other human coronaviruses. We are conducting IND-enabling studies for AB-343. We are also continuing lead optimization activities for an nsp12 viral polymerase inhibitor, which could potentially be combined with AB-343 to achieve better patient treatment outcomes and for use in prophylactic settings.

Our Product Candidates

Our product pipeline includes multiple product candidates that target various steps in the HBV viral lifecycle and pan-coronavirus compounds that target essential viral targets for replication.

Our product pipeline consists of the following programs:

Broad Pipeline



We continue to explore expansion opportunities for our pipeline through internal discovery and development activities and through potential strategic alliances.

RNAi therapeutic, imdusiran (AB-729)

RNAi therapeutics represent a significant advancement in drug development. RNAi therapeutics utilize a natural pathway within cells to silence genes by eliminating the disease-causing proteins that they code for. We are developing RNAi therapeutics that are designed to reduce HBsAg expression and other HBV antigens in people with cHBV. Reducing HBsAg is widely believed to be a key prerequisite to enable a patient's immune system to reawaken and respond against the virus.

Imdusiran (AB-729) is a subcutaneously-delivered RNAi single-trigger therapeutic targeted to hepatocytes using our proprietary covalently conjugated GalNAc delivery technology. Imdusiran reduces all HBV antigens and inhibits viral replication.

Phase 1a/1b single- and multiple-dose clinical trial (AB-729-001)

In this three-part clinical trial, we investigated the safety, tolerability, pharmacokinetics, and pharmacodynamics of single- and multi-doses of imdusiran in healthy subjects and in cHBV patients with the goal of identifying the most appropriate doses and dosing intervals to take forward into Phase 2 clinical development.

The first two parts evaluated single ascending doses of imdusiran in healthy subjects and in patients with cHBV, respectively. Data showed that a 60mg or 90mg single dose of imdusiran results in robust HBsAg and HBV DNA declines in HBV DNA positive patients. Part 3 of the trial dosed HBV DNA negative/positive patients with 60mg or 90mg of imdusiran every 4, 8 or twelve weeks. Dosing of patients in Part 3 has been completed and we are continuing to follow these patients.

Data from Part 3 of the AB-729-001 clinical trial was presented at the 2022 European Association for the Study of the Liver (EASL) International Liver Congress™ (ILC) in June 2022 and showed that repeat dosing of 60mg and 90mg of imdusiran in 41 patients resulted in robust and comparable HBsAg declines in HBeAg positive/negative and HBV DNA positive/negative patients at week 48 (1.89 to 2.15 $\log_{10}$ decline in HBsAg). Fifty percent of the patients (16 out of 32) maintained HBsAg levels below 100 IU/mL 24 weeks after their last dose of imdusiran. Patients treated with imdusiran experienced an increase in HBV-specific T-cells activation and a decrease in exhausted T-cells. In this trial, imdusiran was generally safe and well-tolerated.

At the AASLD Liver Meeting in November 2022, we presented additional data from Part 3 of the AB-729-001 clinical trial, which included nine patients who had previously completed 48 weeks of treatment with imdusiran, and 24 weeks later met protocol-defined criteria to also stop NA therapy. These nine patients had completed 12 to 44 weeks of follow-up after discontinuing their NA therapy. None had met the protocol-defined criteria to restart NA therapy and there was no evidence of clinical or biochemical relapse. HBsAg levels remained at 1.05 $\log_{10}$ to 2.35 $\log_{10}$ below pre-trial levels in all nine patients.

Three patients experienced transient HBV DNA elevations that spontaneously resolved without intervention, which further supports imdusiran's potential for immunological control.

At the Global Hepatitis Summit in April 2023, we reported in an oral presentation additional off-treatment data from these nine patients who had stopped all treatments. One patient restarted NA therapy at the investigator's request after the week 20 visit; no alanine transaminase ("ALT") elevation or safety signals were observed. Another patient met the protocol-defined HBV DNA criteria to restart NA therapy without evidence of any ALT flare. The seven remaining patients continue to maintain low HBV DNA levels off all therapy, and HBsAg levels remain below baseline (-0.8 to -1.6 $\log_{10}$) up to one and a half years after the last dose of imdusiran. There were no adverse events reported and no ALT flares were observed in the clinical trial.

The new clinical data for imdusiran continues to support its development as a potential cornerstone agent for the treatment of cHBV infection. The efficacy and safety data for imdusiran, derived from up to one year of dosing, supported our view that 60 mg every 8 weeks was an appropriate dose to move forward in our Phase 2a clinical trials. To advance our efforts to position imdusiran as a potential cornerstone therapeutic in future HBV combination regimens, we are evaluating imdusiran in two Phase 2a proof-of-concept combination clinical trials with other agents with potentially complementary mechanisms of action, some via clinical collaborations with other companies as described below.

Phase 2a proof-of-concept clinical trial to evaluate imdusiran in combination with Peg-IFNα-2a (AB-729-201)

We have completed enrollment in a randomized, open label, multicenter Phase 2a proof-of-concept clinical trial investigating the safety and antiviral activity of imdusiran in combination with ongoing NA therapy and short courses of Peg-IFNα-2a in 43 stably NA-suppressed, HBeAg negative, non-cirrhotic patients with cHBV. After 24-weeks of dosing with imdusiran (60mg every 8 weeks), patients are randomized into one of four arms to receive ongoing NA therapy plus Peg-IFNα-2a for either 12 or 24 weeks, with or without additional doses of imdusiran. After completion of the assigned Peg-IFNα-2a treatment period, all patients will remain on NA therapy for the initial 24-week follow-up period, and will then discontinue NA treatment, provided they meet protocol-defined stopping criteria. Patients who stop NA therapy will enter an intensive follow-up period for 48 weeks.

At the EASL Congress in June 2023, we presented preliminary data from this clinical trial that suggests that the addition of Peg-IFNα-2a to imdusiran treatment was generally well tolerated and appears to result in continued HBsAg declines in some patients. The mean HBsAg decline from baseline during the lead-in phase was -1.6 $\log_{10}$ at week 24 of treatment which is comparable to what was previously seen in other clinical trials with imdusiran. Four patients reached HBsAg below the lower limit of quantitation (LLOQ) during Peg-IFNα-2a treatment.

Collaboration with Vaccitech (AB-729-202)

Through a clinical collaboration agreement with Vaccitech that we entered into in July 2021, we have completed enrollment in AB-729-202, a Phase 2a proof-of-concept clinical trial evaluating the safety, antiviral activity and immunogenicity of Vaccitech's VTP-300, a proprietary T-cell stimulating HBV antigen-specific immunotherapeutic, administered after imdusiran in NA-suppressed patients with cHBV. The trial is designed to enroll 40 NA-suppressed, HBeAg negative or positive, non-cirrhotic cHBV patients. All patients will receive imdusiran (60mg every 8 weeks) plus NA therapy for 24 weeks. At week 24, treatment with imdusiran will stop. Patients will continue only their NA therapy and will be randomized to receive VTP-300 or placebo at week 26, week 30 and at week 38 (if protocol-defined eligibility is met). At week 48, all patients will be evaluated for eligibility to discontinue NA therapy and will be followed for an additional 24-48 weeks. We anticipate providing preliminary data from patients who received the combination of imdusiran, NA therapy and VTP-300 in the second half of 2023.

We recently amended the AB-729-202 protocol to include an additional arm with an approved PD-1 inhibitor, nivolumab (Opdivo®). In this additional arm, twenty patients will receive imdusiran (60mg every 8 weeks) plus NA therapy for 24 weeks, followed by administration of VTP-300 plus a low dose of nivolumab in conjunction with the booster dose(s) only while remaining on their NA therapy. At week 48, all patients will be evaluated for eligibility to discontinue NA therapy, and will be followed for an additional 24-48 weeks. In June 2023, we announced that the first patient received their first dose of imdusiran in this additional arm. Preliminary data from this additional treatment arm are expected in 2024.

This clinical trial is being managed by us, subject to oversight by a joint development committee comprised of representatives from both companies. We and Vaccitech retain full rights to our respective product candidates and will split all costs associated with the clinical trial. Pursuant to the agreement, the parties intend to undertake a larger Phase 2b clinical trial depending on the results of the initial Phase 2a clinical trial.

Oral HBV RNA Destabilizer (AB-161)

HBV RNA destabilizers are small molecule orally available agents that cause the destabilization and ultimate degradation of HBV RNAs. Mechanistically, RNA destabilizers target the host proteins PAPD5/7, which are involved in regulating the stability of HBV RNA transcripts. In doing so, RNA destabilizers lead to the selective degradation of HBV RNAs, thus reducing HBsAg levels and inhibiting viral replication. To provide a proprietary all-oral treatment regimen for patients with cHBV, we believe inclusion of a small molecule RNA destabilizer is key. HBV RNA destabilizers have the potential to complement or replace subcutaneously delivered RNAi agents, such as imdusiran.

AB-161 is our next-generation oral small molecule RNA destabilizer specifically designed to target the liver. We have conducted extensive non-clinical safety evaluations with AB-161 that provide confidence in this molecule's ability to circumvent the peripheral neuropathy findings seen in non-clinical safety studies with our first-generation oral RNA destabilizer, AB-452. At the Global Hepatitis Summit in April 2023, we presented preclinical data showing that AB-161 provides robust anti-HBV activity, including suppression of HBV RNA and HBsAg production *in vitro* and *in vivo*. Our Phase 1 clinical trial with AB-161 is ongoing with initial single-ascending dose data in healthy subjects expected in the second half of 2023.

Oral PD-L1 Inhibitor (AB-101)

PD-L1 inhibitors complement our pipeline of agents and could potentially be an important part of a combination therapy for the treatment of HBV by reawakening the immune system. Highly functional HBV-specific T-cells within our immune system are believed to be required for long-term HBV viral resolution. However, HBV-specific T-cells become functionally defective, and greatly reduced in their frequency during cHBV. One approach to boost HBV-specific T-cells is to prevent PD-L1 proteins from binding to PD-1 and thus inhibiting the HBV-specific immune function of T-cells. Immune checkpoints such as PD-1/PD-L1 play an important role in the induction and maintenance of immune tolerance and in T-cell activation.

AB-101 is our oral PD-L1 inhibitor candidate that we believe will allow for controlled checkpoint blockade while minimizing the systemic safety issues typically seen with checkpoint antibody therapies. Preclinical data generated thus far indicates that AB-101 mediates activation and reinvigoration of HBV-specific T-cells from cHBV patients. In June 2022, we presented a poster at the 2022 EASL ILC highlighting data from a study that was designed to assess the preclinical activity of AB-101 and the compound's ability to reinvigorate patient HBV-specific T-cells. Studies were conducted using a transgenic MC38 tumor mouse model and peripheral blood mononuclear cells (PBMCs) from cHBV patients. The data presented showed that once daily oral administration of AB-101 resulted in profound tumor reduction that was associated with T-cell activation. In addition, AB-101 activates and reinvigorates HBV-specific T-cells in vitro. Additionally, preclinical data in an HBV mouse model was presented at the 2022 AASLD Liver Meeting showing that monotherapy with AB-101 reduced PD-L1 in liver immune cells, confirming liver target engagement of the compound. Combination treatment with AB-101 and an HBV-targeting GalNAc-siRNA agent resulted in activation and increased frequency of HBV-specific T-cells and greater anti-HBsAg antibody production. This favorable preclinical profile supports further development of AB-101 as a therapeutic modality for cHBV treatment. We believe AB-101, when used in combination with other approved and investigational agents, could potentially lead to a functional cure in HBV chronically infected patients.

In April 2023, we received verbal communication from the FDA that the AB-101 IND application had been placed on clinical hold. For purposes of clarity, the Phase 1 clinical trial had not been initiated and we had not dosed any patients with AB-101. In May 2023, we received the clinical hold letter from the FDA, which raised questions about certain preclinical data and aspects of the clinical trial design. We thus decided to pursue other regulatory pathways outside of the US while evaluating our path forward with the FDA. Based on the communications from the FDA, we no longer intend to report initial data from the single-ascending dose portion of a Phase 1 clinical trial in the second half of 2023. In July 2023, Medsafe approved our CTA application for a Phase 1 clinical trial in New Zealand for AB-101, and we believe the protocol approved by Medsafe adequately addresses the clinical trial design and safety monitoring issues raised by the FDA. We included the clinical hold letter from the FDA as part of our CTA application with New Zealand. We are planning to initiate a Phase 1 clinical trial in the third quarter of 2023.

We are also exploring potential oncology applications for our internal PD-L1 portfolio. Preclinical data was selected for publication at the American Society of Clinical Oncology (ASCO) Annual Meeting in June 2022 showing that our oral small-molecule PD-L1 inhibitors in development, which possess a novel mechanism of action, have the ability to mediate T-cell activation in primary human immune cells. The anti-tumor efficacy seen in vivo was comparable to anti-PD-L1 antibodies. The data is published in the Journal of Clinical Oncology.

Coronavirus Program

Given our scientific team's proven expertise in discovering, developing and commercializing new antiviral therapies, in 2020 we initiated a drug discovery effort for treating COVID-19, pan-coronaviruses and potential future outbreaks. To that end, we have assembled an internal team of expert scientists under the direction of our Chief Scientific Officer, Dr. Michael Sofia, to identify novel small molecule therapies to treat COVID-19 and future coronavirus outbreaks. Dr. Sofia, who was awarded the Lasker-DeBakey Award for his discovery of sofosbuvir, brings extensive antiviral drug discovery experience to this program. As we strive to identify and develop new antiviral small molecules to treat COVID-19 and future coronavirus outbreaks, we have focused our research efforts on two essential targets critical for replication across all coronaviruses – nsp5 protease and nsp12 polymerase. These targets are essential viral proteins that our science team has experience in targeting.

Oral Mpro Inhibitor (AB-343)

AB-343 is our lead coronavirus drug candidate that inhibits Mpro. At the 36th International Conference on Antiviral Research in March 2023, we presented preclinical data that demonstrated the antiviral potency, selectivity and favorable pharmacokinetic profile of AB-343, which supports the further development of AB-343 as a potential ritonavir-free oral treatment for COVID-19 and other human coronaviruses. We anticipate completing IND-enabling studies with AB-343 in the second half of 2023. We also intend to nominate a nsp12 inhibitor clinical candidate and initiate IND-enabling studies in the second half of 2023. An nsp12 viral polymerase inhibitor could potentially be combined with AB-343 to achieve better patient treatment outcomes and for use in prophylactic settings.

Collaboration with X-Chem, Inc. and Proteros biostructures GmbH

In March 2021, we entered into a discovery research and license agreement, as amended, with X-Chem, Inc. ("X-Chem") and Proteros biostructures GmbH ("Proteros") to focus on the discovery of novel inhibitors targeting the SARS-CoV-2 nsp5 main protease (Mpro). The agreement is designed to accelerate the development of pan-coronavirus agents to treat COVID-19 and potential future coronavirus outbreaks. This collaboration brought together our expertise in the discovery and development of antiviral agents with X-Chem's industry leading DNA-encoded library (DEL) technology and Proteros' protein sciences, biophysics and structural biology capabilities and provides important synergies to potentially identify safe and effective therapies against coronaviruses, including SARS-CoV-2. The collaboration allows for the rapid screening of one of the largest small molecule libraries against Mpro (an essential protein required for the virus to replicate itself) and the use of state-of-the-art structure guided methods to rapidly optimize Mpro inhibitors to progress to clinical candidates. The agreement provides for payments by us to X-Chem and Proteros upon satisfaction of certain development, regulatory and commercial milestones, as well as royalties on sales. Through this collaboration, we identified and obtained a worldwide exclusive license to several molecules that inhibit Mpro, a validated target for the treatment of COVID-19 and potential future coronavirus outbreaks.

Other Collaborations, Royalty Entitlements and Intellectual Property Litigation

Collaboration with Qilu Pharmaceutical Co., Ltd. ("Qilu")

In December 2021, we entered into a technology transfer and license agreement (the "License Agreement") with Qilu, pursuant to which we granted Qilu a sublicensable, royalty-bearing license, under certain intellectual property owned by us, which is non-exclusive as to development and manufacturing and exclusive with respect to commercialization of imdusiran, including pharmaceutical products that include imdusiran, for the treatment or prevention of hepatitis B in China, Hong Kong, Macau and Taiwan (the "Territory").

In partial consideration for the rights granted by us, Qilu paid us a one-time upfront cash payment of $40 million on January 5, 2022 and agreed to pay us milestone payments totaling up to $245 million, net of withholding taxes, upon the achievement of certain technology transfer, development, regulatory and commercialization milestones. Qilu also agreed to pay us double-digit royalties into the low twenties percent based upon annual net sales of imdusiran in the Territory. The royalties are payable on a product-by-product and region-by-region basis, subject to certain limitations.

