UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-Q

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

For the quarterly period ended March 31, 2023

OR

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

For the Transition Period from to

Commission File Number: **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 May 2, 2023, the registrant had 166,133,563 common shares, without par value, outstanding.

ARBUTUS BIOPHARMA CORPORATION

Page

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)

	March 31, 2023	December 31, 2022
Assets		
Current assets:		
Cash and cash equivalents	$ 40,574	$ 30,776
Investments in marketable securities, current	106,154	116,137
Accounts receivable	2,664	1,352
Prepaid expenses and other current assets	3,462	2,874
Total current assets	152,854	151,139
Property and equipment, net of accumulated depreciation of $11,135 (December 31, 2022: $10,801)	4,853	5,070
Investments in marketable securities, non-current	31,790	37,363
Right of use asset	1,665	1,744
Other non-current assets	62	103
Total assets	$ 191,224	$ 195,419
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable and accrued liabilities	$ 9,653	$ 16,029
Deferred license revenue, current	15,055	16,456
Lease liability, current	446	372
Total current liabilities	25,154	32,857
Liability related to sale of future royalties	9,384	10,365
Deferred license revenue, non-current	3,296	5,999
Contingent consideration	7,804	7,531
Lease liability, non-current	1,671	1,815
Total liabilities	47,309	58,567
Stockholders' equity		
Common shares		
Authorized: unlimited number without par value		
Issued and outstanding: 165,132,193 (December 31, 2022: 157,455,363)	1,339,453	1,318,737
Additional paid-in capital	74,238	72,406
Deficit	(1,220,142)	(1,203,803)
Accumulated other comprehensive loss	(49,634)	(50,488)
Total stockholders' equity	143,915	136,852
Total liabilities and stockholders' equity	$ 191,224	$ 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 March 31,	
	2023	**2022**
Revenue		
Collaborations and licenses	$ 5,509	$ 11,218
Non-cash royalty revenue	1,178	1,363
Total Revenue	6,687	12,581
Operating expenses		
Research and development	18,275	18,462
General and administrative	5,552	4,892
Change in fair value of contingent consideration	273	201
Total operating expenses	24,100	23,555
Loss from operations	(17,413)	(10,974)
Other income (loss)		
Interest income	1,268	159
Interest expense	(198)	(506)
Foreign exchange gain	4	—
Total other income (loss)	1,074	(347)
Loss before income taxes	(16,339)	(11,321)
Income tax expense	—	(4,444)
Net loss	$ (16,339)	$ (15,765)
Loss per share		
Basic and diluted	$ (0.10)	$ (0.11)
Weighted average number of common shares		
Basic and diluted	161,643,404	148,428,326
Comprehensive loss		
Unrealized gain (loss) on available-for-sale securities	$ 854	$ (1,071)
Comprehensive loss	$ (15,485)	$ (16,836)

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

	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

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)

	Three Months Ended March 31,	
	2023	**2022**
OPERATING ACTIVITIES		
Net loss	$ (16,339)	$ (15,765)
Non-cash items:		
Depreciation	334	394
Stock-based compensation expense	2,131	1,736
Change in fair value of contingent consideration	273	201
Non-cash royalty revenue	(1,178)	(1,363)
Non-cash interest expense	197	506
Net accretion and amortization of investments in marketable securities	(385)	168
Net change in operating items:		
Accounts receivable	(1,312)	(414)
Prepaid expenses and other assets	(468)	(1,507)
Accounts payable and accrued liabilities	(6,376)	(2,102)
Deferred license revenue	(4,104)	38,840
Other liabilities	(74)	(75)
Net cash (used in) provided by operating activities	(27,301)	20,619
INVESTING ACTIVITIES		
Purchase of investments in marketable securities	(20,205)	(61,981)
Disposition of investments in marketable securities	37,000	2,000
Acquisition of property and equipment	(117)	(75)
Net cash provided by (used in) investing activities	16,678	(60,056)
FINANCING ACTIVITIES		
Issuance of common shares pursuant to Share Purchase Agreement	—	10,973
Issuance of common shares pursuant to the Open Market Sale Agreement	19,862	268
Issuance of common shares pursuant to exercise of stock options	259	8
Issuance of common shares pursuant to exercise of ESPP	296	236
Net cash provided by financing activities	20,417	11,485
Effect of foreign exchange rate changes on cash and cash equivalents	4	—
Increase (decrease) in cash and cash equivalents	9,798	(27,952)
Cash and cash equivalents, beginning of period	30,776	109,282
Cash and cash equivalents, end of period	$ 40,574	$ 81,330

See accompanying notes to the condensed consolidated financial statements.

