UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549

FORM 10-Q

(Mark One)

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

For the quarterly period ended March 31, 2022

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: 001-38957

ADAPTIVE BIOTECHNOLOGIES CORPORATION

(Exact Name of Registrant as Specified in its Charter)

Washington	**27-0907024**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
1165 Eastlake Avenue East Seattle, Washington	**98109**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code: (206) 659-0067

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common stock, par value $0.0001 per share	ADPT	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 April 29, 2022, the registrant had 142,227,952 shares of common stock, $0.0001 par value per share, outstanding.

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FORWARD-LOOKING STATEMENTS

This report contains forward-looking statements that are based on management's beliefs and assumptions and on information currently available to management. All statements contained in this report other than statements of historical fact are forward-looking statements, which include but are not limited to, statements about:

- our ability to leverage and extend our immune medicine platform to discover, develop and commercialize our products and services, including further commercialization and development of products and services related to our Immune Medicine and Minimal Residual Disease ("MRD") market opportunities, particularly in light of the novelty of immune medicine and our methods;
- our ability to achieve and maintain commercial market acceptance of our current products and services, such as clonoSEQ, T-Detect and immunoSEQ, as well as our ability to achieve market acceptance for any additional products and services beyond our current portfolio, if developed;
- our collaboration with Genentech, Inc. ("Genentech") and our ability to develop and commercialize cellular therapeutics, including our ability to achieve milestones and realize the intended benefits of the collaboration;
- our ability to develop a map of the interaction between the immune system and disease ("TCR-Antigen Map") and yield insights from it that are commercially viable as we expand the T-Detect product line with the goal of a multi-disease universal diagnostic test;
- our expected reliance on collaborators and other third parties for development, clinical testing and regulatory approval of current products in new indications and potential product candidates, which may fail at any time due to a number of possible unforeseen events; and
- the potential effects on our business resulting from our March 2022 reduction in workforce and related restructuring, including our ability to realize expected cost savings, attract and retain personnel and meet our expansion initiatives and clinical development plans.

The forward-looking statements in this report also include statements regarding our ability to develop, commercialize and achieve market acceptance of our current and planned products and services, our research and development efforts and other matters regarding our business strategies, use of capital, results of operations and financial position and plans and objectives for future operations. In some cases, you can identify forward-looking statements by the words "may," "will," "could," "would," "should," "expect," "intend," "plan," "anticipate," "believe," "estimate," "predict," "project," "potential," "continue," "ongoing" or the negative of these terms or other comparable terminology, although not all forward-looking statements contain these words. These statements involve risks, uncertainties and other factors that may cause actual results, levels of activity, performance or achievements to be materially different from the information expressed or implied by these forward-looking statements. These risks, uncertainties and other factors are described under "Risk Factors," "Management's Discussion and Analysis of Financial Condition and Results of Operations" and elsewhere in this report and in other documents we file with the Securities and Exchange Commission ("SEC") from time to time. We caution you that forward-looking statements are based on a combination of facts and factors currently known by us and our projections of the future, about which we cannot be certain. As a result, the forward-looking statements may not prove to be accurate. The forward-looking statements in this report represent our views as of the date of this report.

We undertake no obligation to update any forward-looking statements for any reason, except as required by law.

Unless otherwise stated or the context otherwise indicates, references to "we," "us," "our" and similar references refer to Adaptive Biotechnologies Corporation.

PART I—FINANCIAL INFORMATION

Item 1. Financial Statements (Unaudited)

Condensed Consolidated Balance Sheets
(in thousands, except share and per share amounts)

	March 31, 2022 (unaudited)	December 31, 2021
Assets		
Current assets		
Cash and cash equivalents	$ 114,805	$ 139,065
Short-term marketable securities (amortized cost of $250,448 and $214,115, respectively)	248,757	213,996
Accounts receivable, net	22,518	17,409
Inventory	21,002	19,263
Prepaid expenses and other current assets	12,038	13,015
Total current assets	419,120	402,748
Long-term assets		
Property and equipment, net	85,994	85,262
Operating lease right-of-use assets	85,634	87,678
Long-term marketable securities (amortized cost of $140,202 and $218,163, respectively)	137,110	217,145
Restricted cash	2,382	2,138
Intangible assets, net	8,107	8,526
Goodwill	118,972	118,972
Other assets	874	875
Total assets	$ 858,193	$ 923,344
Liabilities and shareholders' equity		
Current liabilities		
Accounts payable	$ 5,959	$ 3,307
Accrued liabilities	10,407	9,343
Accrued compensation and benefits	6,651	15,642
Current portion of operating lease liabilities	8,545	5,055
Current portion of deferred revenue	83,504	80,460
Total current liabilities	115,066	113,807
Long-term liabilities		
Operating lease liabilities, less current portion	104,978	106,685
Deferred revenue, less current portion	84,894	98,750
Total liabilities	304,938	319,242
Commitments and contingencies (Note 9)		
Shareholders' equity		
Preferred stock: $0.0001 par value, 10,000,000 shares authorized at March 31, 2022 and December 31, 2021; no shares issued and outstanding at March 31, 2022 and December 31, 2021	—	—
Common stock: $0.0001 par value, 340,000,000 shares authorized at March 31, 2022 and December 31, 2021; 142,183,258 and 141,393,865 shares issued and outstanding at March 31, 2022 and December 31, 2021, respectively	14	14
Additional paid-in capital	1,339,601	1,324,006
Accumulated other comprehensive loss	(4,783)	(1,137)
Accumulated deficit	(781,627)	(718,891)
Total Adaptive Biotechnologies Corporation shareholders' equity	553,205	603,992
Noncontrolling interest	50	110
Total shareholders' equity	553,255	604,102
Total liabilities and shareholders' equity	$ 858,193	$ 923,344

The accompanying notes are an integral part of these condensed consolidated financial statements.

Condensed Consolidated Statements of Operations
(in thousands, except share and per share amounts)
(unaudited)

	Three Months Ended March 31,	
	2022	2021
Revenue	$ 38,620	$ 38,442
Operating expenses		
Cost of revenue	13,192	9,991
Research and development	37,839	33,772
Sales and marketing	26,093	20,604
General and administrative	24,144	14,936
Amortization of intangible assets	419	419
Total operating expenses	101,687	79,722
Loss from operations	(63,067)	(41,280)
Interest and other income, net	271	638
Net loss	(62,796)	(40,642)
Add: Net loss attributable to noncontrolling interest	60	—
Net loss attributable to Adaptive Biotechnologies Corporation	$ (62,736)	$ (40,642)
Net loss per share attributable to Adaptive Biotechnologies Corporation common shareholders, basic and diluted	$ (0.44)	$ (0.29)
Weighted-average shares used in computing net loss per share attributable to Adaptive Biotechnologies Corporation common shareholders, basic and diluted	141,697,252	138,967,754

The accompanying notes are an integral part of these condensed consolidated financial statements.

Condensed Consolidated Statements of Comprehensive Loss
(in thousands)
(unaudited)

	Three Months Ended March 31,	
	2022	2021
Net loss	$ (62,796)	$ (40,642)
Other comprehensive loss		
Change in unrealized gains and losses on investments	(3,646)	(262)
Comprehensive loss	(66,442)	(40,904)
Add: Comprehensive loss attributable to noncontrolling interest	60	—
Comprehensive loss attributable to Adaptive Biotechnologies Corporation	$ (66,382)	$ (40,904)

The accompanying notes are an integral part of these condensed consolidated financial statements.

Condensed Consolidated Statements of Shareholders' Equity
(in thousands, except share amounts)
(unaudited)

	Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Gain (Loss)	Accumulated Deficit	Noncontrolling Interest	Total Shareholders' Equity
	Shares	Amount					
Balance at December 31, 2020	137,646,896	$ 14	$ 1,253,971	$ 893	$ (511,612)	$ —	$ 743,266
Issuance of common stock upon exercise of common stock warrant	54,162	—	—	—	—	—	—
Issuance of common stock for cash upon exercise of stock options	2,183,640	—	14,442	—	—	—	14,442
Common stock option and restricted stock unit share-based compensation	—	—	8,484	—	—	—	8,484
Capital contributions for Digital Biotechnologies, Inc.	—	—	300	—	—	129	429
Other comprehensive loss	—	—	—	(262)	—	—	(262)
Net loss	—	—	—	—	(40,642)	—	(40,642)
Balance at March 31, 2021	139,884,698	$ 14	$ 1,277,197	$ 631	$ (552,254)	$ 129	$ 725,717
Balance at December 31, 2021	141,393,865	$ 14	$ 1,324,006	$ (1,137)	$ (718,891)	$ 110	$ 604,102
Issuance of common stock for cash upon exercise of stock options	648,208	—	2,734	—	—	—	2,734
Vesting of restricted stock units	141,185	—	—	—	—	—	—
Common stock option, restricted stock unit and market-based restricted stock unit share-based compensation	—	—	12,861	—	—	—	12,861
Other comprehensive loss	—	—	—	(3,646)	—	—	(3,646)
Net loss	—	—	—	—	(62,736)	(60)	(62,796)
Balance at March 31, 2022	142,183,258	$ 14	$ 1,339,601	$ (4,783)	$ (781,627)	$ 50	$ 553,255

The accompanying notes are an integral part of these condensed consolidated financial statements.