Qilu is responsible for all costs related to developing, obtaining regulatory approval for, and commercializing imdusiran for the treatment or prevention of hepatitis B in the Territory. Qilu is required to use commercially reasonable efforts to develop, seek regulatory approval for, and commercialize at least one imdusiran product candidate in the Territory. A joint development committee has been established between us and Qilu to coordinate and review the development, manufacturing and commercialization plans. Both parties also have entered into a supply agreement and related quality agreement pursuant to

which we will manufacture or have manufactured and supply Qilu with all quantities of imdusiran necessary for Qilu to develop and commercialize in the Territory until we have completed manufacturing technology transfer to Qilu and Qilu has received all approvals required for it or its designated contract manufacturing organization to manufacture imdusiran in the Territory.

Concurrent with the execution of the License Agreement, we entered into a Share Purchase Agreement (the "Share Purchase Agreement") with Anchor Life Limited, a company established pursuant to the applicable laws and regulations of Hong Kong and an affiliate of Qilu (the "Investor"), pursuant to which the Investor purchased 3,579,952 of our common shares at a purchase price of USD $4.19 per share, which was a 15% premium on the thirty-day average closing price of our common shares as of the close of trading on December 10, 2021 (the "Share Transaction"). We received $15.0 million of gross proceeds from the Share Transaction on January 6, 2022. The common shares sold to the Investor in the Share Transaction represented approximately 2.5% of our common shares outstanding immediately prior to the execution of the Share Purchase Agreement.

Alnylam Pharmaceuticals, Inc. ("Alnylam") and Acuitas Therapeutics, Inc. ("Acuitas")

We have two royalty entitlements to Alnylam's global net sales of ONPATTRO.

In 2012, we entered into a license agreement with Alnylam that entitles Alnylam to develop and commercialize products with our lipid nanoparticle ("LNP") delivery technology. Alnylam's ONPATTRO, which represents the first approved application of our LNP technology, was approved by the FDA and the European Medicines Agency ("EMA") during the third quarter of 2018 and was launched by Alnylam immediately upon approval in the United States. Under the terms of this license agreement, we are entitled to tiered royalty payments on global net sales of ONPATTRO ranging from 1.00% - 2.33% after offsets, with the highest tier applicable to annual net sales above $500 million. This royalty interest was sold to the Ontario Municipal Employees Retirement System ("OMERS"), effective as of January 1, 2019, for $20 million in gross proceeds before advisory fees. OMERS will retain this entitlement until it has received $30 million in royalties, at which point 100% of this royalty entitlement on future global net sales of ONPATTRO will revert to us. OMERS has assumed the risk of collecting up to $30 million of future royalty payments from Alnylam and we are not obligated to reimburse OMERS if they fail to collect any such future royalties. If this royalty entitlement reverts to us, it has the potential to provide an active royalty stream or to be otherwise monetized again in full or in part. From the inception of the royalty sale through June 30, 2023, an aggregate of $20.8 million of royalties have been earned by OMERS.

We also have rights to a second royalty interest ranging from 0.75% to 1.125% on global net sales of ONPATTRO, with 0.75% applying to sales greater than $500 million, originating from a settlement agreement and subsequent license agreement with Acuitas. This royalty entitlement from Acuitas has been retained by us and was not part of the royalty entitlement sale to OMERS.

Genevant Sciences, Ltd.

In April 2018, we entered into an agreement with Roivant Sciences Ltd. ("Roivant"), our largest shareholder, to launch Genevant Sciences Ltd. ("Genevant"), a company focused on a broad range of RNA-based therapeutics enabled by our LNP and ligand conjugate delivery technologies. We licensed rights to our LNP and ligand conjugate delivery platforms to Genevant for RNA-based applications outside of HBV, except to the extent certain rights had already been licensed to other third parties (the "Genevant License"). We retained all rights to our LNP and conjugate delivery platforms for HBV.

Under the Genevant License, as amended, if a third party sublicensee of intellectual property licensed by Genevant from us commercializes a sublicensed product, we become entitled to receive a specified percentage of certain revenue that may be received by Genevant for such sublicense, including royalties, commercial milestones and other sales-related revenue, or, if less, tiered low single-digit royalties on net sales of the sublicensed product. The specified percentage is 20% in the case of a mere sublicense (i.e., naked sublicense) by Genevant without additional contribution and 14% in the case of a bona fide collaboration with Genevant.

Additionally, if Genevant receives proceeds from an action for infringement by any third parties of our intellectual property licensed to Genevant, we would be entitled to receive, after deduction of litigation costs, 20% of the proceeds received by Genevant or, if less, tiered low single-digit royalties on net sales of the infringing product (inclusive of the proceeds from litigation or settlement, which would be treated as net sales).

In July 2020, Roivant recapitalized Genevant through an equity investment and conversion of previously issued convertible debt securities held by Roivant. We participated in the recapitalization of Genevant with an equity investment of $2.5 million.

In connection with the recapitalization, the three parties entered into an Amended and Restated Shareholders Agreement that provides Roivant with substantial control of Genevant. We have a non-voting observer seat on Genevant's Board of Directors.

As of June 30, 2023, we owned approximately 16% of the common equity of Genevant and the carrying value of our investment in Genevant was zero. Our entitlement to receive future royalties or sublicensing revenue from Genevant was not impacted by the recapitalization.

Moderna Inter Partes Review Petition

On February 21, 2018, Moderna Therapeutics, Inc. ("Moderna") filed a petition requesting the United States Patent and Trademark Office to institute an Inter Partes Review of Arbutus United States Patent 9,404,127 (the "'127 Patent"). In its petition, Moderna sought to invalidate all claims of the patent based on Moderna's allegation that the claims are anticipated and/or obvious. We filed a response to Moderna's petition on June 14, 2018. On September 12, 2018, the Patent Trial and Appeal Board (the "PTAB") rendered its decision to institute Inter Partes Review of the '127 Patent. The '127 Patent represents only a fraction of our extensive LNP patent portfolio.

With respect to the '127 Patent, the PTAB held all claims as invalid on September 10, 2019, by reason of anticipatory prior art. However this decision was vacated and sent back (remanded) to the PTAB for a rehearing, pending the Supreme Court's decision whether to grant certiorari in a different case, United States v. Athrex, Inc. ("US v. Athrex"), the holding of which could impact the findings in the '127 Patent matter. The Supreme Court granted certiorari in US v. Athrex on October 13, 2020 (i.e. agreed to review the decision appealed from a lower court). Until the Supreme Court rendered its opinion in US v. Athrex, the '127 Patent hearing remained in abeyance, with no decision reached as to the validity of its claims. The Supreme Court decided on the US v. Athrex case on June 21, 2021, following which the Federal Circuit reinstated the appeal sua sponte, requiring the parties to brief how the case should proceed in light of the Supreme Court's opinion or for the Appellant to waive the challenge. We elected to waive the challenge and proceed with the appeal at the Federal Circuit. The opening brief was filed on October 25, 2021. Moderna's responsive brief was filed on February 24, 2022 and our reply brief was filed on April 26, 2022. An oral hearing for this matter was held on November 4, 2022. On April 11, 2023, the Federal Circuit rendered its opinion, affirming the PTAB's finding that all claims of the '127 Patent are invalid by reason of anticipation.

Moderna and Merck European Opposition

On April 5, 2018, Moderna and Merck, Sharp & Dohme Corporation ("Merck") filed Notices of Opposition to Arbutus' European patent EP 2279254 ("the '254 Patent") with the European Patent Office ("EPO"), requesting that the '254 Patent be revoked in its entirety for all contracting states. We filed a response to Moderna and Merck's oppositions on September 3, 2018. A hearing was conducted before the Opposition Division of the EPO on October 10, 2019. At the conclusion of the hearing, the EPO upheld an auxiliary request adopting the amendment, as put forth by us, of certain claims of the '254 Patent. In February 2020 Moderna and Merck filed Notices of Appeal challenging the EPO's grant of the auxiliary request. Merck filed its notice of appeal on February 24, 2020 and Moderna on February 27, 2020. Both Merck and Moderna perfected their appeals by filing Grounds of Appeal on April 30, 2020. We filed our responses to the appeals on September 18, 2020. On March 22, 2022, Moderna filed further written submissions to which we and Genevant responded in August 2022. On April 18, 2023, we and Genevant withdrew our auxiliary request, however, the original (main) request remains in the action. We and Moderna informed the Board of Appeals that we would not object to a remittance of the matter without a hearing to the Opposition Division of the EPO. The hearing in this matter before the Board of Appeals was cancelled and a formal remittance to the Opposition Division (i.e. lower board) of the EPO is pending.

While we are the patent holder, the '127 Patent, the '254 Patent, the other patents in our LNP portfolio have been licensed to Genevant and are included in the rights licensed by us to Genevant under the Genevant License.

Patent Infringement Litigation vs. Moderna

On February 28, 2022, we and Genevant filed a lawsuit in the U.S. District Court for the District of Delaware against Moderna, Inc. and a Moderna affiliate seeking damages for infringement of U.S. Patent Nos. 8,058,069, 8,492,359, 8,822,668, 9,364,435, 9,504,651, and 11,141,378 in the manufacture and sale of MRNA-1273, Moderna's vaccine for COVID-19. The patents relate to nucleic acid-lipid particles and lipid vesicles, as well as compositions and methods for their use. The lawsuit does not seek an injunction or otherwise seek to impede the sale, manufacture or distribution of MRNA-1273. However, we seek fair compensation for Moderna's use of our patented technology that was developed with great effort and at great expense, without which Moderna's COVID-19 vaccine would not have been successful. On May 6, 2022, Moderna filed a partial motion to dismiss the claims "relating to Moderna's sale and provision of COVID-19 vaccine doses to the U.S. Government." On November 2, 2022, the Court issued an Order denying Moderna's motion. On November 30, 2022, Moderna filed its Answer to the Complaint and Counterclaims. We and Genevant filed our Answer to Moderna's Counterclaims on December 21, 2022. On February 14, 2023, the U.S. Department of Justice filed a Statement of Interest in the action. On February 16, 2023, the Court held an Initial Pretrial Conference after which it issued an Order, dated February 16, 2023, ordering that within 14 days of the issuance of the Order, the parties and the U.S. Government were to submit letters regarding the impact of the Governments' Statement of Interest on the scheduling of the matter. On March 10, 2023, the Court reaffirmed its denial of Moderna's motion to dismiss. On March 16, 2023, the Court held a Rule 16 scheduling conference, and on March 21, 2023, the Court issued a scheduling order in the matter without setting a trial date. On June 9, 2023, the parties extended the schedule for claim construction proceedings. The claim construction hearing is currently scheduled for February 7, 2024. Document discovery in the action is currently ongoing.

Patent Infringement Litigation vs. Pfizer and BioNTech

On April 4, 2023, we and Genevant filed a lawsuit in the U.S. District Court for the District of New Jersey against Pfizer Inc. ("Pfizer") and BioNTech SE ("BioNTech") seeking damages for infringement of U.S. Patent Nos. 9,504,651; 8,492,359; 11,141,378; 11,298,320; and 11,318,098 in the manufacture and sale of any COVID-19 mRNA-LNP vaccines. The patents relate to nucleic acid-lipid particles and their composition, manufacture, delivery and methods of use. The lawsuit does not seek an injunction or otherwise seek to impede the sale, manufacture or distribution of any COVID-19 mRNA-LNP vaccines. However, we seek fair compensation for Pfizer's and BioNTech's use of our patented technology that was developed with great effort and at great expense, without which their COVID-19 mRNA-LNP vaccines would not have been successful. On July 10, 2023, Pfizer and BioNTech filed their answer to the complaint, affirmative defenses and counterclaims. We and Genevant have yet to answer these counterclaims and no case schedule is yet in place. A scheduling conference is set for August 28, 2023.

Acuitas Declaratory Judgment Lawsuit

On March 18, 2022, Acuitas filed a lawsuit against us and Genevant in the U.S. District Court for the Southern District of New York, asking the court to enter declaratory judgment that Arbutus patent Nos. 8,058,069, 8,492,359, 8,822,668, 9,006,417, 9,364,435, 9,404,127, 9,504,651, 9,518,272, and 11,141,378 do not infringe Pfizer and BioNTech's COVID-19 vaccine, COMIRNATY, which uses an mRNA lipid provided, under license, by Acuitas. Acuitas also seeks a declaration that each of the listed patents is invalid. On June 24, 2022, we and Genevant sought a pre-motion conference concerning our anticipated motion to dismiss all of Acuitas' claims due to lack of subject matter jurisdiction. The request for a pre-motion conference was granted, but the case was subsequently re-assigned to a new judge who entered an order directing: (i) Acuitas to inform the court whether it intended to file an amended complaint; (ii) that Acuitas must file any amended complaint by a certain date; and (iii) that if Acuitas did not file an amended complaint, we and Genevant must file our motion to dismiss by a certain date. Acuitas filed its amended complaint on September 6, 2022. On October 4, 2022, we and Genevant filed our motion to dismiss the Acuitas action for lack of subject matter jurisdiction based on the lack of a case or controversy. Acuitas filed its opposition to the motion to dismiss on November 1, 2022, and we and Genevant filed our reply brief on November 16, 2022. The motion is now fully briefed and a status conference is set for August 9, 2023. No case schedule is yet in place.

CRITICAL ACCOUNTING POLICIES AND SIGNIFICANT JUDGEMENTS AND ESTIMATES

This management's discussion and analysis of our financial condition and results of operations is based on our condensed consolidated financial statements, which have been prepared in accordance with United States generally accepted accounting principles. The preparation of these financial statements requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues, and expenses. Our estimates are based on our historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

We believe there have been no significant changes in our critical accounting policies and estimates as discussed in "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations" of our Annual Report on Form 10-K for the year ended December 31, 2022.

RECENT ACCOUNTING PRONOUNCEMENTS

From time to time, new accounting pronouncements are issued by the Financial Accounting Standards Board or other standard setting bodies that are adopted by us as of the specified effective date. Unless otherwise discussed, we believe that the impact of recently issued standards that are not yet effective will not have a material impact on our financial position or results of operations upon adoption.

Please refer to Note 2 to our condensed consolidated financial statements included in "Part I, Item 1-Financial Statements (Unaudited)" of this Quarterly Report on Form 10-Q for a description of recent accounting pronouncements applicable to our business.

RESULTS OF OPERATIONS

The following summarizes the results of our operations for the periods shown:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
	(in thousands)			
Total revenue	$ 4,651	$ 14,241	$ 11,338	$ 26,822
Operating expenses	23,036	28,350	47,136	51,905
Loss from operations	(18,385)	(14,109)	(35,798)	(25,083)
Other income (loss)	1,291	(83)	2,365	(430)
Loss before income taxes	(17,094)	(14,192)	(33,433)	(25,513)
Income tax expense	—	—	—	(4,444)
Net loss	$ (17,094)	$ (14,192)	$ (33,433)	$ (29,957)

Revenue

Revenues are summarized in the following table:

	Three Months Ended June 30,			
	2023	% of Total	2022	% of Total
	(in thousands, except percentages)			
Revenue from collaborations and licenses				
Royalties from sales of ONPATTRO	$ 861	19 %	$ 1,550	11 %
Qilu Pharmaceutical Co., Ltd.	3,024	65 %	11,024	77 %
Other milestone and royalty payments	—	— %	(18)	— %
Non-cash royalty revenue				
Royalties from sales of ONPATTRO	766	16 %	1,685	12 %
Total revenue	$ 4,651	100 %	$ 14,241	100 %

	Six Months Ended June 30,			
	2023	% of Total	2022	% of Total
	(in thousands, except percentages)			
Revenue from collaborations and licenses				
Royalties from sales of ONPATTRO	$ 2,266	20 %	$ 3,084	11 %
Qilu Pharmaceutical Co., Ltd.	7,128	63 %	20,655	77 %
Other milestone and royalty payments	—	— %	35	— %
Non-cash royalty revenue				
Royalties from sales of ONPATTRO	1,944	17 %	3,048	11 %
Total revenue	$ 11,338	100 %	$ 26,822	100 %

Total revenue decreased $9.6 million and $15.5 million for the three and six months ended June 30, 2023, respectively, compared to the same periods in 2022, primarily due to a decrease in license revenue recognized related to our progress towards the satisfaction of our performance obligations with respect to the technology transfer and licensing agreement with Qilu, which closed in January 2022, as well as a decrease in license royalty revenue due to a decrease in Alnylam's sales of ONPATTRO.