ARBUTUS BIOPHARMA CORPORATION

Notes to Condensed Consolidated Financial Statements
(Tabular amounts in thousands of U.S. Dollars, except share and per share amounts)

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, 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, AB-729, is the only RNAi therapeutic with evidence of immune re-awakening. AB-729 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 March 31, 2023, the Company had an aggregate of $178.5 million in cash, cash equivalents and investments in marketable securities. The Company had no outstanding debt as of March 31, 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 March 31, 2023 and December 31, 2022, the Company's results of operations for the three months ended March 31, 2023 and 2022, and the Company's cash flows for the three months ended March 31, 2023 and 2022. Such adjustments are of a normal recurring nature. The results of operations for the three months ended March 31, 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 months ended March 31, 2023 and 2022, since the effect of including potential common shares would be anti-dilutive. For the three months ended March 31, 2023, potential common shares of 19.7 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 15.7 million outstanding stock options were excluded from the calculation for the three months ended March 31, 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 $7.8 million as of March 31, 2023 and the increase of $0.3 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 three months ended March 31, 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 March 31, 2023	Level 1	Level 2	Level 3	Total
	(in thousands)			
Assets				
Cash and cash equivalents	$ 40,574	$ —	$ —	$ 40,574
Investments in marketable securities, current	—	106,154	—	106,154
Investments in marketable securities, non-current	—	31,790	—	31,790
Total	$ 40,574	$ 137,944	$ —	$ 178,518
Liabilities				
Contingent consideration	—	—	7,804	7,804
Total	$ —	$ —	$ 7,804	$ 7,804

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	Increase in fair value of liability	Liability at end of the period
	(in thousands)		
Three Months Ended March 31, 2023	$ 7,531	$ 273	$ 7,804
Three Months Ended March 31, 2022	$ 3,426	$ 201	$ 3,627

4. Investments in marketable securities

Investments in marketable securities consisted of the following:

As of March 31, 2023	Amortized Cost	Gross Unrealized Gain[1]	Gross Unrealized Loss[1]	Fair Value
	(in thousands)			
Cash equivalents				
US government money market fund	$ 31,745	$ —	$ —	$ 31,745
US treasury bills	3,991	1	—	3,992
Total	$ 35,736	$ 1	$ —	$ 35,737
Investments in marketable short-term securities				
US government agency bonds	$ 25,448	$ 4	$ (343)	$ 25,109
US corporate bonds	37,075	—	(300)	36,775
US government bonds	44,886	—	(616)	44,270
Total	$ 107,409	$ 4	$ (1,259)	$ 106,154
Investments in marketable long-term securities				
US government agency bonds	$ 7,193	$ 4	$ —	$ 7,197
US corporate bonds	24,792	—	(200)	24,593
Total	$ 31,985	$ 5	$ (200)	$ 31,790

[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 markets	$ 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 $106.2 million of short-term marketable securities held by the Company as of March 31, 2023 is less than one year. As of March 31, 2023, the Company held $31.8 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 March 31, 2023 and December 31, 2022, respectively, the Company had 47 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 likely 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 totaling $0.6 million at each of March 31, 2023 and December 31, 2022 is included in Prepaid expenses and other current assets.

The Company had no realized gains or losses during the three months ended March 31, 2023. The Company had realized gains of less than $0.1 million for the three months ended March 31, 2022.