Condensed Consolidated Statements of Cash Flows
(in thousands)
(unaudited)

	Three Months Ended March 31,	
	2022	2021
Operating activities		
Net loss	$ (62,796)	$ (40,642)
Adjustments to reconcile net loss to net cash used in operating activities		
Depreciation expense	4,637	2,252
Noncash lease expense	1,792	1,732
Share-based compensation expense	12,861	8,484
Intangible assets amortization	419	419
Investment amortization	862	2,108
Other	(20)	(9)
Changes in operating assets and liabilities		
Accounts receivable, net	(5,109)	(9,707)
Inventory	(1,739)	(3,359)
Prepaid expenses and other current assets	962	1,273
Accounts payable and accrued liabilities	(7,545)	(7,257)
Operating lease right-of-use assets and liabilities	2,035	813
Deferred revenue	(10,812)	(14,233)
Other	—	(119)
Net cash used in operating activities	(64,453)	(58,245)
Investing activities		
Purchases of property and equipment	(3,077)	(15,841)
Purchases of marketable securities	(60,235)	(15,340)
Proceeds from maturities of marketable securities	101,000	125,000
Net cash provided by investing activities	37,688	93,819
Financing activities		
Proceeds from exercise of stock options	2,749	14,185
Proceeds from initial capital contributions for Digital Biotechnologies, Inc.	—	429
Net cash provided by financing activities	2,749	14,614
Net (decrease) increase in cash, cash equivalents and restricted cash	(24,016)	50,188
Cash, cash equivalents and restricted cash at beginning of year	141,203	125,574
Cash, cash equivalents and restricted cash at end of period	$ 117,187	$ 175,762
Noncash investing activities		
Purchases of equipment included in accounts payable and accrued liabilities	$ 2,952	$ 7,698

The accompanying notes are an integral part of these condensed consolidated financial statements.

Notes to Unaudited Condensed Consolidated Financial Statements
(unaudited)

1. Organization and Description of Business

Adaptive Biotechnologies Corporation ("we," "us" or "our") is a commercial-stage company advancing the field of immune medicine by harnessing the inherent biology of the adaptive immune system to transform the diagnosis and treatment of disease. We believe the adaptive immune system is nature's most finely tuned diagnostic and therapeutic for most diseases, but the inability to decode it has prevented the medical community from fully leveraging its capabilities. Our immune medicine platform applies our proprietary technologies to read the diverse genetic code of a patient's immune system and aims to understand precisely how the immune system detects and treats disease in that patient. We capture these insights in our dynamic clinical immunomics database, which is underpinned by computational biology and machine learning, and use them to develop and commercialize clinical products and services that we are tailoring to each individual patient. We have commercial products and services and a robust pipeline of clinical products and services that we are designing to diagnose, monitor and enable the treatment of diseases, such as cancer, autoimmune disorders and infectious diseases.

We were incorporated in the State of Washington on September 8, 2009 under the name Adaptive TCR Corporation. On December 21, 2011, we changed our name to Adaptive Biotechnologies Corporation. We are headquartered in Seattle, Washington.

2. Significant Accounting Policies

Basis of Presentation and Principles of Consolidation

The unaudited condensed consolidated financial statements include the accounts of Adaptive Biotechnologies Corporation, our wholly-owned subsidiary and Digital Biotechnologies, Inc., a corporate subsidiary we have 70% ownership interest in. The remaining interest in Digital Biotechnologies, Inc., held by certain of our related parties and their related family trusts, are shown in the unaudited condensed consolidated financial statements as noncontrolling interest. All intercompany transactions and balances between Adaptive Biotechnologies Corporation, our wholly-owed subsidiary and Digital Biotechnologies, Inc. have been eliminated upon consolidation.

Use of Estimates

The preparation of condensed consolidated financial statements in conformity with accounting principles generally accepted in the United States of America ("GAAP") requires management to make certain estimates, judgments and assumptions that affect the reported amounts of assets and liabilities and the related disclosures at the date of the condensed consolidated financial statements, as well as the reported amounts of revenues and expenses during the periods presented. We base our estimates on historical experience and other relevant assumptions that we believe to be reasonable under the circumstances. Estimates are used in several areas including, but not limited to, estimates of progress to date for certain performance obligations and the transaction price for certain contracts with customers, share-based compensation, including the fair value of stock, the provision for income taxes, including related reserves, and goodwill, among others. These estimates generally involve complex issues and require judgments, involve the analysis of historical results and prediction of future trends, can require extended periods of time to resolve and are subject to change from period to period. Actual results may differ materially from management's estimates.

Unaudited Interim Condensed Consolidated Financial Statements

In our opinion, the accompanying unaudited condensed consolidated financial statements have been prepared in accordance with GAAP for interim financial information. These unaudited condensed consolidated financial statements include all adjustments necessary to fairly state our financial position and the results of our operations and cash flows for interim periods in accordance with GAAP. All such adjustments were of a normal, recurring nature. Interim-period results are not necessarily indicative of results of operations or cash flows for a full year or any subsequent interim period.

The accompanying unaudited condensed consolidated financial statements should be read in conjunction with the audited financial statements and notes included in our Annual Report on Form 10-K for the year ended December 31, 2021 filed with the SEC on February 15, 2022.

Reclassification

We previously disclosed revenue bifurcated into sequencing and development financial statement captions and now present total revenue on the unaudited condensed consolidated statements of operations. See Note 3, Revenue for additional disaggregation of revenue under our Immune Medicine and MRD market opportunities.

Restricted Cash

We had a restricted cash balance of $2.4 million and $2.1 million as of March 31, 2022 and December 31, 2021, respectively. Our restricted cash primarily relates to certain balances we are required to maintain under lease arrangements for some of our property and facility leases.

Concentrations of Risk

We are subject to a concentration of risk from a limited number of suppliers, or in certain cases single suppliers, for some of our laboratory instruments and materials. This risk is managed by targeting a quantity of surplus stock.

Cash, cash equivalents and marketable securities are financial instruments that potentially subject us to concentrations of credit risk. We invest in money market funds, United States ("U.S.") government debt securities, U.S. government agency securities, commercial paper and corporate bonds with high-quality accredited financial institutions.

Significant customers are those that represent more than 10% of our total revenue or accounts receivable, net balances for the periods and as of each condensed consolidated balance sheet date presented, respectively.

For each significant customer, revenue as a percentage of total revenue for the periods presented and accounts receivable, net as a percentage of total accounts receivable, net as of the dates presented were as follows:

	Revenue		Accounts Receivable, Net	
	Three Months Ended March 31,		March 31,	December 31,
	2022	2021	2022	2021
Customer A	*%	*%	15.1%	*%
Customer B	17.9	10.4	30.1	11.3
Customer C	*	10.0	*	*
Genentech and Roche Group	33.8	42.1	*	*

* less than 10%

Revenue Recognition

We recognize revenue in accordance with Accounting Standards Codification ("ASC") Topic 606 ("ASC 606"), *Revenue from Contracts with Customers*. Under ASC 606, for all revenue-generating contracts, we perform the following steps to determine the amount of revenue to be recognized: (1) identify the contract or contracts; (2) determine whether the promised goods or services are performance obligations, including whether they are distinct in the context of the contract; (3) measure the transaction price, including the constraint on variable consideration; (4) allocate the transaction price to the performance obligations based on estimated selling prices; and (5) recognize revenue when (or as) we satisfy each performance obligation.

We derive revenue by providing diagnostic and research services in our Immune Medicine and MRD market opportunities. Our Immune Medicine revenue consists of revenue generated from (1) providing sample testing services for our commercial research product, immunoSEQ, to biopharmaceutical customers and academic institutions; (2) providing our T-Detect COVID tests to clinical customers; and (3) our collaboration agreements with Genentech and other biopharmaceutical customers in areas of drug and target discovery. Our MRD revenue consists of revenue generated from (1) providing our clonoSEQ report to clinical customers; (2) providing MRD sample testing services to biopharmaceutical customers and certain academic institutions, including investigator-led clinical trials; and (3) providing our clonoSEQ report or results to certain international laboratory sites through technology transfers.