Operating expenses

Operating expenses are summarized in the following table:

	Three Months Ended June 30,			
	2023	% of Total	2022	% of Total
	(in thousands, except percentages)			
Research and development	$ 17,692	77 %	$ 22,942	81 %
General and administrative	5,980	26 %	5,200	18 %
Change in fair value of contingent consideration	(636)	(3)%	208	1 %
Total operating expenses	$ 23,036	100 %	$ 28,350	100 %

	Six Months Ended June 30,			
	2023	% of Total	2022	% of Total
	(in thousands, except percentages)			
Research and development	$ 35,967	76 %	$ 41,404	80 %
General and administrative	11,532	24 %	10,092	19 %
Change in fair value of contingent consideration	(363)	(1)%	409	1 %
Total operating expenses	$ 47,136	100 %	$ 51,905	100 %

Research and development

Research and development expenses consist primarily of personnel expenses, fees paid to clinical research organizations and contract manufacturers, consumables and materials, consulting, and other third party expenses to support our clinical and preclinical activities, as well as a portion of stock-based compensation and general overhead costs.

Research and development expenses decreased $5.3 million and $5.4 million for the three and six months ended June 30, 2023, respectively, compared to the same periods in 2022. The decrease was due primarily to a decrease in expenses for drug supply manufacturing for our imdusiran, AB-101 and AB-161 clinical trials as well as a decrease in expenses for our AB-836 Phase 1a/1b clinical trial, which was discontinued in the fourth quarter of 2022. These were partially offset by an increase in expenses for our coronavirus program, including drug supply manufacturing.

A significant portion of our research and development expenses are not tracked by project as they benefit multiple projects or our technology platform and because our most-advanced programs are not yet in late-stage clinical development.

General and administrative

General and administrative expenses increased $0.8 million and $1.4 million for the three and six months ended June 30, 2023 respectively, as compared to the same periods in 2022, due primarily to increases in non-cash stock-based compensation expense and professional fees.

Change in fair value of contingent consideration

Contingent consideration is a liability related to our acquisition of Enantigen Therapeutics, Inc. in October 2014. In general, as time passes and assuming no changes to the assumptions related to the contingency, the fair value of the contingent consideration increases as the progress of our programs get closer to triggering contingent payments based on certain sales milestones of our first commercial product for cHBV. As imdusiran continues to progress through Phase 2a proof-of-concept clinical trials, we will adjust our assumptions regarding probability of success commensurate with the progression of the program, which will increase the fair value of the liability.

Other loss (income)

The components of our other income (loss) are summarized in the following table:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
	(in thousands)			
Interest income	$ 1,461	$ 396	$ 2,729	$ 555
Interest expense	(171)	(482)	(369)	(988)
Foreign exchange (gain) loss	1	3	5	3
Total other income (loss)	$ 1,291	$ (83)	$ 2,365	$ (430)

Interest income

The increase in interest income for the three and six months ended June 30, 2023 compared to the same periods in 2022 was due primarily to higher interest earned on our cash and investment balances due to a general increase in market interest rates.

Interest expense

Interest expense for both the three and six months ended June 30, 2023 and 2022 consisted primarily of non-cash amortization of discount and issuance costs related to the sale of a portion of our ONPATTRO royalty interest to OMERS in July 2019. The decrease is related to the declining balance of the unamortized discount and issuance costs.

Income tax expense

During the six months ended June 30, 2022, we recognized income tax expense of $4.4 million for withholding taxes paid to the Chinese taxing authority by Qilu on our behalf in connection with the upfront license fee Qilu paid us. We did not recognize any income tax expense during the six months ended June 30, 2023.

LIQUIDITY AND CAPITAL RESOURCES

The following table summarizes our cash flow activities for the periods indicated:

	Six Months Ended June 30,	
	2023	2022
	(in thousands)	
Net loss	$ (33,433)	$ (29,957)
Non-cash items	2,911	3,154
Change in deferred license revenue	(7,128)	27,815
Net change in operating items	(9,210)	(686)
Net cash (used in) provided by operating activities	(46,860)	326
Net cash provided by (used in) investing activities	18,119	(73,886)
Issuance of common shares pursuant to Share Purchase Agreement	—	10,973
Issuance of common shares pursuant to the Open Market Sale Agreement	24,604	268
Cash provided by other financing activities	555	357
Net cash provided by financing activities	25,159	11,598
Effect of foreign exchange rate changes on cash and cash equivalents	3	—
Decrease in cash and cash equivalents	(3,579)	(61,962)
Cash and cash equivalents, beginning of period	30,776	109,282
Cash and cash equivalents, end of period	$ 27,197	$ 47,320

Since our incorporation, we have financed our operations through sales of equity, debt, revenues from research and development collaborations and licenses with corporate partners, royalty monetization, interest income on funds available for investment, and government contracts, grants and tax credits.

For the six months ended June 30, 2023, $46.9 million of cash was used in operating activities compared to $0.3 million provided by operating activities for the six months ended June 30, 2022, a change of $47.2 million. The change was due primarily to a January 2022 upfront cash payment of $40.0 million from Qilu and a $4.0 million premium paid by Qilu as part of their $15.0 million equity investment in us.

For the six months ended June 30, 2023, net cash provided by investing activities was $18.1 million, resulting primarily from maturities of investments in marketable securities of $68.5 million, partially offset by additional investments in marketable securities of $49.4 million. For the six months ended June 30, 2022, net cash used in investing activities was $73.9 million, which consisted primarily of additional investments in marketable securities of $84.6 million.

For the six months ended June 30, 2023, net cash provided by financing activities was $25.2 million, which was primarily related to $24.6 million in proceeds from sales of common shares under the Sale Agreement. For the six months ended June 30, 2022, net cash provided by financing activities was $11.6 million, which included $11.0 million for the fair value of the shares purchased by Qilu as part of their $15.0 million equity investment in us, of which the remaining $4.0 million was a premium paid by Qilu on the equity investment and was allocated to deferred revenue.

Sources of Liquidity

As of June 30, 2023, we had cash, cash equivalents and investments in marketable securities of $163.5 million. We had no outstanding debt as of June 30, 2023.

Open Market Sale Agreement

We have an Open Market Sale Agreement[SM] with Jefferies LLC dated December 20, 2018, as amended by Amendment No. 1, dated December 20, 2019, Amendment No. 2, dated August 7, 2020 and Amendment No. 3, dated March 4, 2021 (as amended, the “Sale Agreement”), under which we may offer and sell common shares, from time to time.

On December 23, 2019, we filed a shelf registration statement on Form S-3 with the Securities and Exchange Commission “the “SEC”) (File No. 333-235674) and accompanying base prospectus, which was declared effective by the SEC on January 10, 2020 (the “January 2020 Registration Statement”), for the offer and sale of up to $150.0 million of our securities. The January 2020 Registration Statement also contained a prospectus supplement for an offering of up to $50.0 million of our common shares pursuant to the Sale Agreement. This prospectus supplement was fully utilized during 2020. On August 7, 2020, we filed a prospectus supplement with the SEC (the “August 2020 Prospectus Supplement”) for an offering of up to an additional $75.0 million of our common shares pursuant to the Sale Agreement under the January 2020 Registration Statement. The August 2020 Prospectus Supplement was fully utilized during 2020.

On August 28, 2020, we filed a shelf registration statement on Form S-3 with the SEC (File No. 333-248467) and accompanying base prospectus, which was declared effective by the SEC on October 22, 2020 (the “October 2020 Registration Statement”), for the offer and sale of up to $200.0 million of our securities. On March 4, 2021, we filed a prospectus supplement with the SEC for an offering of up to an additional $75.0 million of our common shares pursuant to the Sale Agreement under the October 2020 Registration Statement, which we fully utilized during 2021. On October 8, 2021, we filed a prospectus supplement with the SEC (the “October 2021 Prospectus Supplement”) for the offer and sale of up to an additional $75.0 million of our common shares pursuant to the Sale Agreement under the October 2020 Registration Statement.

On November 4, 2021, we filed a shelf registration statement on Form S-3 with the SEC (File No. 333-260782) and accompanying base prospectus, which was declared effective by the SEC on November 18, 2021 (the “November 2021 Registration Statement”), for the offer and sale of up to $250.0 million of our securities.

On March 3, 2022, we filed a prospectus supplement with the SEC (the “March 2022 Prospectus Supplement”) for the offer and sale of up to an additional $100.0 million of our common shares pursuant to the Sale Agreement under: (i) the January 2020 Registration Statement; (ii) the October 2020 Registration Statement; and (iii) the November 2021 Registration Statement.

During the six months ended June 30, 2023, we issued 9,214,168 common shares pursuant to the Sale Agreement, as amended, resulting in net proceeds of approximately $24.6 million. For the six months ended June 30, 2022, we issued 69,048 common shares pursuant to the Sale Agreement, resulting in net proceeds of approximately $0.3 million. As of June 30, 2023, there was approximately $105.8 million available in aggregate under the October 2021 Prospectus Supplement and the March 2022 Prospectus Supplement.

Royalty Entitlements

We have a royalty entitlement on ONPATTRO, a drug developed by Alnylam that incorporates our LNP technology and was approved by the FDA and the EMA during the third quarter of 2018 and was launched by Alnylam immediately upon approval in the United States. In July 2019, we sold a portion of this royalty interest to OMERS, effective as of January 1, 2019, for $20 million in gross proceeds before advisory fees. OMERS will retain this entitlement until it has received $30 million in royalties, at which point 100% of such royalty interest on future global net sales of ONPATTRO will revert to us. OMERS has assumed the risk of collecting up to $30 million of future royalty payments from Alnylam and we are not obligated to reimburse OMERS if they fail to collect any such future royalties. From the inception of the royalty sale through December 31, 2022, we have recorded an aggregate of $18.9 million of non-cash royalty revenue for royalties earned by OMERS. If this royalty entitlement reverts to us, it has the potential to provide an active royalty stream or to be otherwise monetized again in full or in part. In addition to the royalty from the Alnylam LNP license agreement, we are also receiving a second, lower royalty interest on global net sales of ONPATTRO originating from a settlement agreement and subsequent license agreement with Acuitas. The royalty from Acuitas has been retained by us and was not part of the royalty sale to OMERS.

In December 2021, we entered into a technology transfer and exclusive licensing agreement with Qilu pursuant to which we granted Qilu an exclusive (with certain exceptions), sublicensable, royalty-bearing license, under certain intellectual property owned by us, to develop, manufacture and commercialize imdusiran for the treatment or prevention of cHBV in the Territory. In partial consideration for the rights granted by us, Qilu paid us a one-time upfront cash payment of $40 million and made an equity investment in us of $15.0 million, both received in January 2022, and agreed to pay us milestone payments totaling up to $245 million, net of withholding taxes, upon the achievement of certain technology transfer, development, regulatory and commercialization milestones. Qilu also agreed to pay us double-digit royalties into the low twenties percent based upon annual net sales of imdusiran in the Territory.

Cash requirements

We believe that our $163.5 million of cash, cash equivalents and investments in marketable securities as of June 30, 2023 will be sufficient to fund our operations into the first quarter of 2025. We expect a net cash burn between $90 million and $95 million in 2023, excluding any proceeds from our Open Market Sale Agreement. In the future, substantial additional funds will be required to continue with the active development of our pipeline products and technologies. In particular, our funding needs may vary depending on a number of factors including:

- revenue earned from our legacy collaborative partnerships and licensing agreements, including potential royalty payments from Alnylam's ONPATTRO;
- revenue earned from ongoing collaborative partnerships, including milestone and royalty payments;
- the potential requirement to make milestone payments related to our legacy agreements;
- the extent to which we continue the development of our product candidates, add new product candidates to our pipeline, or form collaborative relationships or licensing arrangements to advance our product candidates;
- delays in the development of our product candidates due to preclinical and clinical findings;
- our decisions to in-license or acquire additional products, product candidates or technology for development;
- our ability to attract and retain development or commercialization partners, and their effectiveness in carrying out the development and ultimate commercialization of one or more of our product candidates;
- whether batches of product candidates that we manufacture fail to meet specifications resulting in clinical trial delays and investigational and remanufacturing costs;
- the decisions, and the timing of decisions, made by health regulatory agencies regarding our technology and product candidates;
- competing products, product candidates and technological and market developments; and
- costs associated with prosecuting and enforcing our patent claims and other intellectual property rights, including litigation and arbitration arising in the course of our business activities.

We intend to seek funding to maintain and advance our business from a variety of sources including public or private equity or debt financing, potential monetization transactions, collaborative or licensing arrangements with pharmaceutical companies and government grants and contracts. There can be no assurance that funding will be available at all or on acceptable terms to permit further development of our research and development programs.

If adequate funding is not available, we may be required to delay, reduce or eliminate one or more of our research or development programs or reduce expenses associated with our non-core activities. We may need to obtain funds through arrangements with collaborators or others that may require us to relinquish most or all of our rights to product candidates at an earlier stage of development or on less favorable terms than we would otherwise seek if we were better funded. Insufficient financing may also mean failing to prosecute our patents or relinquishing rights to some of our technologies that we would otherwise develop or commercialize.

OFF-BALANCE SHEET ARRANGEMENTS

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

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

The information under this item is not required to be provided by smaller reporting companies.

ITEM 4. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our principal executive officer and principal financial officer, evaluated the effectiveness of our disclosure controls and procedures as of June 30, 2023. The term "disclosure controls and procedures", as

defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), means controls and other procedures of a company that are designed to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate, to allow timely decisions regarding required disclosure, particularly during the period in which this Quarterly Report on Form 10-Q was being prepared. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their desired objectives, and our management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of June 30, 2023, our principal executive officer and principal financial officer concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

Changes in Internal Control over Financial Reporting

There have been no changes in our internal control over financial reporting (as defined in Rules 13a–15(f) and 15d–15(f) under the Exchange Act) during the three months ended June 30, 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

Patent Infringement Litigation vs. Pfizer and BioNTech

On April 4, 2023, we and Genevant Sciences Ltd. ("Genevant") filed a lawsuit in the U.S. District Court for the District of New Jersey against Pfizer Inc. ("Pfizer") and BioNTech SE ("BioNTech") seeking damages for infringement of U.S. Patent Nos. 9,504,651; 8,492,359; 11,141,378; 11,298,320; and 11,318,098 in the manufacture and sale of any COVID-19 mRNA-LNP vaccines. The patents relate to nucleic acid-lipid particles and their composition, manufacture, delivery and methods of use. The lawsuit does not seek an injunction or otherwise seek to impede the sale, manufacture or distribution of any COVID-19 mRNA-LNP vaccines. However, we seek fair compensation for Pfizer's and BioNTech's use of our patented technology that was developed with great effort and at great expense, without which their COVID-19 mRNA-LNP vaccines would not have been successful. On July 10, 2023, Pfizer and BioNTech filed their answer to the complaint, affirmative defenses and counterclaims. We and Genevant have yet to answer these counterclaims and no case schedule is yet in place. A scheduling conference is set for August 28, 2023.

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Other Matters

We are also involved with various legal matters arising in the ordinary course of business. We make provisions for liabilities when it is both probable that a liability has been incurred and the amount of the loss can be reasonably estimated. Such provisions are reviewed at least quarterly and adjusted to reflect the impact of any settlement negotiations, judicial and administrative rulings, advice of legal counsel, and other information and events pertaining to a particular case. Litigation is inherently unpredictable. Although the ultimate resolution of these various matters cannot be determined at this time, we do not believe that such matters, individually or in the aggregate, will have a material adverse effect on our consolidated results of operations, cash flows, or financial condition.

ITEM 1A. RISK FACTORS

It may take considerable time and expense to resolve the clinical hold that has been placed on our IND application of AB-101 by the FDA, and no assurance can be given that the FDA will remove the clinical hold, in which case our business and financial prospects may be adversely affected.

On April 25, 2023, we announced that we were notified via verbal communication from the FDA that our AB-101 IND application has been placed on clinical hold. For purposes of clarity, the Phase 1 clinical trial had not been initiated and we had not dosed any patients with AB-101. In May 2023, we received the clinical hold letter from the FDA, which raised questions about certain preclinical data and aspects of the clinical trial design. In July 2023, the New Zealand Medicine and Medical Device Safety Authority (Medsafe) approved our CTA application for a Phase 1 clinical trial in New Zealand for AB-101; however, there are no assurances that FDA will accept the results of such clinical trial and may require us to conduct an additional Phase 1 clinical trial or additional nonclinical studies. If the FDA does not accept the results of our Phase 1 clinical trial in New Zealand for AB-101 or requires us to conduct additional trials or studies, it may take a considerable period of time, the length of which is not certain at this time, and expense for us to fully address the FDA's concerns. Even if we are able to fully respond to the FDA's current concerns, the FDA may subsequently make additional requests that we would need to fulfill prior to the lifting of the clinical hold. It is possible that we will be unable to fully address the FDA's concerns and, as a result, the clinical hold may never be lifted and we may never be able to initiate our AB-101 clinical program in the United States, which could have a material adverse effect on our business and financial prospects.