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 March 31, 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:

	March 31, 2023	December 31, 2022
	(in thousands)	
Trade accounts payable	$ 2,455	$ 3,520
Research and development accruals	5,134	8,261
Professional fee accruals	580	512
Payroll accruals	1,478	3,730
Other accrued liabilities	6	6
Total accounts payable and accrued liabilities	$ 9,653	$ 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 March 31, 2023, the Company estimated an effective annual interest rate of approximately 7.6%. 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 March 31, 2023, the Company has recorded an aggregate of $20.0 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 three months ended March 31, 2023, the Company recognized non-cash royalty revenue of $1.2 million and related non-cash interest expense of $0.2 million. During the three months ended March 31, 2022, the Company recognized non-cash royalty revenue of $1.4 million and related non-cash interest expense of $0.5 million.
The table below shows the activity related to the net liability for the three months ended March 31, 2023 and 2022:

	Three Months Ended March 31,	
	2023	2022
	(in thousands)	
Net liability related to sale of future royalties - beginning balance	$ 10,365	$ 16,296
Non-cash royalty revenue	(1,178)	(1,363)
Non-cash interest expense	197	506
Net liability related to sale of future royalties - ending balance	$ 9,384	$ 15,439

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 $7.8 million as of March 31, 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 AB-729, including pharmaceutical products that include AB-729, 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 AB-729 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 AB-729 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 AB-729 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 AB-729 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 AB-729 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 three months ended March 31, 2023:

	Three Months Ended March 31, 2023		
	Transaction Price	Cumulative Collaboration Revenue Recognized	Deferred License Revenue
		(in thousands)	
Combined performance obligation	$ 49,270	$ 30,119	$ 19,151
Less contract asset			(800)
Total deferred license revenue			18,351
Less current portion of deferred license revenue			15,055
Non-current deferred license revenue			$ 3,296

The Company recognized $4.1 million and $9.6 million of revenue based on labor hours expended by the Company on its Manufacturing Obligations during the three months ended March 31, 2023 and 2022, respectively.

As of March 31, 2023, the balance of the deferred license revenue was $19.2 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 $18.4 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 less than $0.1 million and no expense for related amortization for the three months ended March 31, 2023 and 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 AB-729 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 $0.6 million and $0.2 million of expenses, net of reimbursements from Vaccitech, related to the collaboration during the three months ended March 31, 2023 and 2022, respectively and reflected those costs in research and development in the statements of operations and comprehensive loss.

Assembly Biosciences, Inc.

In August 2020, the Company entered into a clinical collaboration agreement with Assembly Biosciences, Inc. ("Assembly") to evaluate AB-729 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. Assembly has completed enrollment in the clinical trial. In July 2022, Assembly announced its plan to discontinue development of VBR. Despite this, in consultation with Assembly, the Company continued dosing patients in the Phase 2a proof-of-concept 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 $0.7 million and $0.6 million of expenses related to the collaboration during the three months ended March 31, 2023 and 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 AB-729 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 $0.3 million of expenses related to the collaboration during the three months ended March 31, 2023 and 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 March 31, 2023, an aggregate of $20.0 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 March 31,	
	2023	2022
	(in thousands)	
Revenue from collaborations and licenses		
Acuitas Therapeutics, Inc.	$ 1,405	$ 1,534
Qilu Pharmaceutical Co., Ltd.	4,104	9,632
Other milestone and royalty payments	—	52
Non-cash royalty revenue		
Alnylam Pharmaceuticals, Inc.	1,178	1,363
Total revenue	$ 6,687	$ 12,581

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 months ended March 31, 2023 and 2022, the Company issued 7,423,622 and 69,048 common shares pursuant to the Sale Agreement, respectively, resulting in net proceeds of approximately $19.9 million and $0.3 million, respectively. As of March 31, 2023, there was approximately $110.7 million 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 months ended March 31, 2023 and 2022 and the expense recognized in the condensed consolidated statements of operations:

	Three Months Ended March 31,	
	2023	2022
	(in thousands, except share and per share data)	
Stock options		
Options granted during period	3,750,800	4,372,295
Weighted average exercise price	$ 2.90	$ 2.81
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	$ 875	$ 757
General and administrative	1,256	979
Total stock compensation expense	$ 2,131	$ 1,736

During the three months ended March 31, 2023, the Company granted 1,344,550 restricted stock units ("RSUs"). 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 months ended March 31, 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; 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, 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, AB-729, is the only RNAi therapeutic with evidence of immune re-awakening. AB-729 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 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 would 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.