For research customers who utilize either immunoSEQ or our MRD services, contracts typically include an amount billed in advance of services ("upfront") and subsequent billings as sample results are delivered to the customer. Upfront amounts received are recorded as deferred revenue, which we recognize as revenue upon satisfaction of performance obligations. We have identified two typical performance obligations under the terms of our research service contracts: (1) the delivery of our immunoSEQ or MRD data for customer provided samples; and (2) related data analysis. We recognize revenue for both identified performance obligations as sample results are delivered to the customer. In periods where our sample estimates are reduced or a customer project is cancelled and, in either case, we have remaining related deferred revenue, we recognize revenue using a cumulative catch-up approach based on the proportion of samples delivered to date relative to the remaining samples expected to be delivered.

For agreements where we provide our clonoSEQ report to ordering physicians, we have identified one performance obligation: the delivery of a clonoSEQ report. We bill and receive payments for these transactions from medical institutions and commercial and government third-party payors. As payment from the respective payors may vary based on the various reimbursement rates and patient responsibilities, we consider the transaction price to be variable and record an estimate of the transaction price, subject to the constraint for variable consideration, as revenue at the time of delivery. The estimate of transaction price is based on historical and expected reimbursement rates with the various payors, which are monitored in subsequent periods and adjusted as necessary based on actual collection experience.

Regarding our clonoSEQ coverage under Medicare, we bill an episode of treatment when we deliver the first eligible test report. This billing contemplates all necessary tests required during a patient's treatment cycle, which is currently estimated at approximately four tests per patient, including the initial sequence identification test. Revenue recognition commences at the time the initial billable test report is delivered and is based upon cumulative tests delivered to date. We estimate the number of tests we expect to deliver over a patient's treatment cycle based on historical testing frequencies for patients by indication. These estimates are subject to change as we develop more information about utilization over time. Any unrecognized revenue from the initial billable test is recorded as deferred revenue and is recognized either as we deliver our estimate of the remaining tests in a patient's treatment cycle or when the likelihood becomes remote that a patient will receive additional testing.

The contract transaction price for agreements we enter into with biopharmaceutical customers to further develop and commercialize their therapeutics may consist of a combination of non-refundable upfront fees, separately priced MRD testing fees and milestone fees earned upon our customers achievement of certain regulatory approvals. Depending on the contract, these agreements include single or multiple performance obligations. Such performance obligations include providing services to support our customer's therapeutic development efforts, including regulatory support for our technology intended to be utilized as part of our customer's registrational trials, developing analytical plans for our data, participating on joint research committees and assisting in completing a regulatory submission and providing MRD testing services related to customer-provided samples for their regulatory submissions. Generally, the support services, excluding MRD testing services, are not distinct within the context of the contract and thus are accounted for as a single performance obligation. The transaction price allocated to the respective performance obligations is estimated using an adjusted market assessment approach for the regulatory support services and a standalone selling price for the estimated MRD testing services. At contract inception, we fully constrain any consideration related to regulatory milestones, as the achievement of such milestones is subject to third-party regulatory approval and the customers' own submission decision-making. When MRD sample testing services are separately priced customer options, we assess if a material right exists and, if not, the customer option to purchase additional MRD sample testing services is not considered part of the contract. We recognize revenue related to MRD testing services over time using an output method based on the proportion of sample results delivered relative to the total amount of sample results expected to be delivered, when expected to be a faithful depiction of progress. We use the same method to recognize the regulatory support services. When an output method based on the proportion of sample results delivered is not expected to be a faithful depiction of progress, we utilize an input method using a cost-based model based on estimates of effort completed. Selecting the measure of progress and estimating progress to date requires significant judgment. Except for any non-refundable upfront fees, the other forms of compensation represent variable consideration. Variable consideration related to regulatory milestones is estimated using the most likely amount method, where variable consideration is constrained until it is probable that a significant reversal of cumulative revenue recognized will not occur. Milestone payments for regulatory approvals, which are not within our customers' control, are not considered probable of being achieved until those approvals are received. Determining whether regulatory milestone payments are probable is an area that requires significant judgment. In making this assessment, we evaluate scientific, clinical, regulatory and other risks, as well as the level of effort and investment required to achieve the respective milestone.

Net Loss Per Share Attributable to Adaptive Biotechnologies Corporation Common Shareholders

We calculate basic net loss per share attributable to our common shareholders by dividing net loss attributable to us by our weighted-average number of shares of common stock outstanding for the period. The diluted net loss per share attributable to our common shareholders is computed by giving effect to all potential dilutive common stock equivalents outstanding for the period determined using the treasury stock method. For purposes of this calculation, common stock warrants, stock options outstanding, nonvested restricted stock units and the maximum nonvested market-based restricted stock units eligible to be earned are considered common stock equivalents but have been excluded from the calculation of diluted net loss per share attributable to our common shareholders, as their effect is anti-dilutive.

3. Revenue

We disaggregate our revenue from contracts with customers by market opportunity and type of arrangement, as we believe this best depicts how the nature, amount, timing and uncertainty of our revenue and cash flows are affected by economic factors. The following table presents our disaggregated revenue for the periods presented (in thousands):

	Three Months Ended March 31,	
	2022	2021
Immune Medicine revenue		
Service revenue	$ 7,113	$ 4,048
Collaboration revenue	13,703	16,057
Total Immune Medicine revenue	20,816	20,105
MRD revenue		
Service revenue	14,804	11,337
Regulatory milestone revenue	3,000	7,000
Total MRD revenue	17,804	18,337
Total revenue	$ 38,620	$ 38,442

During the three months ended March 31, 2022, we recognized $1.4 million in revenue related to Medicare reimbursements resulting from our determination that the likelihood of additional testing for specific patients was remote, cancelled biopharmaceutical customer contracts and changes in estimates of total samples to be provided under certain of our agreements, $0.2 million of which was recognized as Immune Medicine service revenue and $1.2 million of which was recognized as MRD service revenue. During the three months ended March 31, 2021, we recognized $0.8 million in revenue related to changes in estimates of total samples to be provided under certain of our agreements, Medicare reimbursements resulting from our determination that the likelihood of additional testing for specific patients was remote and cancelled biopharmaceutical customer contracts, all of which was recognized as MRD service revenue.

As of March 31, 2022, we could receive up to an additional $330.5 million in milestone payments in future periods if certain regulatory approvals are obtained by our customers' therapeutics in connection with MRD data generated from our MRD product.

Genentech Collaboration Agreement

In December 2018, we entered into a worldwide collaboration and license agreement with Genentech (the "Genentech Agreement") to leverage our capability to develop cellular therapies in oncology. Subsequent to receipt of regulatory approval in January 2019, we received a non-refundable, upfront payment of $300.0 million in February 2019 and may be eligible to receive more than $1.8 billion over time, including payments of up to $75.0 million upon the achievement of specified regulatory milestones, up to $300.0 million upon the achievement of specified development milestones and up to $1,430.0 million upon the achievement of specified commercial milestones. In addition, we are separately able to receive tiered royalties at a rate ranging from the mid-single digits to the mid-teens on aggregate worldwide net sales of products arising from the strategic collaboration, subject to certain reductions, with aggregate minimum floors. Under the agreement, we are pursuing two product development pathways for novel T cell immunotherapies in which Genentech intends to use T cell receptors ("TCRs") screened by our immune medicine platform to engineer and manufacture cellular medicines:

- Shared Products. The shared products will use "off-the-shelf" TCRs identified against cancer antigens shared among patients ("Shared Products").
- Personalized Product. The personalized product will use patient-specific TCRs identified by real-time screening of TCRs against cancer antigens in each patient ("Personalized Product").

Under the terms of the agreement, we granted Genentech exclusive worldwide licenses to develop and commercialize TCR-based cellular therapies in the field of oncology, including licenses to existing shared antigen data packages. Additionally, Genentech has the right to determine which product candidates to further develop for commercialization purposes. We determined that this arrangement meets the criteria set forth in ASC Topic 808, *Collaborative Arrangements* ("ASC 808"), because both parties are active participants in the activity and are exposed to significant risks and rewards depending on the activity's commercial failure or success. Because ASC 808 does not provide guidance on how to account for the activities under a collaborative arrangement, we applied the guidance in ASC 606 to account for the activities related to the Genentech Agreement.