There have been no other material changes in our risk factors from those disclosed in our Annual Report on Form 10-K for the fiscal year-ended December 31, 2022.

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

None.

ITEM 3. DEFAULTS UPON SENIOR SECURITIES

None.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

ITEM 5. OTHER INFORMATION

None.

ITEM 6. EXHIBITS

EXHIBIT INDEX

Number	Description
3.1	Notice of Articles and Articles of the Company, as amended (incorporated herein by reference to Exhibit 3.1 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2017, filed with the SEC on March 16, 2018).
3.2	Amendment to Articles of the Company (incorporated herein by reference to Exhibit 3.1 to the Registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2018, filed with the SEC on November 7, 2018).
10.1*#	Executive Employment Agreement, dated effective as of July 10, 2023, between Arbutus Biopharma, Inc. and Karen Sims, MD, PhD
10.2*#	Executive Employment Agreement, dated effective as of July 10, 2023, between Arbutus Biopharma, Inc. and J. Christopher Naftzger
10.3*#	Option Agreement, dated July 10, 2023, by and between Arbutus Biopharma Corporation and J. Christopher Naftzger
10.4	Arbutus Biopharma Corporation 2016 Omnibus Share and Incentive Plan, as supplemented and amended (incorporated herein by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, filed with the SEC on May 30, 2023).
31.1*	Certification of Principal Executive Officer pursuant to Rule 13a-14(a) or 15d-14(a) of 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 Rule 13a-14(a) or 15d-14(a) of 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 materials from Arbutus Biopharma Corporation's Quarterly Report on Form 10-Q for the quarter ended June 30, 2023, formatted in inline XBRL (eXtensible Business Reporting Language): (i) Condensed Consolidated Balance Sheets; (ii) Condensed Consolidated Statements of Operations; (iii) Condensed Consolidated Statements of Comprehensive Loss; (iv) Condensed Consolidated Statements of Stockholders' Equity; (v) Condensed Consolidated Statements of Cash Flows; and (vi) Notes to Condensed Consolidated Financial Statements.
104	Cover page interactive data file (embedded within the inline XBRL document and included in Exhibit 101).

* Filed herewith.

** Furnished herewith.

Management contract or compensatory arrangement.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized on August 3, 2023.

ARBUTUS BIOPHARMA CORPORATION

By: /s/ William H. Collier
William H. Collier
President and Chief Executive Officer
(Principal Executive Officer)

By: /s/ David C. Hastings
David C. Hastings
Chief Financial Officer
(Principal Financial Officer and Principal Accounting Officer)

EXECUTIVE EMPLOYMENT AGREEMENT

This Executive Employment Agreement ("**Agreement**"), which supersedes in its entirety the Original Employment Agreement as defined below, is made effective as of July 10, 2023 (the "**Effective Date**") by and between Arbutus Biopharma Inc. (the "**Company**"), and **Karen Sims, MD, PhD** (the "**Executive**") (together the "**Parties**")

RECITALS

A. WHEREAS, the Executive was most recently employed as Vice President, Clinical Development by the Company, having been promoted from the position of Senior Medical Offer, wherein both positions were subject to the terms of an agreement having an offer date of February 23, 2017 and an acceptance date of March 1, 2017 ("Original Employment Agreement"); and

B. Whereas Company now desires to employ the Executive as Chief Medical Officer in accordance with the provisions of this Agreement; and

C. WHEREAS, Executive desires to serve the Company and accept employment under the terms and conditions stated in this Agreement; and

D. WHEREAS, the Parties have freely negotiated the terms and conditions of this Agreement and have reached agreement on them.

THEREFORE, the Parties agree as follows:

Section 1. Position and Duties. The Executive will serve as Chief Medical Officer of the Company and will have powers and duties consistent with such position as may from time to time be prescribed by the Chief Executive Officer of the Company. As Chief Medical Officer of the Company, the Executive shall devote her full working time and efforts to the business and affairs of the Company. Notwithstanding the foregoing, the Executive may manage her personal investments or engage charitable or other community activities except as restricted or prohibited by the terms of a confidentiality agreement between the Executive and the Company and as long as those engagements, services and activities, individually or in the aggregate, do not interfere with the Executive's performance of her duties to the Company.

Section 2. Compensation and Related Matters.

a) Base Salary. The Executive's base salary will be US$460,000 per year. The Executive's base salary will be reviewed annually by the Chief Executive Officer of the Company and is subject to increase but not decrease except for an across-the-board salary reduction affecting all senior executives of the Company. The base salary in effect at any given time is referred to as "**Base Salary**" and this Agreement need not be modified to reflect a change in Base Salary. The Base Salary is subject to withholding and payable in a manner that is consistent with the Company's usual payroll practices for senior executives.

b) Bonus. The Executive is eligible to be considered for an annual discretionary bonus of up to 40% of Base Salary (such bonus, the "**Target Bonus**"). The Target Bonus shall be subject to the terms of the bonus plan and the approval of the Company's Board of Directors (the "**Board**"), in its sole discretion, on an annual basis.

c) Expenses. The Executive is entitled to receive prompt reimbursement for all reasonable expenses incurred by her in performing services under this Agreement, in accordance with the policies and procedures then in effect and established by the Company for its senior executives.

d) Other Benefits. The Executive is entitled to participate in or receive benefits consistent with other senior executives under the Company's employee benefit plans as they may be adopted and amended from time to time, subject to the terms and conditions of those employee benefit plans.

e) Equity Compensation. Subject to the discretionary approval of the Company's Board of Directors, and in accordance with the Company's annual performance and compensation review process, the Executive shall be eligible to receive equity awards under the Arbutus Biopharma Corporation 2016 Omnibus Share and Incentive Plan and or any other similar equity incentive plan to the same extent as other executives of the Company. The Company's President and CEO will promptly recommend to the Board that the Executive receive an options grant in the amount of 153,640 shares of the Company, subject to the terms of the Equity Plan, the terms of a notice of grant and any other terms as may be required by the Board.

f) Paid Time Off. The Executive is entitled to paid holidays and PTO days each year, in an amount determined in accordance with and subject to the Company's applicable policies in effect, and as may be amended from time to time. PTO may be taken at such times and intervals as the Executive shall determine, subject to the business needs of the Company.

Section 3. Non-Competition and Non-Solicitation

a) The Executive acknowledges that the Company's industry is highly competitive and employees leaving the employ of the Company have the ability to cause significant damage to the Company's interests if they join a competing business immediately upon leaving the Company.

b) Definitions:

(i) "Affiliate" means any person or entity directly or indirectly controlling, controlled by or under common control with the Company, where control may be by either management authority or equity interest.

(ii) "Business" or "Business of the Company" means (a) researching, developing, producing and marketing any treatment for hepatitis B virus infection in humans or (b) any other treatment area in which the Company has an active research and development program on the date this Agreement terminates and in connection with which the Executive directly provided service or had direct supervisory responsibilities.

(iii) "Competing Business" means any endeavor, activity or business which is competitive in any material way with the Business of the Company worldwide.

(iv) "Contact" means any person, firm, corporation or other entity that was a client, customer, supplier, principal, shareholder, investor, collaborator, strategic partner, licensee, contact or prospect of the Company (or of its partners, funders or Affiliates) with whom the Executive dealt or otherwise became aware of during the term of her employment in any capacity with the Company.

(v) "Restricted Period" means the twelve (12) month period commencing immediately after the Executive's employment terminates

c) Reasonableness. The Executive hereby acknowledges and agrees that:

(i) both before and since the Effective Date the Company has operated and competed and will operate and compete worldwide, with respect to the Business of the Company;

(ii) competitors of the Company and the Business are located worldwide;

(iii) in order to protect the Company adequately, any enjoinder of competition would have to apply to any country in which the Company, during the term of the Executive's employment, had material business relationships;

(iv) during the course of the Executive's employment with the Company, on behalf of the Company, the Executive will acquire knowledge of, and will come into contact with, initiate and establish relationships with, both existing and new clients, customers, suppliers, principals, contacts and prospects of the Company, and that in some circumstances the Executive may become the senior or sole representative of the Company dealing with such persons; and

(v) in light of the foregoing, the provisions of this Section 3 are reasonable and necessary for the proper protection of the Business of the Company.

d) Restrictive Covenant. Except as set forth on Exhibit B attached hereto, during the term of the Executive's employment and for the Restricted Period after the termination thereof, the Executive shall not, without the advance written consent of the Board, such consent to be granted or withheld in the Board's sole discretion, within the geographic scope of any country in which the Company, during the term of the Executive's employment, had material business relationships, carry on or be employed by or engaged in or have any financial or other interest in or be otherwise commercially involved in a Competing Business, directly or indirectly, either individually or in partnership or jointly or in conjunction with any person, firm, corporation or other entity, as principal, agent, consultant, advisor, employee, shareholder or in any manner whatsoever.

e) Exception. The Executive shall not be in default of Section 3(d) by virtue of the Executive:

(i) following the termination of employment, holding, strictly for portfolio purposes and as a passive investor, no more than five percent (5%) of the issued and outstanding shares of, or any other interest in, any corporation or other entity that is a Competing Business; or

(ii) during the term of her employment, holding, strictly for portfolio purposes and as a passive investor, issued and outstanding shares of, or any other interest in, any corporation or other entity, the business of which corporation or other entity is in the same Business as the Company provided such corporation is not a Competing Business, and provided further that the Executive first obtains the Company's written consent, which consent will not be unreasonably withheld.

If the Executive holds issued and outstanding shares or any other interest in a corporation or other entity pursuant to Section 3(e)(ii) above, and following the acquisition of such shares or other interest the business of the corporation or other entity becomes a Competing Business, the Executive will promptly dispose of the Executive's shares or other interest in such corporation or other entity.

f) Non-Solicitation. The Executive shall not, during the term of her employment and for the Restricted Period after the termination thereof for any reason, whether legal or illegal, either individually or in partnership or jointly or in conjunction with any person, firm, corporation or other entity, as principal, agent, consultant, advisor, employee, shareholder or in any manner whatsoever, without the prior written and informed consent of the Company, directly or indirectly:

(i) solicit, induce or encourage any Contact to curtail or cease its relationship with the Company, for any purpose which is competitive with the Business; or

(ii) accept (or procure or assist the acceptance of) any business from any Contact if such business is competitive with the Business; or

(iii) be employed by or supply (or procure or assist the supply of) any goods or services to any Contact for any purpose which the Executive knows or has reason to know is competitive with the Business; or

(iv) employ, engage, offer employment or engagement to or solicit the employment or engagement of or otherwise entice away from or solicit, induce or encourage to leave the employment or engagement of the Company, any individual who is employed or engaged by the Company at the time of any such offer, solicitation or enticement whether or not such individual would commit any breach of her contract or terms of employment or engagement by leaving the employ or the engagement of the Company, provided that the Executive shall be permitted, solely in a personal capacity, to provide letters of reference for individuals who are employed by the Company.

g) Validity. The Executive expressly recognizes and acknowledges that it is the intent of the parties that the Executive's activities following the termination of the Executive's employment with the Company be restricted in the manner described in this Section 3, and acknowledges that good, valuable, and sufficient consideration has been provided in exchange for such restrictions. The Executive agrees that should any of the restrictions contained in this Section 3 be found to be unreasonable to any extent by a court of competent jurisdiction adjudicating upon the validity of the restriction, whether as to the scope of the restriction, the area of the restriction or the duration of the restriction, then such restriction shall be reduced to that which is in fact declared reasonable by such court, or a subsequent court of competent jurisdiction, requested to make such a declaration, in order to ensure that the intention of the parties is given the greatest possible effect.

Section 4. Termination. The Executive's employment by the Company may be terminated without any breach of this Agreement under the following circumstances:

a) Death. The Executive's employment hereunder terminates upon her death.

b) Disability. The Company may terminate the Executive's employment if she is disabled (as determined by a non-employee doctor hired by the company) in a

manner that renders the Executive unable to perform the essential functions of her then existing position or positions under this Agreement with or without reasonable accommodation for a period of six months or more. Nothing in this Section 4.b) is to be construed to waive the Executive's rights, if any, under existing law including, without limitation, the Family and Medical Leave Act of 1993, 29 U.S.C. §2601 et seq., and the Americans with Disabilities Act, 42 U.S.C. §12101 et seq.

c) Termination by Company for Cause. For purposes of this Agreement, "For Cause" shall mean: (i) Employee is charged with a felony (excluding a DUI) or any violation of state or federal securities laws; (ii) Employee willfully engages in conduct that is in bad faith and materially injurious to the Company, including but not limited to, misappropriation of trade secrets, fraud or embezzlement; (iii) Employee commits a material breach of this Agreement; (iv) Employee willfully refuses to implement or follow a lawful policy or directive of the Company; or (v) Employee engages in misfeasance or malfeasance demonstrated by a pattern of failure to perform job duties diligently and professionally. The Company may terminate Employee's employment For Cause at any time, without any advance notice. The Company shall pay Employee all compensation to which Employee is entitled up through the date of termination, subject to any other rights or remedies of the Company under law; and thereafter all obligations of the Company under this Agreement shall cease.

d) Termination by the Company Without Cause or by the Executive for Good Reason. The Company may terminate the Executive's employment under this Agreement at any time without Cause and the Executive may terminate her employment with Good Reason. For purposes of this Agreement, "Good Reason" means the occurrence of any of the following events without the Executive's prior written consent: (i) the failure of the Executive to be appointed to the position set forth in Section 1, if not promptly cured after written notice; (ii) a reduction by the Company of the Executive's Base Salary or Target Bonus percentage, except for an across-the-board salary reduction affecting all senior executives of the Company; (iii) a relocation of Employee's principal place of employment by more than fifty (50) miles; (iv) a termination of the Executive's employment by the Company; and (v) a substantial and adverse change to the Executive's duties and responsibilities. For purposes of this Agreement, except for the Company terminating the Executive's employment, termination for Good Reason requires Executive to comply with the "Good Reason Process," which means that (i) the Executive reasonably determines in good faith that a Good Reason condition has occurred; (ii) the Executive notifies the Company in writing of the first occurrence of the Good Reason condition within 30 days of the first occurrence of such condition; (iii) the Executive cooperates in good faith with the Company's efforts, for a period of not less than 30 days following that notice (the "**Cure Period**") to remedy the condition; (iv) notwithstanding the Company's efforts, the Good Reason condition continues to exist; and (v) the Executive terminates her employment within 30 days after the end of the Cure Period. If the Company cures the Good Reason condition during the Cure Period, Good Reason is deemed not to have occurred.

Any termination by the Company of the Executive's employment under this Agreement that does not constitute a termination for Cause under Section 4.c) and does not result from the death or disability of the Executive under Section 4(a) or (b) is a termination without Cause.

e) Termination by the Executive. Executive may terminate employment with the Company without Good Reason at any time for any reason or no reason at all, upon thirty (30) days' advance written notice. The Company shall have the option, in its sole discretion, to make Executive's termination effective or to direct the Executive to perform no work and/or remain off premises at any time prior to the end of such notice period as long as the Company pays Executive all compensation to which Executive is entitled up through the last day of the 30 day notice period.

f) Notice of Termination. Except for termination as specified in Section 4.a), any termination of the Executive's employment by the Company or any termination of her employment by the Executive must be communicated by written Notice of Termination to the other party. For purposes of this Agreement, a "**Notice of Termination**" means a notice that indicates the specific termination provision in this Agreement that the termination is based upon.

g) Date of Termination. "**Date of Termination**" means: (i) if the Executive's employment is terminated by her death, the date of her death; (ii) if the Executive's employment is terminated on account of disability under Section 4.b) or by the Company for Cause under Section 4.c), or by the Company without Cause under Section 4.d) on the date the Notice of Termination is given; (iii) if the Executive terminates her employment under Section 4.e) without Good Reason, on the date specified by the Executive in the notice (which shall be at least thirty (30) days after the date of the Notice of Termination) and, if no such date is specified, 30 days after the date of the Notice of Termination; and (iv) if the Executive terminates her employment under Section 4.e) with Good Reason, the date on which a Notice of Termination is given after the end of the Cure Period. Notwithstanding the foregoing, if the Executive gives a Notice of Termination to the Company that takes effect at a future date, the Company may unilaterally accelerate the Date of Termination and that acceleration will not be deemed a termination by the Company for purposes of this Agreement so long as the Company pays Executive all compensation to which Executive is entitled up through the last day of the 30-day notice period.