  AB-729 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. AB-729 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 AB-729 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 AB-729 increased HBV-specific immune responses and, in a small number of patients who discontinued both AB-729 and nucleos(t)ide analogue ("NA") therapy, a sustained reduction in HBsAg and HBV DNA persisted after stopping AB-729. The clinical data for AB-729 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. Preclinical data presented at the 2022 Discovery on Target Conference showed that AB-161 reduced HBV RNA and HBsAg in multiple preclinical models, with favorable liver centricity and lack of observed peripheral neuropathy. 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*. We recently dosed the first healthy subject in our single-ascending Phase 1 clinical trial with AB-161.

  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. The FDA indicated they will provide an official clinical hold letter to us within thirty days of the verbal communication. Based on this communication, 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. 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 AB-729, AB-101 and AB-161 may provide our first proprietary combination therapy for patients with cHBV. In-line with our strategy to position AB-729 as a potential cornerstone therapeutic in future HBV combination regimens, and to help guide future development of combination therapies of AB-729 with other compounds from our proprietary HBV portfolio, we are evaluating AB-729 in combination with other agents with potentially complementary mechanisms of action, including the following:

    - AB-729 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 the lead-in phase of this clinical trial further validated AB-729's potential to reduce HBsAg in cHBV patients.

    - AB-729 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 amended the clinical trial to include an additional arm with 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.

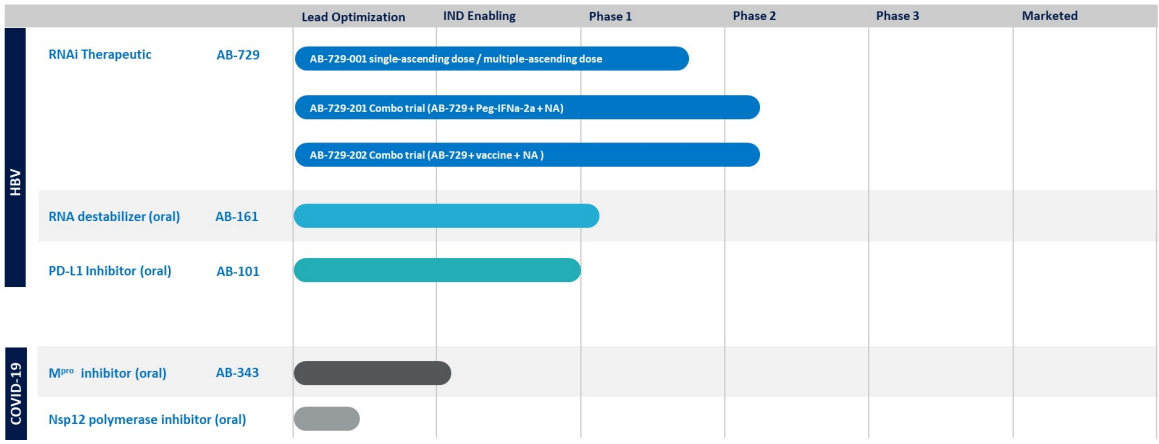
    - In the fourth quarter of 2022, we nominated AB-343 as our lead coronavirus drug candidate that inhibits the SARS-CoV-2 Mpro, a validated target for the treatment of COVID-19 and potential future coronavirus outbreaks. At the 36th International Conference on Antiviral Research in March 2023, we presented 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 advancing AB-343 into IND-enabling studies. We are also continuing lead optimization activities for an nsp12 viral polymerase, 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 (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.

AB-729 is a subcutaneously-delivered RNAi single-trigger therapeutic targeted to hepatocytes using our proprietary covalently conjugated GalNAc delivery technology. AB-729 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 AB-729 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 AB-729 in healthy subjects and in patients with cHBV, respectively. Data showed that a 60mg or 90mg single dose of AB-729 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 AB-729 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 AB-729 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 AB-729. Patients treated with AB-729 experienced an increase in HBV-specific T-cells activation and a decrease in exhausted T-cells. In this trial, AB-729 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 AB-729, 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 AB-729'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 AB-729. There were no adverse events reported and no ALT flares were observed in the clinical trial.

The new clinical data for AB-729 continues to support its development as a potential cornerstone agent for the treatment of cHBV infection. The efficacy and safety data for AB-729, 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 AB-729 as a potential cornerstone therapeutic in future HBV combination regimens, we are evaluating AB-729 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 AB-729 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 AB-729 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 AB-729 (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 AB-729. 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.