In applying ASC 606, we identified the following performance obligations at the inception of the agreement:

1. License to utilize on an exclusive basis all TCR-specific platform intellectual property to develop and commercialize any licensed products in the field of oncology.

2. License to utilize all data and information within each shared antigen data package and any other know-how disclosed by us to Genentech in oncology.
3. License to utilize all private antigen TCR product data in connection with research and development activities in the field of use.
4. License to existing shared antigen data packages.
5. Research and development services for Shared Products development, including expansion of shared antigen data packages.
6. Research and development services for private product development.
7. Obligations to participate on various joint research, development and project committees.

We determined that none of the licenses, research and development services or obligations to participate on various committees were distinct within the context of the contract, given such rights and activities were highly interrelated and there was substantial additional research and development to further develop the licenses. We considered factors such as the stage of development of the respective existing antigen data packages, the subsequent development that would be required to both identify and submit a potential target for investigational new drug acceptance under both product pathways and the variability in research and development pathways given Genentech's control of product commercialization. Specifically, under the agreement, Genentech is not required to pursue development or commercialization activities pertaining to both product pathways and may choose to proceed with one or the other. Accordingly, we determined that all of the identified performance obligations were attributable to one general performance obligation, which is to further the development of our TCR-specific platform, including data packages, and continue to make our TCR identification process available to Genentech to pursue either product pathway.

Separately, we have a responsibility to Genentech to enter into a supply and manufacturing agreement for patient-specific TCRs as it pertains to any Personalized Product therapeutic. We determined this was an option right of Genentech should they pursue commercialization of a Personalized Product therapy. Because of the uncertainty resulting from the early stage of development, the novel approach of our collaboration with Genentech and our rights to future commercial milestones and royalty payments, we determined that this option right was not a material right that should be accounted for at inception. As such, we will account for the supply and manufacturing agreement when entered into between the parties.

We determined the initial transaction price shall be made up of only the $300.0 million upfront, non-refundable payment, as all potential regulatory and development milestone payments were probable of significant revenue reversal given their achievement was highly dependent on factors outside our control. As a result, these payments were fully constrained and were not included in the transaction price as of March 31, 2022. We excluded the commercial milestones and potential royalties from the transaction price, as those items relate predominantly to the license rights granted to Genentech and will be assessed when and if such events occur.

As there are potential substantive developments necessary, which Genentech may be able to direct, we determined that we would apply a proportional performance model to recognize revenue for our performance obligation. We measure proportional performance using an input method based on costs incurred relative to the total estimated costs of research and development efforts to pursue both the Shared Products and Personalized Product pathways. When any of the potential regulatory and development milestones are no longer fully constrained and included in the transaction price, such amounts will be recognized using the cumulative catch-up method based on proportional performance at such time. We currently expect to recognize the revenue over a period of approximately seven to eight years from the effective date. This estimate of the research and development period considers pursuit options of development activities supporting both the Shared Products and the Personalized Product, but may be reduced or increased based on the various activities as directed by the joint committees, decisions made by Genentech, regulatory feedback or other factors not currently known.

We recognized $12.3 million and $15.6 million in Immune Medicine collaboration revenue during the three months ended March 31, 2022 and 2021, respectively, related to the Genentech Agreement. Costs related to the Genentech Agreement are included in research and development expenses.

4. Deferred Revenue

Deferred revenue from our Genentech Agreement represents $56.9 million and $80.9 million of the current and non-current deferred revenue balances, respectively, as of March 31, 2022 and $56.1 million and $94.0 million of the current and non-current deferred revenue balances, respectively, as of December 31, 2021. In general, we expect that the current amounts will be recognized as revenue within 12 months and the non-current amounts will be recognized as revenue over a period of approximately four to five years from March 31, 2022. This period of time represents an estimate of the research and development period to develop cellular therapies in oncology, which may be reduced or increased based on the various research and development activities.

Changes in deferred revenue during the three months ended March 31, 2022 were as follows (in thousands):

Deferred revenue balance at December 31, 2021	$	179,210
Additions to deferred revenue during the period		8,907
Revenue recognized during the period		(19,719)
Deferred revenue balance at March 31, 2022	$	168,398

As of March 31, 2022, $16.0 million was recognized as revenue that was included in the deferred revenue balance at December 31, 2021.

5. Fair Value Measurements

The following tables set forth the fair value of financial assets as of March 31, 2022 and December 31, 2021 that were measured at fair value on a recurring basis (in thousands):

	March 31, 2022			
	Level 1	Level 2	Level 3	Total
Financial assets				
Money market funds	$ 92,096	$ —	$ —	$ 92,096
U.S. government debt securities	—	358,291	—	358,291
Corporate bonds	—	39,573	—	39,573
Total financial assets	$ 92,096	$ 397,864	$ —	$ 489,960

	December 31, 2021			
	Level 1	Level 2	Level 3	Total
Financial assets				
Money market funds	$ 131,946	$ —	$ —	$ 131,946
U.S. government debt securities	—	391,145	—	391,145
Corporate bonds	—	39,996	—	39,996
Total financial assets	$ 131,946	$ 431,141	$ —	$ 563,087

Level 1 securities include highly liquid money market funds, for which we measure the fair value based on quoted prices in active markets for identical assets or liabilities. Level 2 securities consist of U.S. government debt securities and corporate bonds, and are valued based on recent trades of securities in inactive markets or on quoted market prices of similar instruments and other significant inputs derived from or corroborated by observable market data. Of the March 31, 2022 Level 2 U.S. government debt securities balance, $12.0 million is recorded within the cash and cash equivalents balance on the unaudited condensed consolidated balance sheet as of March 31, 2022.

6. Investments

Available-for-sale investments consisted of the following as of March 31, 2022 and December 31, 2021 (in thousands):

	March 31, 2022			
	Amortized Cost	Unrealized Gain	Unrealized Loss	Estimated Fair Value
Short-term marketable securities				
U.S. government debt securities	$ 210,589	$ —	$ (1,405)	$ 209,184
Corporate bonds	39,859	—	(286)	39,573
Total short-term marketable securities	$ 250,448	$ —	$ (1,691)	$ 248,757
Long-term marketable securities				
U.S. government debt securities	$ 140,202	$ —	$ (3,092)	$ 137,110
Total long-term marketable securities	$ 140,202	$ —	$ (3,092)	$ 137,110

	December 31, 2021			
	Amortized Cost	Unrealized Gain	Unrealized Loss	Estimated Fair Value
Short-term marketable securities				
U.S. government debt securities	$ 186,752	$ 4	$ (109)	$ 186,647
Corporate bonds	27,363	—	(14)	27,349
Total short-term marketable securities	$ 214,115	$ 4	$ (123)	$ 213,996
Long-term marketable securities				
U.S. government debt securities	$ 205,472	$ —	$ (974)	$ 204,498
Corporate bonds	12,691	—	(44)	12,647
Total long-term marketable securities	$ 218,163	$ —	$ (1,018)	$ 217,145

All the U.S. government debt securities and corporate bonds designated as short-term marketable securities have an effective maturity date that is equal to or less than one year from the respective condensed consolidated balance sheet date. Those that are designated as long-term marketable securities have an effective maturity date that is more than one year from the respective condensed consolidated balance sheet date.

Accrued interest receivable is excluded from the amortized cost and estimated fair value of our marketable securities. Accrued interest receivable of $1.1 million and $1.4 million is presented separately within the prepaid expenses and other current assets balance on the unaudited condensed consolidated balance sheet as of March 31, 2022 and on the condensed consolidated balance sheet as of December 31, 2021, respectively.

The following table presents the gross unrealized holding losses and fair value for investments in an unrealized loss position, and the length of time individual securities have been in a continuous loss position, as of March 31, 2022 (in thousands):

	Less Than 12 Months		12 Months Or Greater	
	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss
U.S. government debt securities	$ 346,294	$ (4,497)	$ —	$ —
Corporate bonds	39,573	(286)	—	—
Total available-for-sale securities	$ 385,867	$ (4,783)	$ —	$ —

We periodically review our available-for-sale securities to assess for credit impairment. Some of the factors considered in assessing impairment include the extent to which the fair value is less than the amortized cost basis, adverse conditions related to the security, an industry or geographic area, changes to security ratings or sector credit ratings and other relevant market data.

As of March 31, 2022, we did not intend, nor were we more likely than not to be required, to sell our available-for-sale investments before the recovery of their amortized cost basis, which may be maturity. Based on our assessment, we concluded all impairment as of March 31, 2022 to be due to factors other than credit loss, such as changes in interest rates. A credit allowance was not recognized and the impairment of our available-for-sale securities was recorded in other comprehensive loss.