Section 5. Compensation Upon Termination.

a) Termination Generally. If the Executive's employment with the Company is terminated for any reason, the Company shall pay or provide to the Executive (or to her authorized representative or estate), (i) unpaid expense reimbursements submitted to the Company in accordance with the Company's policies; (ii) accrued but unused vacation to the extent payment is required by law or Company policy; (iii) any vested benefits the Executive may have under any employee benefit plan of the Company; (iv) any earned but unpaid Base Salary and (v) any earned but unpaid annual Target Bonus, for the prior fiscal year (collectively the "**Accrued Benefit**") on or before the time required by law, but in no event more than 30 days after the Executive's Date of Termination. The Executive shall not be entitled to any other salary, compensation, bonus (or pro rata share thereof) or benefits from the Company thereafter, except as otherwise specifically provided hereunder, under the Company's employee benefit plans or as expressly required by applicable law.

b) Termination by the Company Without Cause or by the Executive for Good Reason. If the Executive's employment is terminated by the Company without Cause or by the Executive for Good Reason, then the Company shall pay the Executive her Accrued Benefit as of the Date of Termination. In addition, subject to the Executive providing the Company with a fully effective general release of claims in a form and manner satisfactory to the Company that includes but is not limited to the terms set forth in the attached Exhibit A (the "**Release**") within the 60-day period following the Date of Termination, the Company shall pay the Executive (i) severance pay in a lump sum in cash in an amount equal to twelve (12) months of Executive's Base Salary, less lawful withholding (as applicable, "**Severance Amount**"), payable within 60 days after the Date of Termination, but if that 60-day period extends over two calendar years, the Company shall make the payment in the second calendar year, and (ii) provided that the Executive timely elects COBRA coverage, reimburse the Executive for the COBRA premiums paid by the Executive, if any, for the continuation of coverage under the Executive's then-existing group company health plan that the Executive and her dependents are eligible to receive for the earlier of a period of up to twelve (12) months from the date of the Executive's termination of employment, or until the Executive becomes eligible to receive health insurance benefits under any other employer's group health plan.

Section 6. Change in Control Provisions. The provisions of this Section 6 set forth the Executive's rights and obligations upon the occurrence of a Change in Control of the Company. These provisions are intended to assure and encourage in advance the Executive's continued attention and dedication to her assigned duties and her objectivity during the pendency and after the occurrence of any Change in Control. The provisions of this Section 6 apply in addition to, and/or modify, the provisions of Section 5(b) regarding severance pay and benefits upon a termination of employment, if applicable, if the termination of employment occurs within 12 months after the occurrence of a Change in Control. These provisions are subject to the Executive providing (and not revoking) the Company with a fully effective Release. These provisions terminate and are of no further force or effect beginning 12 months after the occurrence of such a Change in Control.

a) Severance. If within 12 months following a Change of Control (i) the Company terminates the Executive's employment with the Company other than for Cause, or (ii) the Executive resigns from her employment with the Company for Good Reason, within the 60-day period following the Date of Termination, then, in lieu of paying the Executive the Severance Amount and in addition to paying the Accrued Benefit, Company shall: (i) pay the Executive severance pay in a lump sum in cash (less applicable withholdings) in an amount equal to twelve (12) months of the Executive's Base Salary ("**Change in Control Severance Amount**"), payable within 60 days after the Date of Termination, but if that 60-day period extends over two calendar years, the Company shall make the payment in the second calendar year; (ii) pay the Executive a bonus payment equal to the Target Bonus for twelve (12) months of the year that Executive is employed, (iii) provided that the Executive timely elects COBRA coverage, reimburse the Executive for the COBRA premiums paid by the Executive, if any, for the continuation of coverage under the Executive's then-existing group company health plan that the Executive and her dependents are eligible to receive for the earlier of (x) a period of up to twelve (12) months from the date of the Executive's termination of employment, or (y) until the Executive becomes eligible to receive health insurance benefits under any other employer's group health

plan; and (iv) cause all stock options and other stock-based awards granted after the Effective Date and held by the Executive to immediately accelerate, vest, and become fully exercisable or nonforfeitable.

b) Additional Limitation.

(i) Anything in this Agreement to the contrary notwithstanding, if the amount of any compensation, payment, acceleration, benefit, or distribution by the Company to or for the benefit of the Executive, whether paid or payable or distributed or distributable pursuant to the terms of this Agreement or otherwise, calculated in a manner consistent with Section 280G of the Internal Revenue Code of 1986, as amended (the "**Code**") and the applicable regulations thereunder (the "**Severance Payments**"), would be subject to the excise tax imposed by Section 4999 of the Code, then the Severance Payments will be reduced (but not below zero) to the extent necessary so that the sum of all Severance Payments does not exceed the Threshold Amount (defined below), but if the after-tax amount the Executive would receive if there were no reduction pursuant to this section (including any federal, state, and local taxes) exceeds the after-tax amount the Executive would receive if the Severance Payments were reduced below the Threshold Amount, the Severance Payments will no longer be so reduced. If Severance Payments are required to be reduced, the Severance Payments will be reduced in the following order: (1) cash payments not subject to Section 409A of the Code; (2) cash payments subject to Section 409A of the Code; (3) equity-based payments and acceleration; and (4) non-cash forms of benefits.

(ii) For the purposes of this Section 6(c), "**Threshold Amount**" means three times the Executive's "base amount" within the meaning of Section 280G(b)(3) of the Code and the regulations promulgated thereunder less one dollar ($1.00).

(iii) The determinations under this Section 6(c) will be made by a nationally recognized accounting firm selected by the Company (the "**Accounting Firm**"), which must provide detailed supporting calculations both to the Company and the Executive within 15 business days of the Date of Termination, if applicable, or at such earlier time as is reasonably requested by the Company or the Executive.

c) Change in Control Definition. For purposes of this Section 6, "**Change in Control**" means the consummation of any of the following:

(i) the sale of all or substantially all of the assets of the Company or the Parent to an unrelated person or entity;

(ii) a merger, reorganization, or consolidation involving the Company or the Parent in which the shares of voting stock outstanding immediately prior to the transaction represent or are converted into or exchanged for securities of the surviving or resulting entity that, immediately upon completion of the transaction, represent less than 50% of the outstanding voting power of the surviving or resulting entity;

(iii) the acquisition of all or a majority of the outstanding voting stock of the Company or the Parent in a single transaction or a series of related transactions by a person or group of persons; or

(iv) any other acquisition of the business of the Company or the Parent, as determined by the Board;

but the Company's initial public offering, any subsequent public offering, or another capital raising event, or a merger effected solely to change the Company's domicile does not constitute a Change in Control.

Section 7. Section 409A Compliance. The following rules shall apply, to the extent necessary, with respect to distribution of the payments and benefits, if any, to be provided to the Executive under this Agreement. Subject to the provisions in this Section, the severance payments pursuant to this Agreement shall begin only upon the date of the Executive's "separation from service" (determined as set forth below) which occurs on or after the date of the Executive's termination of employment.

a) This Agreement is intended to comply with Code Section 409A (to the extent applicable) and the parties hereto agree to interpret, apply and administer this Agreement in the least restrictive manner necessary to comply therewith and without resulting in any increase in the amounts owed hereunder by the Company.

b) It is intended that each installment of the severance payments and benefits provided under this Agreement shall be treated as a separate "payment" for purposes of Section 409 A of the Internal Revenue Code of 1986, as amended, and the guidance issued thereunder ("Section 409A"). Neither the Executive nor the Company shall have the right to accelerate or defer the delivery of any such payments or benefits except to the extent specifically permitted or required by Section 409A.

c) If, as of the date of the Executive's "separation from service" from the Company, the Executive is not a "specified employee" (within the meaning of Section 409 A), then each installment of the severance payments and benefits shall be made on the dates and terms set forth in this Agreement.

d) If, as of the date of the Executive's "separation from service" from the Company, the Executive is a "specified employee" (within the meaning of Section 409A), then:

(i) Each installment of the severance payments and benefits due under this Agreement that, in accordance with the dates and terms set forth herein, will in all circumstances, regardless of when the separation from service occurs, be paid within the short-term deferral period (as defined in Section 409A) shall be treated as a short-term deferral within the meaning of Treasury Regulation Section 1.409A-l(b)(4) to the maximum extent permissible under Section 409A; and

(ii) Each installment of the severance payments and benefits due under this Agreement that is not described in Section 7(d)(i) above and that would, absent this subsection, be paid within the six-month period following the Executive's "separation from service" from the Company shall not be paid until the date that is six months and one day after such separation from service (or, if earlier, the date of Executive's death), with any such installments that are required to be delayed being accumulated during the six-month period and paid in a lump sum on the date that is six months and one day following the Executive's separation from service and any subsequent installments, if any, being paid in accordance with the dates and terms set forth herein; provided, however, that the preceding provisions of this sentence shall not apply to any installment of severance payments and benefits if and to the maximum extent that such installment is deemed to be paid under a separation pay plan that does not provide for a deferral of compensation by reason of the application of Treasury Regulation 1.409A-1 (b)(9)(iii) (relating to separation pay upon an involuntary separation from service).

Any installments that qualify for the exception under Treasury Regulation Section 1.409A-l(b)(9)(iii) must be paid no later than the last day of the second taxable year following the taxable year in which the separation from service occurs.

e) The determination of whether and when the Executive's separation from service from the Company has occurred shall be made in a manner consistent with, and based on the presumptions set forth in, Treasury Regulation Section 1.409A-l(h). Solely for purposes of this Section, "Company" shall include all persons with whom the Company would be considered a single employer as determined under Treasury Regulation Section 1.409A-l(h)(3).

f) All reimbursements and in-kind benefits provided under this Agreement shall be made or provided in accordance with the requirements of Section 409A to the extent that such reimbursements or in-kind benefits are subject to Section 409A, including, where applicable, the requirements that (i) any reimbursement is for expenses incurred during the Executive's lifetime (or during a shorter period of time specified in this Agreement), (ii) the amount of expenses eligible for reimbursement during a calendar year may not affect the expenses eligible for reimbursement in any other calendar year, (iii) the reimbursement of an eligible expense will be made on or before the last day of the calendar year following the year in which the expense is incurred and (iv) the right to reimbursement is not subject to set off or liquidation or exchange for any other benefit.

g) Notwithstanding anything herein to the contrary, the Company shall have no liability to the Executive or to any other person if the payments and benefits provided in this Agreement that are intended to be exempt from or compliant with Section 409A are not so exempt or compliant.

Section 8. Confidential Information. Employee agrees to enter into the Company's standard Employee Confidentiality and Proprietary Rights Agreement (the "Confidential Information Agreement"). Employee's receipt of any benefits in connection with or following Employee's termination will be subject to Employee continuing to comply with the terms of Confidential Information Agreement.

Section 9. Cooperation; Other Documents; Non-Disclosure.

a) Litigation and Regulatory Cooperation. During and after the Executive's employment, the Executive shall reasonably cooperate with the Company in the defense or prosecution of any claims or actions now in existence or which may be brought in the future against or on behalf of the Company which relate to events or occurrences that took place while the Executive was employed by the Company. The Executive's reasonable cooperation in connection with such claims or actions includes, but is not limited to, being available to meet with counsel to prepare for discovery or trial and to act as a witness on behalf of the Company at mutually convenient times. During and after the Executive's employment, the Executive also shall reasonably cooperate with the Company in connection with any investigation or review of any federal, state, or local regulatory authority as any such investigation or review relates to events or occurrences that took place while the Executive was employed by the Company. The Company shall reasonably compensate Executive, in its sole discretion, for her time spent, and reimburse the Executive for any reasonable out-of-pocket expenses incurred, in connection with the Executive's performance of obligations pursuant to this

b) Section 9.a).

(b) Non-Disclosure. The Executive shall use her reasonable efforts to maintain the confidentiality of the terms of this Agreement to the extent permitted by law, but the Executive may disclose the terms of this Agreement to the extent it is concerted activity under Section 7 of the National Labor Relations Act and to her immediate family members and to her legal, tax, and other advisors.

Section 10. Arbitration of Disputes.

(a) Scope of Arbitration Requirement. The Executive hereby waives her right to a trial before a judge or jury and agrees to arbitrate before a neutral arbitrator skilled in hearing similar disputes any and all claims or disputes arising out of this Agreement and any and all claims arising from or relating to her employment, including but not limited to claims against any current or former employee, director, or agent of the Company, claims of wrongful termination, retaliation, discrimination, harassment, breach of contract (including but not limited to disputes pertaining to the formation, validity, interpretation or effect of this Agreement), breach of the covenant of good faith and fair dealing, defamation, invasion of privacy, fraud, misrepresentation, constructive discharge or failure to provide a leave of absence, or claims regarding commissions, stock options or bonuses, infliction of emotional distress, or unfair business practices (each an "**Arbitrable Dispute**"). Arbitration is the exclusive remedy for any Arbitrable Dispute, instead of any court or administrative action, unless the waiver of a certain court or administrative action is prohibited by law. Except as otherwise required under applicable law, the Executive hereby waives any right to assert an Arbitrable Dispute as a class action or representative action claim against the Company and agrees to only submit the Executive's own, individual claims in arbitration and will not seek to represent the interests of any other person.

(b) Procedure. Any arbitration will be administered by the American Arbitration Association ("**AAA**") and the neutral arbitrator will be selected in a manner consistent with AAA's National Rules For The Resolution of Employment Disputes ("**Applicable Arbitration Rules**"). Any arbitration under this Agreement must be conducted in the Commonwealth of Pennsylvania, and the arbitrator must administer and conduct the arbitration in accordance with the Applicable Arbitration Rules, except that (i) the arbitrator must allow for the discovery authorized by the Pennsylvania Rules of Civil Procedure or the discovery that the arbitrator decides is necessary for the Parties to vindicate their respective claims or defenses, and (ii) presentation of evidence will be governed by the Pennsylvania Rules of Evidence. Within a reasonable time after the conclusion the arbitration proceedings, the arbitrator shall issue a written decision and must include the findings of fact and law that support that decision. The arbitrator has the power to award any remedies available under applicable law, and the arbitrator's decision is final and binding on both Parties, except to the extent applicable law allows for judicial review of arbitration awards.

(c) Costs. The Company shall bear all the costs of arbitration, except that the Executive shall pay the first $125.00 of any filing fees associated with any arbitration the Executive initiates. Both Parties are responsible for their own attorneys' fees, and the arbitrator may not award attorneys' fees unless a statute or contract at issue specifically authorizes such an award.

(d) Applicability. This Section 10 does not apply to (i) workers' compensation or unemployment insurance claims or (ii) claims concerning ownership, validity, infringement, misappropriation, disclosure, misuse, or enforceability of any confidential information, patent right, copyright, mask work, trademark, or any other trade secret or intellectual property held or sought by either the Executive or the Company.

(e) Remedy. Should any party institute any legal action or administrative proceeding against the other with respect to any claim waived by this Agreement, to the extent allowable by law, or pursue any Arbitrable Dispute by any method other than as set forth above, except to enforce the arbitration provisions and as expressly provided for in this Section 9, the responding party is entitled to recover from the initiating party all damages, costs, expenses, and attorneys' fees incurred as a result of that action. This section shall not apply to workers compensation claims or unemployment benefits claims.

Section 11. Consent to Jurisdiction. To the extent that any court action is initiated to enforce Section 10 of this Agreement, the Parties hereby consent to the jurisdiction of any state court in the Commonwealth of Pennsylvania and any U.S. District Court sitting in the Commonwealth of Pennsylvania. Accordingly, with respect to any such court action, the Executive (a) submits to the personal jurisdiction of such courts; (b) consents to service of process; and (c) waives any other requirement (whether imposed by statute, rule of court, or otherwise) with respect to personal jurisdiction or service of process.

Section 12. Integration. This Agreement, together with the Confidential Information Agreement executed concurrently herewith, constitute the entire agreement between the Parties with respect to the subject matter hereof and supersedes all prior agreements between the Parties concerning such subject matter. Without limiting the foregoing, the parties agree that any employment agreement, other than this Agreement, existing between the Parties as of the date hereof is hereby terminated and shall be of no force of effect.

Section 13. Withholding. All payments made by the Company to the Executive under this Agreement will be net of any tax or other amounts lawfully withheld by the Company under applicable law. Nothing in this Agreement is to be construed to obligate the Company to design or implement any compensation arrangement in a way that minimizes tax consequences for the Executive.