Preliminary data from the lead-in phase of the trial further validated AB-729's capacity to reduce HBsAg. For the first 15 patients who reached week 16 of treatment and received two doses of AB-729 plus NA therapy, the mean HBsAg decline was 1.51 $\log_{10}$, comparable to the decline observed at the same timepoint in the Phase 1b clinical trial AB-729-001 (1.56 $\log_{10}$), while continuing to exhibit a generally safe and well-tolerated profile. We anticipate providing preliminary data from patients who have received the combination of AB-729, NA therapy and Peg-IFNα-2a in the second quarter of 2023.

Collaboration with Vaccitech (AB-729-202)

Through a clinical collaboration agreement with Vaccitech that we entered into in July 2021, we are enrolling patients 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 AB-729 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 AB-729 (60mg every 8 weeks) plus NA therapy for 24 weeks. At week 24, treatment with AB-729 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 AB-729, 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 AB-729 (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. We anticipate dosing the first patient in this amended arm in the second quarter of 2023.

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 AB-729.

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. Preclinical data presented at the 2022 Discovery on Target Conference showed that AB-161 reduced HBV RNA and HBsAg in multiple preclinical models, with favorable liver centricity and lack of observed peripheral neuropathy. 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*. We recently dosed the first healthy subject in our Phase 1 clinical trial with AB-161, with initial single-ascending dose data 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 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. The FDA indicated they will provide an official clinical hold letter to us within thirty days of the verbal communication. Based on this communication, 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.

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 are currently conducting IND-enabling studies with AB-343, and on completion, we expect to initiate a Phase 1 clinical trial in the second half of 2023. We also intend to nominate a nsp12 clinical candidate and initiate IND-enabling studies in the second half of 2023. An nsp12 viral polymerase 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 AB-729, including pharmaceutical products that include AB-729, 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 AB-729 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 AB-729 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 AB-729 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 AB-729 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 AB-729 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 March 31, 2023, an aggregate of $20.0 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 March 31, 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 Petitions

On February 21, 2018 and March 5, 2018, Moderna Therapeutics, Inc. ("Moderna") filed petitions requesting the United States Patent and Trademark Office to institute an Inter Partes Review of Arbutus United States Patents 9,404,127 (the "'127 Patent") and 9,364,435 (the "'435 Patent"). In its petitions, Moderna sought to invalidate all claims of each patent based on Moderna's allegation that the claims are anticipated and/or obvious. We filed a response to Moderna's petitions 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 both the '127 Patent and the '435 Patent.

The status of these patents, which collectively represent only a fraction of our extensive LNP patent portfolio, is as follows:

'127 Patent

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 Oppositions

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. The date for the oral proceedings has not been set.

While we are the patent holder, the '127 Patent, the '435 Patent, the '069 Patent and the '254 Patent 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.

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.

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. 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 March 31,	
	2023	2022
	(in thousands)	
Total revenue	$ 6,687	$ 12,581
Operating expenses	24,100	23,555
Loss from operations	(17,413)	(10,974)
Other income (loss)	1,074	(347)
Loss before income taxes	(16,339)	(11,321)
Income tax expense	—	(4,444)
Net loss	$ (16,339)	$ (15,765)

Revenue

Revenues are summarized in the following table:

	Three Months Ended March 31,			
	2023	% of Total	2022	% of Total
	(in thousands, except percentages)			
Revenue from collaborations and licenses				
Royalties from sales of ONPATTRO	$ 1,405	21 %	$ 1,534	12 %
Qilu Pharmaceutical Co., Ltd.	4,104	61 %	9,632	77 %
Other milestone and royalty payments	—	— %	52	— %
Non-cash royalty revenue				
Royalties from sales of ONPATTRO	1,178	18 %	1,363	11 %
Total revenue	$ 6,687	100 %	$ 12,581	100 %

Total revenue decreased $5.9 million for the three months ended March 31, 2023 compared to the same period 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 from Alnylam and Acuitas due to a decrease in Alnylam's sales of ONPATTRO.