7. Goodwill and Intangible Assets

There have been no changes in the carrying amount of goodwill since its recognition in 2015.

Intangible assets subject to amortization as of March 31, 2022 and December 31, 2021 consisted of the following (in thousands):

	March 31, 2022		
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Acquired developed technology	$ 20,000	$ (12,049)	$ 7,951
Purchased intellectual property	325	(169)	156
Balance at March 31, 2022	$ 20,325	$ (12,218)	$ 8,107

	December 31, 2021		
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Acquired developed technology	$ 20,000	$ (11,638)	$ 8,362
Purchased intellectual property	325	(161)	164
Balance at December 31, 2021	$ 20,325	$ (11,799)	$ 8,526

The developed technology was acquired in connection with our acquisition of Sequenta, Inc. in 2015. The remaining balance of the acquired technology and the purchased intellectual property is expected to be amortized over the next 4.8 years.

As of March 31, 2022, expected future amortization expense for intangible assets was as follows (in thousands):

2022 (excluding the three months ended March 31, 2022)	$ 1,280
2023	1,699
2024	1,703
2025	1,699
2026	1,699
Thereafter	27
Total future amortization expense	$ 8,107

8. Leases

We have operating lease agreements for laboratory, office and warehouse facilities in Seattle, Washington, Bothell, Washington, South San Francisco, California and New York City, New York. As of March 31, 2022, we were not party to any finance leases.

The following table reconciles our undiscounted operating lease cash flows to our operating lease liabilities, less current portion balance as of March 31, 2022 (in thousands):

2022 (excluding the three months ended March 31, 2022)	$ 10,618
2023	13,964
2024	13,692
2025	14,098
2026	12,330
Thereafter	81,188
Total undiscounted lease payments	145,890
Less:	
Imputed interest rate	(31,087)
Tenant improvement receivables	(1,280)
Total operating lease liabilities	113,523
Less: Current portion	(8,545)
Operating lease liabilities, less current portion	$ 104,978

Cash paid for amounts included in the measurement of lease liabilities was $3.3 million and cash received for tenant improvement allowances was $4.0 million during the three months ended March 31, 2022. During the three months ended March 31, 2021, cash paid for amounts included in the measurement of lease liabilities was $0.5 million, net of $1.2 million of cash received for tenant improvement allowances.

We previously entered into a $2.1 million letter of credit with one of our financial institutions in connection with one of our leases.

9. Commitments and Contingencies

Legal Proceedings

We are subject to claims and assessments from time to time in the ordinary course of business. We will accrue a liability for such matters when it is probable that a liability has been incurred and the amount can be reasonably estimated. When only a range of possible loss can be established, the most probable amount in the range is accrued. If no amount within this range is a better estimate than any other amount within the range, the minimum amount in the range is accrued. We were not party to any material legal proceedings as of March 31, 2022.

Indemnification Agreements

In the ordinary course of business, we may provide indemnification of varying scope and terms to vendors, lessors, customers and other parties with respect to certain matters including, but not limited to, losses arising out of breach of our agreements with them or from intellectual property infringement claims made by third parties. In addition, we have entered into indemnification agreements with members of our board of directors and certain of our executive officers that will require us to indemnify them against certain liabilities that may arise by reason of their status or service as directors or officers. The maximum potential amount of future payments that we could be required to make under these indemnification agreements is, in many cases, unlimited. We have not incurred any material costs as a result of such indemnifications and are not currently aware of any indemnification claims.

10. Shareholders' Equity

Common Stock

Our common stock has no preferences or privileges and is not redeemable. Holders of our common stock are entitled to one vote for each share of common stock held. The holders of record of outstanding shares of common stock shall be entitled to receive, when, as and if declared, out of funds legally available, such cash and other dividends as may be declared from time to time.

As of March 31, 2022, we had reserved shares of common stock for the following:

Shares issuable upon the exercise of outstanding stock options granted	15,015,928
Shares issuable upon the vesting of outstanding restricted stock units granted and the maximum outstanding market-based restricted stock units eligible to be earned	5,984,738
Shares available for future grant under the 2019 Equity Incentive Plan	14,500,039
Shares available for future grant under the Employee Stock Purchase Plan	2,804,298
Total shares of common stock reserved for future issuance	38,305,003

Our 2019 Equity Incentive Plan ("2019 Plan") provides for annual increases in the number of shares that may be issued under the 2019 Plan on January 1, 2020 and on each subsequent January 1, thereafter, by a number of shares equal to the lesser of (a) 5% of the number of shares of common stock issued and outstanding on the immediately preceding December 31, or (b) an amount determined by our board of directors.

Furthermore, our Employee Stock Purchase Plan ("ESPP") provides for annual increases in the number of shares available for issuance under our ESPP on January 1, 2020 and on each January 1, thereafter, by a number of shares equal to the smallest of (a) 1% of the number of shares of common stock issued and outstanding on the immediately preceding December 31, or (b) an amount determined by our board of directors.

Our board of directors determined not to increase the 2019 Plan and ESPP reserves in 2022.

11. Equity Incentive Plans

2009 Equity Incentive Plan

We adopted an equity incentive plan in 2009 ("2009 Plan") that provided for the issuance of incentive and nonqualified common stock options and other share-based awards for employees, directors and consultants. Under the 2009 Plan, the exercise price for incentive and nonqualified stock options were not to be less than the fair market value of our common stock at the date of grant. Stock options granted under this plan expire no later than ten years from the grant date and vesting was established at the time of grant. Pursuant to the terms of the 2019 Plan, any shares subject to outstanding stock options originally granted under the 2009 Plan that terminate, expire or lapse for any reason without the delivery of shares to the holder thereof shall become available for issuance pursuant to awards granted under the 2019 Plan. While no shares are available for future issuance under the 2009 Plan, it continues to govern outstanding equity awards granted thereunder.

2019 Equity Incentive Plan

The 2019 Plan became effective immediately prior to the closing of our initial public offering in July 2019. The 2019 Plan provides for the issuance of awards in the form of stock options and other share-based awards for employees, directors and consultants. Under the 2019 Plan, the stock option exercise price per share shall not be less than the fair market value of a share of stock on the effective date of grant, as defined by the 2019 Plan, unless explicitly qualified under the provisions of Section 409A or Section 424(a) of the Internal Revenue Code of 1986. Additionally, unless otherwise specified, stock options granted under this plan expire no later than ten years from the grant date and vesting is established at the time of grant. Except for certain stock option and restricted stock unit grants made to non-employee directors, stock options and restricted stock units granted under the 2019 Plan generally vest over a four-year period, subject to continuous service through each applicable vesting date. As of March 31, 2022, we have 29,213,355 shares of common stock authorized for issuance under the 2019 Plan.

Changes in shares available for grant during the three months ended March 31, 2022 were as follows:

	Shares Available for Grant
Shares available for grant at December 31, 2021	22,299,923
Stock options and restricted stock units granted and the maximum market-based restricted stock units granted eligible to be earned	(9,178,494)
Stock options and restricted stock units forfeited, cancelled or expired	1,378,610
Shares available for grant at March 31, 2022	14,500,039

Stock Options

Stock option activity under the 2009 Plan and 2019 Plan during the three months ended March 31, 2022 was as follows:

	Shares Subject to Outstanding Stock Options	Weighted-Average Exercise Price per Share	Aggregate Intrinsic Value (in thousands)
Stock options outstanding at December 31, 2021	12,778,984	$ 19.72	
Stock options granted	3,730,851	12.43	
Stock options forfeited or cancelled	(795,626)	29.00	
Stock options expired	(50,073)	34.73	
Stock options exercised	(648,208)	4.22	
Stock options outstanding at March 31, 2022	15,015,928	$ 18.03	$ 51,641
Stock options vested and exercisable at March 31, 2022	7,387,511	$ 13.42	$ 42,129

The weighted-average remaining contractual life for stock options outstanding as of March 31, 2022 was 7.3 years. The weighted-average remaining contractual life for vested and exercisable stock options as of March 31, 2022 was 5.4 years.

Of the $14.2 million of proceeds from the exercise of stock options included on the unaudited condensed consolidated statements of cash flows for the three months ended March 31, 2021, $0.3 million related to stock options exercised prior to but settled during the three months ended March 31, 2021. Furthermore, $0.5 million of proceeds from stock options exercised during the three months ended March 31, 2021 were unsettled as of March 31, 2021.