Section 14. Successor to the Executive. This Agreement inures to the benefit of and is enforceable by the Executive's personal representatives, executors, administrators, heirs, distributees, devisees, and legatees. If the Executive dies after her termination of employment but prior to the completion by the Company of all payments due her under this Agreement, the Company shall continue the payments to the Executive's beneficiary designated in writing to the Company prior to her death (or to her estate, if the Executive fails to make such a designation).

Section 15. Enforceability. If any portion or provision of this Agreement is declared illegal or unenforceable by a court of competent jurisdiction, then the remainder of this Agreement, or the application of that portion or provision in circumstances other than those as to which it is so declared illegal or unenforceable, will not be affected by that declaration, and each portion and provision of this Agreement will continue to be valid and enforceable to the fullest extent permitted by law.

Section 16. Survival. The provisions of this Agreement survive the termination of this Agreement and/or the termination of the Executive's employment to the extent necessary to effectuate the intent of the Parties as expressed in this Agreement.

Section 17. Waiver. No waiver of any provision of this Agreement is effective unless made in writing and signed by the waiving party, and, in the case of the Company only after the waiver has been specifically approved by the Board. The failure of either party to require the performance of any term or obligation of this Agreement, or the waiver by either party of any breach of this Agreement, will not prevent any subsequent enforcement of such term or obligation or be deemed a waiver of any subsequent breach.

Section 18. Notices. Any notices, requests, demands, and other communications provided for by this Agreement are sufficient if in writing and delivered in person or sent by a nationally recognized overnight courier service or by registered or certified mail, postage prepaid, return receipt requested, to the Executive at the last address the Executive has filed in writing with the Company or, in the case of the Company, at its main offices, attention to the Corporate Secretary.

Section 19. Amendment. This Agreement may be amended or modified only by a written instrument signed by the Executive and by a duly authorized representative of the Company.

Section 20. Governing Law. This is a Pennsylvania contract and is to be construed under and be governed in all respects by the laws of the Commonwealth of Pennsylvania without giving effect to the conflict of laws principles of that state.

Section 21. Counterparts. This Agreement may be executed in any number of counterparts, and by each party on separate counterparts, each of which counterparts, when so executed and delivered is to be taken to be an original; but those counterparts together constitute one and the same document. PDF, facsimile, scanned, and electronic signatures have the same legal effect as original ink signatures.

Section 22. Successor to Company. The Company shall require any successor (whether direct or indirect, by purchase, merger, consolidation, or otherwise) to all or substantially all of the business or assets of the Company expressly to assume and agree to perform this Agreement to the same extent that the Company would be required to perform it if no succession had taken place. Failure of the Company to obtain an assumption of this Agreement at or prior to the effectiveness of any succession is a material breach of this Agreement.

Section 23. Voluntary Nature of Agreement. The Executive acknowledges and agrees that she is executing this Agreement voluntarily and without any duress or undue influence by the Company or anyone else. The Executive further acknowledges and agrees that she has carefully read this Agreement and that she has asked any questions needed for her to fully understand the terms, consequences, and binding effect of this Agreement. The Executive agrees that she has been provided an opportunity to seek the advice of an attorney of her choice before signing this Agreement.

[Signature Page Follows]

The Parties are executing this Executive Agreement as of the date set forth in the introductory paragraph.

ARBUTUS BIOPHARMA INC.

/s/ William Collier

William Collier

Title: President & Chief Executive Officer

EXECUTIVE

/s/ Karen Sims

Karen Sims

EXHIBIT A

GENERAL RELEASE LANGUAGE

The Executive agrees, for herself, her spouse, heirs, executor or administrator, assigns, insurers, attorneys, and other persons or entities acting or purporting to act on her behalf (the "**Executive's Parties**"), to irrevocably and unconditionally release, acquit, and forever discharge, to the extent permissible by law, the Company, its affiliates, subsidiaries, directors, officers, employees, shareholders, partners, agents, representatives, predecessors, successors, assigns, insurers, attorneys, benefit plans sponsored by the Company, and said plans' fiduciaries, agents and trustees (the "**Company's Parties**"), from any and all actions, causes of action, suits, claims, obligations, liabilities, debts, demands, contentions, damages, judgments, levies, and executions of any kind, whether in law or in equity, known or unknown, which the Executive's Parties have, have had, or may in the future claim to have against the Company's Parties by reason of, arising out of, related to, or resulting from the Executive's employment with the Company or the termination of that employment. This release specifically includes without limitation any claims arising in tort or contract, any claim based on wrongful discharge, any claim based on breach of contract, any claim arising under federal, state or local law prohibiting race, sex, age, religion, national origin, handicap, disability, or other forms of discrimination, any claim arising under federal, state, or local law concerning employment practices, and any claim relating to compensation or benefits, with the exception of workers compensation claims. This specifically includes, without limitation, any claim that the Executive has or has had under Title VII of the Civil Rights Act of 1964, as amended, the Age Discrimination in Employment Act, as amended, the Americans with Disabilities Act, as amended, and the Employee Retirement Income Security Act of 1974, as amended. It is understood and agreed that the waiver of benefits and claims contained in this section does not include a waiver of the right to payment of any vested, nonforfeitable benefits to which the Executive or a beneficiary of the Executive may be entitled under the terms and provisions of any employee benefit plan of the company which have accrued as of the Date of Termination, and does not include a waiver of the right to benefits and payment of consideration to which the Executive may be entitled under this Agreement or any of the agreements contemplated by this Agreement (including the indemnification agreement and the stock option agreement). The Executive acknowledges that she is entitled to only the severance benefits and compensation set forth in this Agreement, and that all other claims for any other benefits or compensation are hereby waived, except those expressly stated in the preceding sentence.

The Executive hereby acknowledges her understanding that under this Agreement she is releasing any known or unknown claims she may have.

The Executive expressly waives and relinquishes all rights and benefits under that section and any law of any jurisdiction of similar effect with respect to her release of claims.

EXHIBIT B

EXISTING CONFLICTS

If applicable, Executive to describe, in specific terms, any ongoing business relationship with any organization. Please provide a copy of any agreement(s) you might have with said organization(s) that creates a business relationship described in Section 3 (d).

EXECUTIVE EMPLOYMENT AGREEMENT

This Executive Employment Agreement ("**Agreement**") is made effective as of July 10, 2023 (the "**Effective Date**") by and between Arbutus Biopharma Inc. (the "**Company**"), and **J. Christopher Naftzger** (the "**Executive**") (together the "**Parties**").

RECITALS

A. WHEREAS, the Company desires to employ the Executive as General Counsel and Chief Compliance Officer in accordance with the provisions of this Agreement; and

B. WHEREAS, Executive desires to serve the Company and accept employment under the terms and conditions stated in this Agreement; and

C. WHEREAS, the Parties have freely negotiated the terms and conditions of this Agreement and have reached agreement on them.

THEREFORE, the Parties agree as follows:

Section 1. Position and Duties. The Executive will serve as General Counsel and Chief Compliance Officer of the Company and will have powers and duties consistent with such position as may from time to time be prescribed by the Chief Executive Officer of the Company. As General Counsel and Chief Compliance Officer of the Company, the Executive shall devote his full working time and efforts to the business and affairs of the Company. Notwithstanding the foregoing, the Executive may manage his personal investments or engage charitable or other community activities except as restricted or prohibited by the terms of a confidentiality agreement between the Executive and the Company and as long as those engagements, services and activities, individually or in the aggregate, do not interfere with the Executive's performance of his duties to the Company.

Section 2. Compensation and Related Matters.

a) Base Salary. The Executive's base salary will be US$415,000 per year. The Executive's base salary will be reviewed annually by the Chief Executive Officer of the Company and is subject to increase but not decrease except for an across-the-board salary reduction affecting all senior executives of the Company. The base salary in effect at any given time is referred to as "**Base Salary**" and this Agreement need not be modified to reflect a change in Base Salary. The Base Salary is subject to withholding and payable in a manner that is consistent with the Company's usual payroll practices for senior executives.

b) Bonus. The Executive is eligible to be considered for an annual discretionary bonus of up to 40% of Base Salary (such bonus, the "**Target Bonus**"). The Target Bonus shall be subject to the terms of the bonus plan and the approval of the Company's Board of Directors (the "**Board**"), in its sole discretion, on an annual basis.

c) Expenses. The Executive is entitled to receive prompt reimbursement for all reasonable expenses incurred by him in performing services under this Agreement, in accordance with the policies and procedures then in effect and established by the Company for its senior executives.

d) Other Benefits. The Executive is entitled to participate in or receive benefits consistent with other senior executives under the Company's employee benefit plans as they may be adopted and amended from time to time, subject to the terms and conditions of those employee benefit plans.

e) Equity Compensation. Subject to the discretionary approval of the Company's Board of Directors, and in accordance with the Company's annual performance and compensation review process, the Executive shall be eligible to receive equity awards under the Arbutus Biopharma Corporation 2016 Omnibus Share and Incentive Plan and or any other similar equity incentive plan to the same extent as other executives of the Company. The Company's President and CEO will promptly recommend to the Board that the Executive receive an options grant in the amount of 500,000 shares of the Company, as an inducement award under applicable rules of The Nasdaq Stock Market provided such award will be subject to the terms of the Equity Plan, the terms of a notice of grant and any other terms as may be required by the Board.

f) Paid Time Off. The Executive is entitled to paid holidays and PTO days each year, in an amount determined in accordance with and subject to the Company's applicable policies in effect, and as may be amended from time to time. PTO may be taken at such times and intervals as the Executive shall determine, subject to the business needs of the Company.

Section 3. Non-Competition and Non-Solicitation

a) The Executive acknowledges that the Company's industry is highly competitive and employees leaving the employ of the Company have the ability to cause significant damage to the Company's interests if they join a competing business immediately upon leaving the Company.

b) Definitions:

(i) "Affiliate" means any person or entity directly or indirectly controlling, controlled by or under common control with the Company, where control may be by either management authority or equity interest.

(ii) "Business" or "Business of the Company" means (a) researching, developing, producing and marketing any treatment for hepatitis B virus infection in humans or (b) any other treatment area in which the Company has an active research and development program on the date this Agreement terminates and in connection with which the Executive directly provided service or had direct supervisory responsibilities.

(iii) "Competing Business" means any endeavor, activity or business which is competitive in any material way with the Business of the Company worldwide.

(iv) "Contact" means any person, firm, corporation or other entity that was a client, customer, supplier, principal, shareholder, investor, collaborator, strategic partner, licensee, contact or prospect of the Company (or of its partners, funders or Affiliates) with whom the Executive dealt or otherwise became aware of during the term of his employment in any capacity with the Company.

(v) "Restricted Period" means the twelve (12) month period commencing immediately after the Executive's employment terminates.

c) Reasonableness. The Executive hereby acknowledges and agrees that:

(i) both before and since the Effective Date the Company has operated and competed and will operate and compete worldwide, with respect to the Business of the Company;

(ii) competitors of the Company and the Business are located worldwide;

(iii) in order to protect the Company adequately, any enjoinder of competition would have to apply to any country in which the Company, during the term of the Executive's employment, had material business relationships;

(iv) during the course of the Executive's employment with the Company, on behalf of the Company, the Executive will acquire knowledge of, and will come into contact with, initiate and establish relationships with, both existing and new clients, customers, suppliers, principals, contacts and prospects of the Company, and that in some circumstances the Executive may become the senior or sole representative of the Company dealing with such persons; and

(v) in light of the foregoing, the provisions of this Section 3 are reasonable and necessary for the proper protection of the Business of the Company.

d) Restrictive Covenant. Except as set forth on Exhibit B attached hereto, during the term of the Executive's employment and for the Restricted Period after the termination thereof, the Executive shall not, without the advance written consent of the Board, such consent to be granted or withheld in the Board's sole discretion, within the geographic scope of any country in which the Company, during the term of the Executive's employment, had material business relationships, carry on or be employed by or engaged in or have any financial or other interest in or be otherwise commercially involved in a Competing Business, directly or indirectly, either individually or in partnership or jointly or in conjunction with any person, firm, corporation or other entity, as principal, agent, consultant, advisor, employee, shareholder or in any manner whatsoever.

e) Exception. The Executive shall not be in default of Section 3(d) by virtue of the Executive:

(i) following the termination of employment, holding, strictly for portfolio purposes and as a passive investor, no more than five percent (5%) of the issued and outstanding shares of, or any other interest in, any corporation or other entity that is a Competing Business; or

(ii) during the term of his employment, holding, strictly for portfolio purposes and as a passive investor, issued and outstanding shares of, or any other interest in, any corporation or other entity, the business of which corporation or other entity is in the same Business as the Company provided such corporation is not a Competing Business, and provided further that the Executive first obtains the Company's written consent, which consent will not be unreasonably withheld.

If the Executive holds issued and outstanding shares or any other interest in a corporation or other entity pursuant to Section 3(e)(ii) above and following the acquisition of such shares or other interest the business of the corporation or other entity becomes a Competing Business, the

Executive will promptly dispose of the Executive's shares or other interest in such corporation or other entity.

f) Non-Solicitation. The Executive shall not, during the term of his employment and for the Restricted Period after the termination thereof for any reason, whether legal or illegal, either individually or in partnership or jointly or in conjunction with any person, firm, corporation or other entity, as principal, agent, consultant, advisor, employee, shareholder or in any manner whatsoever, without the prior written and informed consent of the Company, directly or indirectly:

(i) solicit, induce or encourage any Contact to curtail or cease its relationship with the Company, for any purpose which is competitive with the Business; or

(ii) accept (or procure or assist the acceptance of) any business from any Contact if such business is competitive with the Business; or

(iii) be employed by or supply (or procure or assist the supply of) any goods or services to any Contact for any purpose which the Executive knows or has reason to know is competitive with the Business; or

(iv) employ, engage, offer employment or engagement to or solicit the employment or engagement of or otherwise entice away from or solicit, induce or encourage to leave the employment or engagement of the Company, any individual who is employed or engaged by the Company at the time of any such offer, solicitation or enticement whether or not such individual would commit any breach of his contract or terms of employment or engagement by leaving the employ or the engagement of the Company, provided that the Executive shall be permitted, solely in a personal capacity, to provide letters of reference for individuals who are employed by the Company.

g) Validity. The Executive expressly recognizes and acknowledges that it is the intent of the parties that the Executive's activities following the termination of the Executive's employment with the Company be restricted in the manner described in this Section 3, and acknowledges that good, valuable, and sufficient consideration has been provided in exchange for such restrictions. The Executive agrees that should any of the restrictions contained in this Section 3 be found to be unreasonable to any extent by a court of competent jurisdiction adjudicating upon the validity of the restriction, whether as to the scope of the restriction, the area of the restriction or the duration of the restriction, then such restriction shall be reduced to that which is in fact declared reasonable by such court, or a subsequent court of competent jurisdiction, requested to make such a declaration, in order to ensure that the intention of the parties is given the greatest possible effect.

Section 4. Termination. The Executive's employment by the Company may be terminated without any breach of this Agreement under the following circumstances:

a) Death. The Executive's employment hereunder terminates upon his death.

b) Disability. The Company may terminate the Executive's employment if he is disabled (as determined by the Chief Executive Officer) in a manner that renders the Executive unable to perform the essential functions of his then existing position or positions under this Agreement with or without reasonable accommodation for a period of six months or more. Nothing in this Section

4.b) is to be construed to waive the Executive's rights, if any, under existing law including, without limitation, the Family and Medical Leave Act of 1993, 29 U.S.C. §2601 et seq., and the Americans with Disabilities Act, 42 U.S.C. §12101 et seq.

c) Termination by Company for Cause. For purposes of this Agreement, "For Cause" shall mean: (i) Employee is charged with a felony (excluding a DUI) or any violation of state or federal securities laws; (ii) Employee willfully engages in conduct that is in bad faith and materially injurious to the Company, including but not limited to, misappropriation of trade secrets, fraud or embezzlement; (iii) Employee commits a material breach of this Agreement; (iv) Employee willfully refuses to implement or follow a lawful policy or directive of the Company; or (v) Employee engages in misfeasance or malfeasance demonstrated by a pattern of failure to perform job duties diligently and professionally. The Company may terminate Employee's employment For Cause at any time, without any advance notice. The Company shall pay Employee all compensation to which Employee is entitled up through the date of termination, subject to any other rights or remedies of the Company under law; and thereafter all obligations of the Company under this Agreement shall cease.

d) Termination by the Company Without Cause or by the Executive for Good Reason. The Company may terminate the Executive's employment under this Agreement at any time without Cause and the Executive may terminate his employment with Good Reason. For purposes of this Agreement, "Good Reason" means the occurrence of any of the following events without the Executive's prior written consent: (i) the failure of the Executive to be appointed to the position set forth in Section 1, if not promptly cured after written notice; (ii) a reduction by the Company of the Executive's Base Salary or Target Bonus percentage, except for an across-the-board salary reduction affecting all senior executives of the Company; (iii) a relocation of Employee's principal place of employment by more than fifty (50) miles; (iv) a termination of the Executive's employment by the Company; and (v) a substantial and adverse change to the Executive's duties and responsibilities. For purposes of this Agreement, except for the Company terminating the Executive's employment, termination for Good Reason requires Executive to comply with the "Good Reason Process," which means that (i) the Executive reasonably determines in good faith that a Good Reason condition has occurred; (ii) the Executive notifies the Company in writing of the first occurrence of the Good Reason condition within 30 days of the first occurrence of such condition; (iii) the Executive cooperates in good faith with the Company's efforts, for a period of not less than 30 days following that notice (the "**Cure Period**") to remedy the condition; (iv) notwithstanding the Company's efforts, the Good Reason condition continues to exist; and (v) the Executive terminates his employment within 30 days after the end of the Cure Period. If the Company cures the Good Reason condition during the Cure Period, Good Reason is deemed not to have occurred.