Operating expenses

Operating expenses are summarized in the following table:

	Three Months Ended March 31,			
	2023	% of Total	2022	% of Total
	(in thousands, except percentages)			
Research and development	$ 18,275	76 %	$ 18,462	78 %
General and administrative	5,552	23 %	4,892	21 %
Change in fair value of contingent consideration	273	1 %	201	1 %
Total operating expenses	$ 24,100	100 %	$ 23,555	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 $0.2 million for the three months ended March 31, 2023, compared to the same period in 2022. The decrease was due primarily to a decrease in expenses for our AB-836 Phase 1a/1b clinical trial, which was discontinued in the fourth quarter of 2022, partially offset by an increase in expenses for our coronavirus program and other early-stage development programs.

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 $0.7 million for the three months ended March 31, 2023 as compared to the same period in 2022 due primarily to increases in employee compensation costs and non-cash stock-based compensation expense.

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 AB-729 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 March 31,	
	2023	2022
	(in thousands)	
Interest income	$ 1,268	$ 159
Interest expense	(198)	(506)
Total other income (loss)	$ 1,074	$ (347)

Interest income

The increase in interest income for the three months ended March 31, 2023 compared to the same period 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 months ended March 31, 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 three months ended March 31, 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 three months ended March 31, 2023.

LIQUIDITY AND CAPITAL RESOURCES

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

	Three Months Ended March 31,	
	2023	2022
	(in thousands)	
Net loss	$ (16,339)	$ (15,765)
Non-cash items	1,372	1,642
Change in deferred license revenue	(4,104)	38,840
Net change in operating items	(8,230)	(4,098)
Net cash (used in) provided by operating activities	(27,301)	20,619
Net cash provided by (used in) investing activities	16,678	(60,056)
Issuance of common shares pursuant to Share Purchase Agreement	—	10,973
Issuance of common shares pursuant to the Open Market Sale Agreement	19,862	268
Cash provided by other financing activities	555	244
Net cash provided by financing activities	20,417	11,485
Effect of foreign exchange rate changes on cash and cash equivalents	4	—
Increase (decrease) in cash and cash equivalents	9,798	(27,952)
Cash and cash equivalents, beginning of period	30,776	109,282
Cash and cash equivalents, end of period	$ 40,574	$ 81,330

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 three months ended March 31, 2023, $27.3 million of cash was used in operating activities compared to $20.6 million provided by operating activities for the three months ended March 31, 2022, a change of $47.9 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. Also contributing to the change was timing of accruals and payments.

For the three months ended March 31, 2023, net cash provided by investing activities was $16.7 million, resulting primarily from maturities of investments in marketable securities of $37.0 million, partially offset by additional investments in marketable securities of $20.2 million. For the three months ended March 31, 2022, net cash used in investing activities was $60.1 million, which consisted primarily of additional investments in marketable securities of $62.0 million.

For the three months ended March 31, 2023, net cash provided by financing activities was $20.4 million, which was primarily related to $19.9 million in proceeds from sales of common shares under the Sale Agreement. For the three months ended March 31, 2022, net cash provided by financing activities was $11.5 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 March 31, 2023, we had cash, cash equivalents and investments in marketable securities of $178.5 million. We had no outstanding debt as of March 31, 2023.

Open Market Sale Agreement

We have 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 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 three months ended March 31, 2023, we issued 7,423,622 common shares pursuant to the Sale Agreement, as amended, resulting in net proceeds of approximately $19.9 million. For the three months ended March 31, 2022, we issued 69,048 common shares pursuant to the Sale Agreement, resulting in net proceeds of approximately $0.3 million. As of March 31, 2023, there was approximately $110.7 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 AB-729 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 AB-729 in the Territory.

Cash requirements

We believe that our $178.5 million of cash, cash equivalents and investments in marketable securities as of March 31, 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. 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 March 31, 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 March 31, 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 March 31, 2023 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II. OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS

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.

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 (collectively, "Moderna") 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, the Company seeks fair compensation for Moderna's use of its 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.

Acuitas Declaratory Judgment Lawsuit

On March 18, 2022, Acuitas Therapeutics Inc. ("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. No case schedule is yet in place.

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. 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 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).
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 March 31, 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.

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 May 4, 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)

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: May 4, 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: May 4, 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 March 31, 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: May 4, 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 March 31, 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: May 4, 2023

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