Restricted Stock Units

Restricted stock unit activity under the 2019 Plan during the three months ended March 31, 2022 was as follows:

	Restricted Stock Units Outstanding	Weighted-Average Grant Date Fair Value per Share
Nonvested restricted stock units outstanding at December 31, 2021	1,211,191	$ 37.41
Restricted stock units granted	4,953,409	12.17
Restricted stock units forfeited or cancelled	(532,911)	17.37
Restricted stock units vested	(141,185)	44.57
Nonvested restricted stock units outstanding at March 31, 2022	5,490,504	$ 16.40

Market-Based Restricted Stock Units

In addition to the restricted stock units described above, our board of directors approved an award of market-based restricted stock units to our chief executive officer in March 2022. The shares of common stock that may be earned under the award, ranging from zero shares to 494,234 shares, are calculated based upon our total shareholder return during a three-year performance period as measured against that of the group of companies comprising the S&P Biotechnology Select Industry Index as of the grant date, subject to certain adjustments to such index group. Except as expressly provided in the terms of the award agreement, vesting is subject to our chief executive officer's continuous service through the end of the three-year performance period.

Grant Date Fair Value of Stock Options, Restricted Stock Units and Market-Based Restricted Stock Units Granted

The estimated grant date fair values of stock options granted during the three months ended March 31, 2022 and 2021 were estimated using the Black-Scholes option-pricing model with the following assumptions:

	Three Months Ended March 31,	
	2022	2021
Fair value of common stock	$12.14 - $14.95	$43.68 - $66.50
Expected term (in years)	5.27 - 6.08	5.27 - 6.08
Risk-free interest rate	1.7% - 2.5%	0.5% - 1.1%
Expected volatility	68.2% - 69.8%	67.1% - 68.4%
Expected dividend yield	—	—

The determination of the grant date fair value of stock options granted using a Black-Scholes option-pricing model is affected by the fair value of our common stock, as well as assumptions regarding a number of variables that are complex, subjective and generally require significant judgment to determine. The valuation assumptions were determined as follows:

Fair value of common stock—The fair value of each share of common stock is based on the closing price of our common stock on the date of grant, or other relevant determination date, as reported on The Nasdaq Global Select Market.

Expected term—The expected term of stock options granted to employees and non-employee directors is determined using the “simplified” method, as illustrated in ASC Topic 718, *Compensation—Stock Compensation*, as we do not have sufficient exercise history to determine a better estimate of expected term. Under this approach, the expected term is based on the midpoint between the vesting date and the end of the contractual term of the stock option.

Risk-free interest rate—We utilize a risk-free interest rate in the option valuation model based on U.S. Treasury zero-coupon issues with remaining terms similar to the expected terms of the stock options.

Expected volatility—As we do not have sufficient trading history for our common stock, the expected volatility is based on the historical volatility of our publicly traded industry peers utilizing a period of time consistent with our estimate of expected term.

Expected dividend yield—We do not anticipate paying any cash dividends in the foreseeable future and, therefore, use an expected dividend yield of zero in the option valuation model.

The weighted-average grant date fair value per share of stock options granted during the three months ended March 31, 2022 and 2021 was $7.81 and $27.67, respectively.

The grant date fair value of restricted stock units granted is based on the closing price of our common stock on the date of grant, or other relevant determination date, as reported on The Nasdaq Global Select Market. The weighted-average grant date fair value per share of restricted stock units granted during the three months ended March 31, 2022 and 2021 was $12.17 and $44.10, respectively.

The grant date fair value of the market-based restricted stock units granted in March 2022 is $18.89 and was determined using a Monte Carlo valuation model, which uses assumptions such as volatility, risk-free interest rate and dividend estimated for the performance period. The related share-based compensation expense of $4.7 million is recognized on a straight-line basis over the three-year performance period, which is also the requisite service period. Attainment of the market condition and the number of shares earned and vested does not impact the related share-based compensation expense recognized. Share-based compensation expense will be reversed only if our chief executive officer does not provide continuous service through the performance period for reasons other than those expressly provided in the terms of the award.

The compensation cost related to stock options, restricted stock units and market-based restricted stock units for the three months ended March 31, 2022 and 2021 are included on the unaudited condensed consolidated statements of operations as follows (in thousands):

	Three Months Ended March 31,	
	2022	2021
Cost of revenue	$ 795	$ 328
Research and development	4,345	2,883
Sales and marketing	3,229	2,495
General and administrative	4,492	2,778
Total share-based compensation expense	$ 12,861	$ 8,484

As of March 31, 2022, unrecognized share-based compensation expense and the remaining weighted-average recognition period were as follows:

	Unrecognized Share-Based Compensation Expense (in thousands)	Remaining Weighted-Average Recognition Period (in years)
Nonvested stock options	$ 102,285	3.02
Nonvested restricted stock units	85,458	3.63
Nonvested market-based restricted stock units	4,553	2.93

12. Restructuring

In March 2022, we began implementing a restructuring plan to reduce operating costs and drive future growth aligned with the strategic reorganization of our business around our MRD and Immune Medicine market opportunities. Under this restructuring plan, we reduced our workforce by approximately 100 employees.

We estimate that we will incur aggregate restructuring costs of approximately $2.0 million, all of which has been recognized in the three months ended March 31, 2022. These costs primarily relate to one-time termination benefits and ongoing benefit arrangements, both of which include severance payments and extended benefits coverage support and are contingent upon the impacted employees' execution and non-revocation of separation agreements. Our estimated aggregate restructuring costs also include certain contract termination costs.

The activities related to our reduction in workforce were primarily completed in March 2022 and $1.4 million of the $2.0 million aggregate restructuring costs were paid as of March 31, 2022. The remaining $0.6 million in cash payments are expected to be disbursed in the year ended December 31, 2022.

13. Net Loss Per Share Attributable to Adaptive Biotechnologies Corporation Common Shareholders

The following table sets forth the computation of the basic and diluted net loss per share attributable to our common shareholders for the three months ended March 31, 2022 and 2021 (in thousands, except share and per share amounts):

	Three Months Ended March 31,	
	2022	2021
Net loss attributable to Adaptive Biotechnologies Corporation	$ (62,736)	$ (40,642)
Weighted-average shares used in computing net loss per share attributable to Adaptive Biotechnologies Corporation common shareholders, basic and diluted	141,697,252	138,967,754
Net loss per share attributable to Adaptive Biotechnologies Corporation common shareholders, basic and diluted	$ (0.44)	$ (0.29)

Given the loss position for all periods presented, basic net loss per share attributable to our common shareholders is the same as diluted net loss per share attributable to our common shareholders, as the inclusion of all potential shares of common stock outstanding would have been anti-dilutive. The following weighted-average common stock equivalents were excluded from the calculation of diluted net loss per share attributable to our common shareholders for the three months ended March 31, 2022 and 2021 as they had an anti-dilutive effect:

	Three Months Ended March 31,	
	2022	2021
Stock options outstanding	13,255,459	13,516,949
Nonvested restricted stock units	2,587,492	238,583
Maximum nonvested market-based restricted stock units eligible to be earned	153,762	—
Common stock warrant	—	34,757
Total	15,996,713	13,790,289

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

You should read the following discussion and analysis of our financial condition and results of operations together with the unaudited condensed consolidated financial statements and related notes and the other financial information appearing elsewhere in this report, as well as the other financial information we file with the SEC from time to time. Some of the information contained in this discussion and analysis or set forth elsewhere in this report, including information with respect to our plans and strategy for our business and related financing, includes forward-looking statements that involve risks and uncertainties relating to our future plans, objectives, expectations, intentions and financial performance and the assumptions that underlie these statements.

As a result of many factors, including those factors set forth in the "Risk Factors" section of this report, our actual results could differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis.

Overview

We are advancing the field of immune medicine by harnessing the inherent biology of the adaptive immune system to transform the diagnosis and treatment of disease. We believe the adaptive immune system is nature's most finely tuned diagnostic and therapeutic for most diseases, but the inability to decode it has prevented the medical community from fully leveraging its capabilities. Our immune medicine platform applies our proprietary technologies to read the diverse genetic code of a patient's immune system and aims to understand precisely how the immune system detects and treats disease in that patient. We capture these insights in our dynamic clinical immunomics database, which is underpinned by computational biology and machine learning, and use them to develop and commercialize clinical products and services that we are tailoring to each individual patient. We have commercial products and services and a robust pipeline of clinical products and services that we are designing to diagnose, monitor and enable the treatment of diseases, such as cancer, autoimmune disorders and infectious diseases.

Our immune medicine platform is the foundation for our expanding suite of products and services. The cornerstone of our platform and core immunosequencing product, immunoSEQ, serves as our underlying research and development engine and generates revenue from biopharmaceutical and academic customers.