Any termination by the Company of the Executive's employment under this Agreement that does not constitute a termination for Cause under Section 4.c) and does not result from the death or disability of the Executive under Section 4(a) or (b) is a termination without Cause.

e) Termination by the Executive. Executive may terminate employment with the Company without Good Reason at any time for any reason or no reason at all,

upon thirty (30) days' advance written notice. The Company shall have the option, in its sole discretion, to make Executive's termination effective or to direct the Executive to perform no work and/or remain off premises at any time prior to the end of such notice period as long as the Company pays Executive all compensation to which Executive is entitled up through the last day of the 30 day notice period.

f) Notice of Termination. Except for termination as specified in Section 4.a), any termination of the Executive's employment by the Company or any termination of his employment by the Executive must be communicated by written Notice of Termination to the other party. For purposes of this Agreement, a "**Notice of Termination**" means a notice that indicates the specific termination provision in this Agreement that the termination is based upon.

g) Date of Termination. "**Date of Termination**" means: (i) if the Executive's employment is terminated by his death, the date of his death; (ii) if the Executive's employment is terminated on account of disability under Section 4.b) or by the Company for Cause under Section 4.c), or by the Company without Cause under Section 4.d) on the date the Notice of Termination is given; (iii) if the Executive terminates his employment under Section 4.e) without Good Reason, on the date specified by the Executive in the notice (which shall be at least thirty (30) days after the date of the Notice of Termination) and, if no such date is specified, 30 days after the date of the Notice of Termination; and (iv) if the Executive terminates his employment under Section 4.e) with Good Reason, the date on which a Notice of Termination is given after the end of the Cure Period. Notwithstanding the foregoing, if the Executive gives a Notice of Termination to the Company that takes effect at a future date, the Company may unilaterally accelerate the Date of Termination and that acceleration will not be deemed a termination by the Company for purposes of this Agreement.

Section 5. Compensation Upon Termination.

a) Termination Generally. If the Executive's employment with the Company is terminated for any reason, the Company shall pay or provide to the Executive (or to his authorized representative or estate), (i) unpaid expense reimbursements submitted to the Company in accordance with the Company's policies; (ii) accrued but unused vacation to the extent payment is required by law or Company policy; (iii) any vested benefits the Executive may have under any employee benefit plan of the Company; (iv) any earned but unpaid Base Salary and (v) any earned but unpaid annual Target Bonus, for the prior fiscal year (collectively the "**Accrued Benefit**") on or before the time required by law, but in no event more than 30 days after the Executive's Date of Termination. The Executive shall not be entitled to any other salary, compensation, bonus (or pro rata share thereof) or benefits from the Company thereafter, except as otherwise specifically provided hereunder, under the Company's employee benefit plans or as expressly required by applicable law.

b) Termination by the Company Without Cause or by the Executive for Good Reason. If the Executive's employment is terminated by the Company without Cause or by the Executive for Good Reason, then the Company shall pay the Executive his Accrued Benefit as of the Date of Termination. In addition, subject to the Executive providing the Company with a fully effective general

release of claims in a form and manner satisfactory to the Company that includes but is not limited to the terms set forth in the attached Exhibit A (the "**Release**") within the 60-day period following the Date of Termination, the Company shall pay the Executive (i) severance pay in a lump sum in cash in an amount equal to twelve (12) months of Executive's Base Salary, less lawful withholding (as applicable, "**Severance Amount**"), payable within 60 days after the Date of Termination, but if that 60-day period extends over two calendar years, the Company shall make the payment in the second calendar year, and (ii) provided that the Executive timely elects COBRA coverage, reimburse the Executive for the COBRA premiums paid by the Executive, if any, for the continuation of coverage under the Executive's then-existing group company health plan that the Executive and his dependents are eligible to receive for the earlier of a period of up to twelve (12) months from the date of the Executive's termination of employment, or until the Executive becomes eligible to receive health insurance benefits under any other employer's group health plan.

Section 6. Change in Control Provisions. The provisions of this Section 6 set forth the Executive's rights and obligations upon the occurrence of a Change in Control of the Company. These provisions are intended to assure and encourage in advance the Executive's continued attention and dedication to his assigned duties and his objectivity during the pendency and after the occurrence of any Change in Control. The provisions of this Section 6 apply in addition to, and/or modify, the provisions of Section 5(b) regarding severance pay and benefits upon a termination of employment, if applicable, if the termination of employment occurs within 12 months after the occurrence of a Change in Control. These provisions are subject to the Executive providing (and not revoking) the Company with a fully effective Release. These provisions terminate and are of no further force or effect beginning 12 months after the occurrence of such a Change in Control.

a) Severance. If within 12 months following a Change of Control (i) the Company terminates the Executive's employment with the Company other than for Cause, or (ii) the Executive resigns from his employment with the Company for Good Reason, within the 60-day period following the Date of Termination, then, in lieu of paying the Executive the Severance Amount and in addition to paying the Accrued Benefit, Company shall: (i) pay the Executive severance pay in a lump sum in cash (less applicable withholdings) in an amount equal to twelve (12) months of the Executive's Base Salary ("**Change in Control Severance Amount**"), payable within 60 days after the Date of Termination, but if that 60-day period extends over two calendar years, the Company shall make the payment in the second calendar year; (ii) pay the Executive a bonus payment equal to the Target Bonus for twelve (12) months of the year that Executive is employed, (iii) provided that the Executive timely elects COBRA coverage, reimburse the Executive for the COBRA premiums paid by the Executive, if any, for the continuation of coverage under the Executive's then-existing group company health plan that the Executive and his dependents are eligible to receive for the earlier of (x) a period of up to twelve (12) months from the date of the Executive's termination of employment, or (y) until the Executive becomes eligible to receive health insurance benefits under any other employer's group health plan; and (iv) cause all stock options and other stock-based awards granted after the Effective Date and held by the Executive to immediately accelerate, vest, and become fully exercisable or nonforfeitable.

b) Additional Limitation.

(i) Anything in this Agreement to the contrary notwithstanding, if the amount of any compensation, payment, acceleration, benefit, or distribution by the Company to or for the benefit of the Executive, whether paid or payable or distributed or distributable pursuant to the terms of this Agreement or otherwise, calculated in a manner consistent with Section 280G of the Internal Revenue Code of 1986, as amended (the "**Code**") and the applicable regulations thereunder (the "**Severance Payments**"), would be subject to the excise tax imposed by Section 4999 of the Code, then the Severance Payments will be reduced (but not below zero) to the extent necessary so that the sum of all Severance Payments does not exceed the Threshold Amount (defined below), but if the after-tax amount the Executive would receive if there were no reduction pursuant to this section (including any federal, state, and local taxes) exceeds the after-tax amount the Executive would receive if the Severance Payments were reduced below the Threshold Amount, the Severance Payments will no longer be so reduced. If Severance Payments are required to be reduced, the Severance Payments will be reduced in the following order: (1) cash payments not subject to Section 409A of the Code; (2) cash payments subject to Section 409A of the Code; (3) equity-based payments and acceleration; and (4) non-cash forms of benefits.

(ii) For the purposes of this Section 6(c), "**Threshold Amount**" means three times the Executive's "base amount" within the meaning of Section 280G(b)(3) of the Code and the regulations promulgated thereunder less one dollar ($1.00).

(iii) The determinations under this Section 6(c) will be made by a nationally recognized accounting firm selected by the Company (the "**Accounting Firm**"), which must provide detailed supporting calculations both to the Company and the Executive within 15 business days of the Date of Termination, if applicable, or at such earlier time as is reasonably requested by the Company or the Executive.

c) Change in Control Definition. For purposes of this Section 6, "**Change in Control**" means the consummation of any of the following:

(i) the sale of all or substantially all of the assets of the Company or the Parent to an unrelated person or entity;

(ii) a merger, reorganization, or consolidation involving the Company or the Parent in which the shares of voting stock outstanding immediately prior to the transaction represent or are converted into or exchanged for securities of the surviving or resulting entity that, immediately upon completion of the transaction, represent less than 50% of the outstanding voting power of the surviving or resulting entity;

(iii) the acquisition of all or a majority of the outstanding voting stock of the Company or the Parent in a single transaction or a series of related transactions by a person or group of persons; or

(iv) any other acquisition of the business of the Company or the Parent, as determined by the Board;

but the Company's initial public offering, any subsequent public offering, or another capital raising event, or a merger effected solely to change the Company's domicile does not constitute a Change in Control.

Section 7. Section 409A Compliance. The following rules shall apply, to the extent necessary, with respect to distribution of the payments and benefits, if any, to be provided to the Executive under this Agreement. Subject to the provisions in this Section, the severance payments pursuant to this Agreement shall begin only upon the date of the Executive's

“separation from service” (determined as set forth below) which occurs on or after the date of the Executive's termination of employment.

a) This Agreement is intended to comply with Code Section 409A (to the extent applicable) and the parties hereto agree to interpret, apply and administer this Agreement in the least restrictive manner necessary to comply therewith and without resulting in any increase in the amounts owed hereunder by the Company.

b) It is intended that each installment of the severance payments and benefits provided under this Agreement shall be treated as a separate “payment” for purposes of Section 409 A of the Internal Revenue Code of 1986, as amended, and the guidance issued thereunder (“Section 409A”). Neither the Executive nor the Company shall have the right to accelerate or defer the delivery of any such payments or benefits except to the extent specifically permitted or required by Section 409A.

c) If, as of the date of the Executive's “separation from service” from the Company, the Executive is not a “specified employee” (within the meaning of Section 409 A), then each installment of the severance payments and benefits shall be made on the dates and terms set forth in this Agreement.

d) If, as of the date of the Executive's “separation from service” from the Company, the Executive is a “specified employee” (within the meaning of Section 409A), then:

(i) Each installment of the severance payments and benefits due under this Agreement that, in accordance with the dates and terms set forth herein, will in all circumstances, regardless of when the separation from service occurs, be paid within the short-term deferral period (as defined in Section 409A) shall be treated as a short-term deferral within the meaning of Treasury Regulation Section 1.409A-l(b)(4) to the maximum extent permissible under Section 409A; and

(ii) Each installment of the severance payments and benefits due under this Agreement that is not described in Section 7(d)(i) above and that would, absent this subsection, be paid within the six-month period following the Executive's “separation from service” from the Company shall not be paid until the date that is six months and one day after such separation from service (or, if earlier, the Executive's death), with any such installments that are required to be delayed being accumulated during the six-month period and paid in a lump sum on the date that is six months and one day following the Executive's separation from service and any subsequent installments, if any, being paid in accordance with the dates and terms set forth herein; provided, however, that the preceding provisions of this sentence shall not apply to any installment of severance payments and benefits if and to the maximum extent that such installment is deemed to be paid under a separation pay plan that does not provide for a deferral of compensation by reason of the application of Treasury Regulation 1.409A-1 (b)(9)(iii) (relating to separation pay upon an involuntary separation from service). Any installments that qualify for the exception under Treasury Regulation Section 1.409A-l(b)(9)(iii) must be paid no later than the last day of the second taxable year following the taxable year in which the separation from service occurs.

e) The determination of whether and when the Executive's separation from service from the Company has occurred shall be made in a manner consistent with, and based on the presumptions set forth in, Treasury Regulation Section 1.409A-l(h). Solely for purposes of this Section, “Company” shall include all

persons with whom the Company would be considered a single employer as determined under Treasury Regulation Section 1.409A-l(h)(3).

f) All reimbursements and in-kind benefits provided under this Agreement shall be made or provided in accordance with the requirements of Section 409A to the extent that such reimbursements or in-kind benefits are subject to Section 409A, including, where applicable, the requirements that (i) any reimbursement is for expenses incurred during the Executive's lifetime (or during a shorter period of time specified in this Agreement), (ii) the amount of expenses eligible for reimbursement during a calendar year may not affect the expenses eligible for reimbursement in any other calendar year, (iii) the reimbursement of an eligible expense will be made on or before the last day of the calendar year following the year in which the expense is incurred and (iv) the right to reimbursement is not subject to set off or liquidation or exchange for any other benefit.

g) Notwithstanding anything herein to the contrary, the Company shall have no liability to the Executive or to any other person if the payments and benefits provided in this Agreement that are intended to be exempt from or compliant with Section 409A are not so exempt or compliant.

Section 8. Confidential Information. Employee agrees to enter into the Company's standard Employee Confidentiality and Proprietary Rights Agreement (the "Confidential Information Agreement"). Employee's receipt of any benefits in connection with or following Employee's termination will be subject to Employee continuing to comply with the terms of Confidential Information Agreement.

Section 9. Cooperation; Other Documents; Non-Disclosure.

a) Litigation and Regulatory Cooperation. During and after the Executive's employment, the Executive shall reasonably cooperate with the Company in the defense or prosecution of any claims or actions now in existence or which may be brought in the future against or on behalf of the Company which relate to events or occurrences that took place while the Executive was employed by the Company. The Executive's reasonable cooperation in connection with such claims or actions includes, but is not limited to, being available to meet with counsel to prepare for discovery or trial and to act as a witness on behalf of the Company at mutually convenient times. During and after the Executive's employment, the Executive also shall reasonably cooperate with the Company in connection with any investigation or review of any federal, state, or local regulatory authority as any such investigation or review relates to events or occurrences that took place while the Executive was employed by the Company. The Company shall reasonably compensate Executive, in its sole discretion, for his time spent, and reimburse the Executive for any reasonable out-of-pocket expenses incurred, in connection with the Executive's performance of obligations pursuant to this

b) Section 9.a).

(b) Non-Disclosure. The Executive shall use his reasonable efforts to maintain the confidentiality of the terms of this Agreement to the extent permitted by law, but the Executive may disclose the terms of this Agreement to the extent it is concerted activity under Section 7 of the National Labor Relations Act and to his immediate family members and to his legal, tax, and other advisors.

Section 10. Arbitration of Disputes.

(a) Scope of Arbitration Requirement. The Executive hereby waives his right to a trial before a judge or jury and agrees to arbitrate before a neutral arbitrator skilled in hearing similar disputes any and all claims or disputes arising out of this Agreement and any and all claims arising from or relating to his employment, including but not limited to claims against any current or former employee, director, or agent of the Company, claims of wrongful termination, retaliation, discrimination, harassment, breach of contract (including but not limited to disputes pertaining to the formation, validity, interpretation or effect of this Agreement), breach of the covenant of good faith and fair dealing, defamation, invasion of privacy, fraud, misrepresentation, constructive discharge or failure to provide a leave of absence, or claims regarding commissions, stock options or bonuses, infliction of emotional distress, or unfair business practices (each an "**Arbitrable Dispute**"). Arbitration is the exclusive remedy for any Arbitrable Dispute, instead of any court or administrative action, unless the waiver of a certain court or administrative action is prohibited by law. Except as otherwise required under applicable law, the Executive hereby waives any right to assert an Arbitrable Dispute as a class action or representative action claim against the Company and agrees to only submit the Executive's own, individual claims in arbitration and will not seek to represent the interests of any other person.