Leveraging our collaboration with Microsoft, we are creating the TCR-Antigen Map. We are using this map to develop research solutions by disease, called immunoSEQ T-MAP, and a diagnostic product for many diseases from a single blood test, called T-Detect.

Regarding our specific products and pipeline, T-Detect COVID, for which we have received Emergency Use Authorization, is designed to confirm past SARS-CoV-2 infection, the virus that causes COVID-19. It is the first indication for the T-Detect product line. We expect to launch a second indication, T-Detect Lyme, during this year's Lyme season. In addition, we have confirmed signals in Crohn's disease, celiac disease and multiple sclerosis, and we have identified signals in ulcerative colitis and rheumatoid arthritis. In the future, we intend to sell other diagnostic products and services, including other indications for T-Detect.

Our therapeutic product candidates, being developed under the Genentech Agreement, leverage our platform to identify specific receptors on immune cells to develop into cellular therapies in oncology. We also extended our platform to identify highly potent neutralizing antibodies against SARS-CoV-2 and we believe this differentiated approach may be leveraged across multiple disease states.

Our first clinical diagnostic product, clonoSEQ, is the first test authorized by the Food and Drug Administration for the detection and monitoring of MRD in patients with multiple myeloma, B cell acute lymphoblastic leukemia and chronic lymphocytic leukemia, and is also available as a CLIA-validated laboratory developed test for patients with other lymphoid cancers. We disclose our clonoSEQ test volume, which now includes the number of clonoSEQ reports and results we have provided to ordering physicians in the United States and international technology transfer sites. These volumes do not include sample results from our biopharmaceutical customers or academic institutions utilizing our MRD services.

Historically, we have sold immunoSEQ as a fee-for-service offering. These research offerings have comprised the majority of our revenue to date, although our business is pursuing broader opportunities. As we continue to expand the use of our clonoSEQ diagnostic tests, develop and commercialize T-Detect and develop and commercialize therapeutic product candidates with our drug discovery collaborator, we expect our mix of revenue to shift to clinical products and services, which we believe will become our largest sources of revenue.

We are actively pursuing opportunities to deepen our relationships with current customers and initiate relationships with new customers. We have an experienced, specialty salesforce that is targeting department heads, laboratory directors, principal investigators, core facility directors, clinicians, payors, research scientists and pathologists at leading academic and research institutions, biopharmaceutical companies and contract research organizations. As MRD assessment becomes standard practice for patient management across a range of blood cancers, we believe it will be essential for clinicians and patients to have access to a highly accurate, sensitive and standardized MRD assessment tool. We are focused on establishing and maintaining collaborative relationships with payors, developing health economic evidence and building billing and patient access infrastructure to expand reimbursement coverage for our clinical diagnostics. We continue to seek expanded coverage of our clonoSEQ diagnostic test and have successfully expanded coverage through contractual agreements or positive medical policies with Medicare and several of the largest national private health insurers in the United States.

We recognized revenue of $38.6 million and $38.4 million for the three months ended March 31, 2022 and 2021, respectively. Net loss attributable to Adaptive Biotechnologies Corporation was $62.7 million and $40.6 million for the three months ended March 31, 2022 and 2021, respectively. We have funded our operations to date principally from the sale of convertible preferred stock and common stock and, to a lesser extent, revenue. As of March 31, 2022 and December 31, 2021, we had cash, cash equivalents and marketable securities of $500.7 million and $570.2 million, respectively.

Reduction in Workforce

In March 2022, we began implementing a restructuring plan to reduce operating costs and drive future growth aligned with the strategic reorganization of our business around our MRD and Immune Medicine market opportunities. Under this restructuring plan, we reduced our workforce by approximately 100 employees.

We estimate that we will incur aggregate restructuring costs of approximately $2.0 million, all of which has been recognized in the three months ended March 31, 2022. These costs primarily relate to one-time termination benefits and ongoing benefit arrangements, both of which include severance payments and extended benefits coverage support and are contingent upon the impacted employees' execution and non-revocation of separation agreements. Our estimated aggregate restructuring costs also include certain contract termination costs.

The activities related to our reduction in workforce were primarily completed in March 2022 and $1.4 million of the $2.0 million aggregate restructuring costs were paid as of March 31, 2022. The remaining $0.6 million in cash payments are expected to be disbursed in the year ended December 31, 2022.

Revenue Reclassification and clonoSEQ Test Volume

We previously disclosed revenue bifurcated into sequencing and development financial statement captions and now present total revenue on the unaudited condensed consolidated statements of operations included elsewhere in this report. We disaggregate revenue under our Immune Medicine and MRD market opportunities in Note 3 of the accompanying notes to the unaudited condensed consolidated financial statements included elsewhere in this report.

The following table presents the amount of sequencing revenue and development revenue recognized under our Immune Medicine and MRD market opportunities for the periods presented (in thousands):

	Three Months Ended			
	December 31, 2021	September 30, 2021	June 30, 2021	March 31, 2021
Immune Medicine revenue				
Sequencing revenue	$ 6,860	$ 8,170	$ 5,404	$ 4,048
Development revenue	14,514	15,445	17,635	16,057
Total Immune Medicine revenue	21,374	23,615	23,039	20,105
MRD revenue				
Sequencing revenue	16,201	13,936	13,151	11,126
Development revenue	355	1,916	2,315	7,211
Total MRD revenue	16,556	15,852	15,466	18,337
Total revenue	$ 37,930	$ 39,467	$ 38,505	$ 38,442

	Three Months Ended			
	December 31, 2020	September 30, 2020	June 30, 2020	March 31, 2020
Immune Medicine revenue				
Sequencing revenue	$ 3,310	$ 3,691	$ 2,036	$ 3,170
Development revenue	17,155	12,438	12,856	11,077
Total Immune Medicine revenue	20,465	16,129	14,892	14,247
MRD revenue				
Sequencing revenue	9,399	7,585	5,949	6,299
Development revenue	321	2,585	147	364
Total MRD revenue	9,720	10,170	6,096	6,663
Total revenue	$ 30,185	$ 26,299	$ 20,988	$ 20,910

We also previously disclosed the number of clonoSEQ reports provided to ordering physicians in the United States, referred to as "clinical sequencing volume" or "clinical sequencing volume, excluding T-Detect COVID volume" in the "Management's Discussion and Analysis of Financial Condition and Results of Operations" section of certain of our SEC filings. We now present the number of clonoSEQ reports and results we have provided to ordering physicians in the United States and international technology transfer sites, collectively referred to as "clonoSEQ test volume." Our clonoSEQ test volume does not include sample results from our biopharmaceutical customers or academic institutions utilizing our MRD services.

The following table presents our clonoSEQ test volume for the periods presented:

	Three Months Ended			
	December 31, 2021	September 30, 2021	June 30, 2021	March 31, 2021
Clinical sequencing volume, excluding T-Detect COVID volume	6,356	5,928	5,475	4,757
clonoSEQ reports or results provided to international technology transfer sites	494	413	422	543
clonoSEQ test volume	6,850	6,341	5,897	5,300

	Three Months Ended			
	December 31, 2020	September 30, 2020	June 30, 2020	March 31, 2020
Clinical sequencing volume	4,509	4,023	3,136	3,518
clonoSEQ reports or results provided to international technology transfer sites	704	375	310	238
clonoSEQ test volume	5,213	4,398	3,446	3,756

Components of Results of Operations

Revenue

We derive revenue by providing diagnostic and research services in our Immune Medicine and MRD market opportunities. Our Immune Medicine revenue consists of revenue generated from (1) providing sample testing services for our commercial research product, immunoSEQ, to biopharmaceutical customers and academic institutions; (2) providing our T-Detect COVID tests to clinical customers; and (3) our collaboration agreements with Genentech and other biopharmaceutical customers in areas of drug and target discovery. Our MRD revenue consists of revenue generated from (1) providing our clonoSEQ report to clinical customers; (2) providing MRD sample testing services to biopharmaceutical customers and certain academic institutions, including investigator-led clinical trials; and (3) providing our clonoSEQ report or results to certain international laboratory sites through technology transfers.