(b) Procedure. Any arbitration will be administered by the American Arbitration Association ("**AAA**") and the neutral arbitrator will be selected in a manner consistent with AAA's National Rules For The Resolution of Employment Disputes ("**Applicable Arbitration Rules**"). Any arbitration under this Agreement must be conducted in the Commonwealth of Pennsylvania, and the arbitrator must administer and conduct the arbitration in accordance with the Applicable Arbitration Rules, except that (i) the arbitrator must allow for the discovery authorized by the Pennsylvania Rules of Civil Procedure or the discovery that the arbitrator decides is necessary for the Parties to vindicate their respective claims or defenses, and (ii) presentation of evidence will be governed by the Pennsylvania Rules of Evidence. Within a reasonable time after the conclusion the arbitration proceedings, the arbitrator shall issue a written decision and must include the findings of fact and law that support that decision. The arbitrator has the power to award any remedies available under applicable law, and the arbitrator's decision is final and binding on both Parties, except to the extent applicable law allows for judicial review of arbitration awards.

(c) Costs. The Company shall bear all the costs of arbitration, except that the Executive shall pay the first $125.00 of any filing fees associated with any arbitration the Executive initiates. Both Parties are responsible for their own attorneys' fees, and the arbitrator may not award attorneys' fees unless a statute or contract at issue specifically authorizes such an award.

(d) Applicability. This Section 10 does not apply to (i) workers' compensation or unemployment insurance claims or (ii) claims concerning ownership, validity, infringement, misappropriation, disclosure, misuse, or enforceability of any confidential information, patent right, copyright, mask work, trademark, or any other trade secret or intellectual property held or sought by either the Executive or the Company.

(e) Remedy. Should any party institute any legal action or administrative proceeding against the other with respect to any claim waived by this Agreement or pursue any Arbitrable Dispute by any method other than as set forth above, except to enforce the arbitration provisions and as expressly provided for in this Section 9, the responding party is entitled to recover from the initiating party all damages, costs, expenses, and attorneys' fees incurred as a result of that action.

Section 11. Consent to Jurisdiction. To the extent that any court action is initiated to enforce Section 10 of this Agreement, the Parties hereby consent to the jurisdiction of any state court in the Commonwealth of Pennsylvania and any U.S. District Court sitting in the Commonwealth of Pennsylvania. Accordingly, with respect to any such court action, the Executive (a) submits to the personal jurisdiction of such courts; (b) consents to service of process; and (c) waives any other requirement (whether imposed by statute, rule of court, or otherwise) with respect to personal jurisdiction or service of process.

Section 12. Integration. This Agreement, together with the Confidential Information Agreement executed concurrently herewith, constitute the entire agreement between the Parties with respect to the subject matter hereof and supersedes all prior agreements between the Parties concerning such subject matter. Without limiting the foregoing, the parties agree that any employment agreement, other than this Agreement, existing between the Parties as of the date hereof is hereby terminated and shall be of no force of effect.

Section 13. Withholding. All payments made by the Company to the Executive under this Agreement will be net of any tax or other amounts lawfully withheld by the Company under applicable law. Nothing in this Agreement is to be construed to obligate the Company to design or implement any compensation arrangement in a way that minimizes tax consequences for the Executive.

Section 14. Successor to the Executive. This Agreement inures to the benefit of and is enforceable by the Executive's personal representatives, executors, administrators, heirs, distributees, devisees, and legatees. If the Executive dies after his termination of employment but prior to the completion by the Company of all payments due his under this Agreement, the Company shall continue the payments to the Executive's beneficiary designated in writing to the Company prior to his death (or to his estate, if the Executive fails to make such a designation).

Section 15. Enforceability. If any portion or provision of this Agreement is declared illegal or unenforceable by a court of competent jurisdiction, then the remainder of this Agreement, or the application of that portion or provision in circumstances other than those as to which it is so declared illegal or unenforceable, will not be affected by that declaration, and each portion and provision of this Agreement will continue to be valid and enforceable to the fullest extent permitted by law.

Section 16. Survival. The provisions of this Agreement survive the termination of this Agreement and/or the termination of the Executive's employment to the extent necessary to effectuate the intent of the Parties as expressed in this Agreement.

Section 17. Waiver. No waiver of any provision of this Agreement is effective unless made in writing and signed by the waiving party, and, in the case of the Company only after the waiver has been specifically approved by the Board. The failure of either party to require the performance of any term or obligation of this Agreement, or the waiver by either party of any breach of this Agreement, will not prevent any subsequent enforcement of such term or obligation or be deemed a waiver of any subsequent breach.

Section 18. Notices. Any notices, requests, demands, and other communications provided for by this Agreement are sufficient if in writing and delivered in person or sent by a nationally recognized overnight courier service or by registered or certified mail, postage prepaid, return receipt requested, to the Executive at the last address the Executive has filed in writing with the Company or, in the case of the Company, at its main offices, attention to the Corporate Secretary.

Section 19. Amendment. This Agreement may be amended or modified only by a written instrument signed by the Executive and by a duly authorized representative of the Company.

Section 20. Governing Law. This is a Pennsylvania contract and is to be construed under and be governed in all respects by the laws of the Commonwealth of Pennsylvania without giving effect to the conflict of laws principles of that state.

Section 21. Counterparts. This Agreement may be executed in any number of counterparts, and by each party on separate counterparts, each of which counterparts, when so executed and delivered is to be taken to be an original; but those counterparts together constitute one and the same document. PDF, facsimile, scanned, and electronic signatures have the same legal effect as original ink signatures.

Section 22. Successor to Company. The Company shall require any successor (whether direct or indirect, by purchase, merger, consolidation, or otherwise) to all or substantially all of the business or assets of the Company expressly to assume and agree to perform this Agreement to the same extent that the Company would be required to perform it if no succession had taken place. Failure of the Company to obtain an assumption of this Agreement at or prior to the effectiveness of any succession is a material breach of this Agreement.

Section 23. Voluntary Nature of Agreement. The Executive acknowledges and agrees that he is executing this Agreement voluntarily and without any duress or undue influence by the Company or anyone else. The Executive further acknowledges and agrees that he has carefully read this Agreement and that he has asked any questions needed for his to fully understand the terms, consequences, and binding effect of this Agreement. The Executive agrees that he has been provided an opportunity to seek the advice of an attorney of his choice before signing this Agreement.

[Signature Page Follows]

The Parties are executing this Executive Agreement as of the date set forth in the introductory paragraph.

ARBUTUS BIOPHARMA INC.

/s/ William Collier

William Collier

Title: President & Chief Executive Officer

EXECUTIVE

/s/ J. Christopher Naftzger

J. Christopher Naftzger

EXHIBIT A

GENERAL RELEASE LANGUAGE

The Executive agrees, for himself, his spouse, heirs, executor or administrator, assigns, insurers, attorneys, and other persons or entities acting or purporting to act on his behalf (the "**Executive's Parties**"), to irrevocably and unconditionally release, acquit, and forever discharge the Company, its affiliates, subsidiaries, directors, officers, employees, shareholders, partners, agents, representatives, predecessors, successors, assigns, insurers, attorneys, benefit plans sponsored by the Company, and said plans' fiduciaries, agents and trustees (the "**Company's Parties**"), from any and all actions, causes of action, suits, claims, obligations, liabilities, debts, demands, contentions, damages, judgments, levies, and executions of any kind, whether in law or in equity, known or unknown, which the Executive's Parties have, have had, or may in the future claim to have against the Company's Parties by reason of, arising out of, related to, or resulting from the Executive's employment with the Company or the termination of that employment. This release specifically includes without limitation any claims arising in tort or contract, any claim based on wrongful discharge, any claim based on breach of contract, any claim arising under federal, state or local law prohibiting race, sex, age, religion, national origin, handicap, disability, or other forms of discrimination, any claim arising under federal, state, or local law concerning employment practices, and any claim relating to compensation or benefits. This specifically includes, without limitation, any claim that the Executive has or has had under Title VII of the Civil Rights Act of 1964, as amended, the Age Discrimination in Employment Act, as amended, the Americans with Disabilities Act, as amended, and the Employee Retirement Income Security Act of 1974, as amended. It is understood and agreed that the waiver of benefits and claims contained in this section does not include a waiver of the right to payment of any vested, nonforfeitable benefits to which the Executive or a beneficiary of the Executive may be entitled under the terms and provisions of any employee benefit plan of the company which have accrued as of the Date of Termination, and does not include a waiver of the right to benefits and payment of consideration to which the Executive may be entitled under this Agreement or any of the agreements contemplated by this Agreement (including the indemnification agreement and the stock option agreement). The Executive acknowledges that he is entitled to only the severance benefits and compensation set forth in this Agreement, and that all other claims for any other benefits or compensation are hereby waived, except those expressly stated in the preceding sentence.

The Executive hereby acknowledges his understanding that under this Agreement he is releasing any known or unknown claims he may have.

The Executive expressly waives and relinquishes all rights and benefits under that section and any law of any jurisdiction of similar effect with respect to his release of claims.

EXHIBIT B

EXISTING CONFLICTS

If applicable, Executive to describe, in specific terms, any ongoing business relationship with any organization. Please provide a copy of any agreement(s) you might have with said organization(s) that creates a business relationship described in Section 3 (d).

Exhibit 10.3

UNLESS PERMITTED UNDER SECURITIES LEGISLATION, THE HOLDER OF THIS SECURITY MUST NOT TRADE THIS OPTION OR ANY OPTION SHARES ISSUABLE ON EXERCISE OF THIS OPTION BEFORE NOVEMBER 11, 2023

OPTION AGREEMENT - EMPLOYEES

This Option Agreement (the "**Agreement**") is entered into between Arbutus Biopharma Corporation (the "**Company**") and J. Christopher Naftzger (the "**Optionee**"), and is being granted in respect of the Optionee being an employee of Arbutus Biopharma Inc. ("**Arbutus**"), and confirms that:

1. On July 10, 2023 (the "**Grant Date**"), the Optionee is granted the option (the "**Option**") to purchase 500,000 common shares (the "**Option Shares**") of the Company at a per share price of US$2.26;
2. the Option is granted to the Optionee in connection with the Optionee entering into employment with Arbutus and is an inducement material to the Optionee's entry into employment within the meaning of Rule 5635(c)(4) of the Nasdaq Listing Rules;
3. the Option shall be subject to and governed by, and shall be construed and administered in accordance with, the terms and conditions of the Arbutus 2016 Omnibus Share and Incentive Plan (the "**Plan**"), which terms and conditions are incorporated herein by reference; provided, however, that the Option is not awarded under the Plan and the grant of the Option shall not reduce the number of common shares in the capital of the Company available for issuance under awards issued pursuant to the Plan;
4. subject to Sections 7, 8 and 9 below, the Option shall vest over a four-year period, with 25% of the Option Shares vesting on the first anniversary of the Grant Date and the remaining 75% of the Option Shares vesting over the subsequent three-year period in substantially equal monthly installments at a rate of 1/48th of the total original number of Option Shares each month, subject to the Optionee's continued employment with Arbutus through each applicable vesting date, and will be exercisable in whole up to July 10, 2033 (the "**Expiry Date**") or such earlier date as may be required or stipulated in accordance with the Plan or the terms of this Agreement; the Option, once vested, shall remain vested until the expiration, termination or surrender of the Option;
5. this Option shall be considered a Non-Qualified Stock Option;
6. except as provided in Sections 7, 8, 9 and 10 below, if the Optionee's employment with Arbutus terminates for any reason, the unvested portion of the Option shall terminate on, and not be exercisable following, the Optionee's date of termination, and the vested portion of the Option will remain exercisable by the Optionee, the Optionee's estate or the Optionee's estate's personal representative, as applicable, until the earlier of the Expiry Date and the ninetieth (90th) day following the date of the Optionee's termination of employment (or, if the Optionee dies during such ninety (90) day period, the first anniversary of the date of death of the Optionee);
7. in the event of the death of the Optionee, the Option shall become immediately fully vested and exercisable, and shall remain exercisable by the Optionee's estate or the Optionee's estate's

personal representative, as applicable, until the earlier of the Expiry Date and the first anniversary of the date of death of the Optionee;

8. except as provided below in Section 9, if the Optionee's employment with Arbutus is terminated by Arbutus without Cause (as defined in the Optionee's executive employment agreement with the Company, dated effective as of July 10, 2023 (the "**Employment Agreement**")) or by the Optionee for Good Reason (as defined in the Employment Agreement), the Option shall vest and become exercisable as of the moment immediately prior to such termination on a pro-rata basis, prorated at 1/48th of the total original number of Option Shares subject to the Option for each completed month of service as of the Optionee's date of termination, with the vested portion of the Option remaining exercisable by the Optionee, the Optionee's estate or the Optionee's estate's personal representative, as applicable, until the earlier of the Expiry Date and the ninetieth (90th) day following the date of the Optionee's termination of employment (or, if the Optionee dies during such ninety (90) day period, the first anniversary of the date of death of the Optionee);

9. if, within twelve (12) months following a Change in Control (as defined in the Employment Agreement), the Optionee's employment with Arbutus is terminated by Arbutus without Cause or by the Optionee for Good Reason, the Option shall become fully vested and exercisable as of the moment immediately prior to such termination, with the vested portion of the Option remaining exercisable by the Optionee, the Optionee's estate or the Optionee's estate's personal representative, as applicable, until the earlier of the Expiry Date and the ninetieth (90th) day following the date of the Optionee's termination of employment (or, if the Optionee dies during such ninety (90) day period, the first anniversary of the date of death of the Optionee);

10. if the Optionee's employment with Arbutus is terminated by Arbutus for Cause (as defined in the Employment Agreement), the Option, whether or not vested, shall be immediately forfeited and cancelled, without any consideration therefore, and any and all rights of the Optionee with respect to or arising from the Plan shall terminate, as of the commencement of the date that notice of such termination is given, without regard to any period of reasonable notice or any salary continuance, except as otherwise determined by the Committee;

11. the Option may be exercised only by notice signed by the Optionee or, in certain circumstances permitted by the Plan, the legal representative of the Optionee, and accompanied by full payment for the Option Shares being purchased;

12. the Optionee (i) meets the criteria set out in Section 5 of the Plan as of the Grant Date; (ii) is aware that the grant of the Option is exempt from the obligation under applicable securities laws to file a prospectus or other registration document qualifying the distribution; (iii) will, upon each exercise or settlement of an Option and if requested by the Company, confirm these representations; and (iv) will, upon each exercise or settlement of an Option, comply with all applicable securities laws, rules and regulations, including restrictions on transfer;

13. the Company will have no obligation to issue any Option Shares until the Company is satisfied that the issuance of such Option Shares to the Optionee will be exempt from all registration or qualification requirements of applicable securities laws and will be permitted under the applicable rules and regulations of all regulatory authorities to which the Company is subject;

14. the Option is subject to the terms and conditions set out in the Plan, and if there is any conflict between the terms of this Agreement and the Plan, the terms of the Plan will govern, despite any term of this Agreement; and
15. nothing herein or otherwise shall be construed so as to confer on the Optionee any rights as a shareholder of the Company with respect to any common shares in the capital of the Company reserved for the purpose of the Option.

All capitalized terms not defined herein shall have their respective meanings as set out in the Plan.

This Agreement is governed by the laws of the Province of British Columbia and the laws of Canada applicable therein.

By signing this Agreement, the Optionee acknowledges that the Optionee has read and understands the Plan and accepts the Option in accordance with the terms of the Plan and this Agreement.

[REMAINDER OF PAGE LEFT BLANK INTENTIONALLY]

IN WITNESS WHEREOF this Agreement has been executed by the parties hereto as of the Grant Date.

SIGNED, SEALED and DELIVERED

/s/ J. Christopher Naftzger
J. Christopher Naftzger

/s/ William H. Collier
William H. Collier
Authorized Signatory of the Company

Exhibit 31.1

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

I, William Collier, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Arbutus Biopharma Corporation;
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 most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an the annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 3, 2023

/s/ William Collier

Name: William Collier

Title: President and Chief Executive Officer

Exhibit 31.2

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

I, David Hastings, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Arbutus Biopharma Corporation;
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 most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an the annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 3, 2023

/s/ David Hastings
Name: David Hastings
Title: Chief Financial Officer

Exhibit 32.1

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

In connection with the Quarterly Report on Form 10-Q of Arbutus Biopharma Corporation (the "Company") for the quarter ended June 30, 2023, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I William Collier, President and Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of my knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. The information contained in the Report fairly represents, in all material respects, the financial condition and results of the operations of the Company.

Date: August 3, 2023

/s/ William Collier
Name: William Collier
Title: President and Chief Executive Officer

Exhibit 32.2

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

In connection with the Quarterly Report on Form 10-Q of Arbutus Biopharma Corporation (the "Company") for the quarter ended June 30, 2023, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I David Hastings, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of my knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. The information contained in the Report fairly represents, in all material respects, the financial condition and results of the operations of the Company.

Date: August 3, 2023

/s/ David Hastings
Name: David Hastings
Title: Chief Financial Officer