For our research customers, which include biopharmaceutical customers and academic institutions for both our immunoSEQ and MRD services, delivery of the respective test results may include some level of professional support and analysis. Terms with biopharmaceutical customers generally include non-refundable upfront payments, which we record as deferred revenue. For all research customers, we recognize revenue as we deliver sequencing results. From time to time, we offer discounts in order to gain rights and access to certain datasets. Revenue is recognized net of these discounts and costs associated with these services are reflected in cost of revenue. In periods where our sample estimates are reduced or a customer project is cancelled and, in either case, we have remaining related deferred revenue, we recognize revenue using a cumulative catch-up approach based on the proportion of samples delivered to date relative to the remaining samples expected to be delivered. Certain of our MRD revenue arrangements with biopharmaceutical customers include consideration in the form of regulatory milestones upon regulatory approval of the respective biopharmaceutical partners therapeutics. Such revenue is constrained from recognition until it becomes probable that such milestone will be achieved.

Under certain agreements with our biopharmaceutical customers who seek access to our platform to support their therapeutic development activities, revenues are generated from research and development support services that we provide. These agreements may include substantial non-refundable upfront payments, which we recognize over time as we perform the respective services. Revenue recognized from these activities relate primarily to our Genentech Agreement.

For our clinical customers, we primarily derive revenue from providing our clonoSEQ report to ordering physicians. We bill medical institutions and commercial and government payors based on reports delivered to ordering physicians. Amounts paid for clonoSEQ by medical institutions and commercial and government payors vary based on respective reimbursement rates and patient responsibilities, which may differ from our targeted list price. We recognize clinical revenue by evaluating customer payment history, contracted reimbursement rates, if applicable, and other adjustments to estimate the amount of revenue that is collectible.

For our clonoSEQ coverage under Medicare, we bill an episode of treatment when we deliver the first eligible test report. This billing contemplates all necessary tests required during a patient's treatment cycle, which is currently estimated at approximately four tests per patient, including the initial sequence identification test. Revenue recognition commences at the time the initial billable test report is delivered and is based upon cumulative tests delivered to date. Any unrecognized revenue from the initial billable test is recorded as deferred revenue and recognized either as we deliver our estimate of the remaining tests in a patient's treatment cycle or when the likelihood becomes remote that a patient will receive additional testing.

We expect revenue to increase over the long term, particularly as the mix of revenue migrates to clinical diagnostics and drug discovery. The pace by which this mix migrates will be determined by the level of customer adoption and frequency of use of our products and services. Our revenue may fluctuate from period to period due to the uncertain nature of delivery of our products and services, the achievement of milestones by our customers, timing of expenses incurred, changes in estimates of total anticipated costs related to our Genentech Agreement and other events not within our control, such as the delivery of customer samples or customer decisions to no longer pursue their development initiatives.

Due to the ongoing uncertainties related to the COVID-19 pandemic, we may experience variability in revenue in the near term as our customers' abilities to procure samples for their research initiatives change, as customer initiatives evolve and as clinical testing is impacted by the pandemic.

Cost of Revenue

Cost of revenue includes the cost of materials, personnel-related expenses (including salaries, benefits and share-based compensation), shipping and handling expenses, equipment costs and allocated facility costs associated with processing samples and professional support for our service revenue activities. Allocated facility costs include depreciation of laboratory equipment, as well as allocated facility occupancy and information technology costs. Costs associated with processing samples are recorded as expense, regardless of the timing of revenue recognition. As such, cost of revenue and related volume does not always trend in the same direction as revenue recognition and related volume. Additionally, costs to support our Genentech Agreement are a component of our research and development expenses.

We expect cost of revenue to increase in absolute dollars as we grow our sample testing volume and make investments in laboratory automation and facilities, but the cost per sample to decrease over the long term due to the efficiencies we may gain as assay volume increases from improved utilization of our laboratory capacity, automation and other value engineering initiatives. If our sample volume throughput is reduced as a result of the COVID-19 pandemic or otherwise, cost of revenue as a percentage of total revenue may be adversely impacted due to fixed overhead costs.

Research and Development Expenses

Research and development expenses consist of laboratory materials costs, personnel-related expenses, equipment costs, allocated facility costs, information technology expenses and contract service expenses. Research and development activities support further development and refinement of existing assays and products, discovery of new technologies and investments in our immune medicine platform. We also include in research and development expenses the costs associated with software development of applications to support future commercial opportunities, as well as development activities to support laboratory scaling and workflow. We are currently conducting research and development activities for several products and services and we typically use our laboratory materials, personnel, facilities, information technology and other development resources across multiple development programs. Additionally, certain of these research and development activities benefit more than one of our product opportunities. We do not track research and development expenses by specific product candidates.

A component of our research and development expenses are costs supporting clinical and analytical validations to obtain regulatory approval for future clinical products and services. Additionally, the costs to support our Genentech Agreement are a component of our research and development expenses. Some of these activities have generated and may in the future generate Immune Medicine collaboration revenue.

We expect research and development expenses to experience moderate increases in the short term. However, we expect research and development expenses to decrease as a percentage of revenue in the long term, although the percentage may fluctuate from period to period due to the timing and extent of our development and commercialization efforts.

Sales and Marketing Expenses

Sales and marketing expenses consist primarily of personnel-related expenses for commercial sales, product and account management, marketing, reimbursement, medical education and business development personnel that support commercialization of our platform products. In addition, these expenses include external costs, such as advertising expenses, customer education and promotional expenses, market analysis expenses, conference fees, travel expenses and allocated facility costs.

We expect our sales and marketing expenses to experience moderate increases in the short term. In the long term, we expect sales and marketing expenses to increase in absolute dollars as we expand our commercial sales, marketing and business development teams and increase marketing activities to drive awareness and adoption of our products and services. However, we expect sales and marketing expenses to decrease as a percentage of revenue in the long term, subject to fluctuations from period to period due to the timing and magnitude of these expenses.

General and Administrative Expenses

General and administrative expenses consist primarily of personnel-related expenses (including salaries, benefits and share-based compensation) for our personnel in executive, legal, finance and accounting, human resources and other administrative functions, including third-party billing services. In addition, these expenses include insurance costs, external legal costs, accounting and tax service expenses, consulting fees and allocated facility costs.

We expect our general and administrative expenses to experience moderate decreases in the short term driven by reduced headcount. In the long term, we expect these expenses to decrease as a percentage of revenue as revenue increases.

Statements of Operations Data

The following table sets forth our statements of operations data for the periods presented:

	Three Months Ended March 31,	
	2022	2021
	(in thousands, except share and per share amounts)	
Revenue	$ 38,620	$ 38,442
Operating expenses		
Cost of revenue	13,192	9,991
Research and development	37,839	33,772
Sales and marketing	26,093	20,604
General and administrative	24,144	14,936
Amortization of intangible assets	419	419
Total operating expenses	101,687	79,722
Loss from operations	(63,067)	(41,280)
Interest and other income, net	271	638
Net loss	(62,796)	(40,642)
Add: Net loss attributable to noncontrolling interest	60	—
Net loss attributable to Adaptive Biotechnologies Corporation	$ (62,736)	$ (40,642)
Net loss per share attributable to Adaptive Biotechnologies Corporation common shareholders, basic and diluted	$ (0.44)	$ (0.29)
Weighted-average shares used in computing net loss per share attributable to Adaptive Biotechnologies Corporation common shareholders, basic and diluted	141,697,252	138,967,754

Comparison of the Three Months Ended March 31, 2022 and 2021

Revenue

(in thousands, except percentages)	Three Months Ended March 31,		Change		Percent of Revenue	
	2022	2021	$	%	2022	2021
Immune Medicine revenue						
Service revenue	$ 7,113	$ 4,048	$ 3,065	76%		
Collaboration revenue	13,703	16,057	(2,354)	(15)		
Total Immune Medicine revenue	20,816	20,105	711	4	54%	52%
MRD revenue						
Service revenue	14,804	11,337	3,467	31		
Regulatory milestone revenue	3,000	7,000	(4,000)	(57)		
Total MRD revenue	17,804	18,337	(533)	(3)	46%	48%
Total revenue	$ 38,620	$ 38,442	$ 178	*	100%	100%

* Less than 0%

The $0.7 million increase in Immune Medicine revenue was primarily due to a $3.4 million increase in revenue generated from our biopharmaceutical and academic customers and a $0.6 million increase in revenue generated from our T-Detect COVID clinical customers, which were partially offset by a $3.3 million decrease in revenue generated from the Genentech Agreement due to reduced collaboration expenses.

The $0.5 million decrease in MRD revenue was primarily due to a $4.0 million decrease in revenue recognized upon the achievement of certain regulatory milestones by our biopharmaceutical customers' therapeutics and a $0.3 million decrease in revenue generated from providing MRD sample testing services to investigator-led clinical trials, which were partially offset by a $3.6 million increase in revenue generated from providing our clonoSEQ report to clinical customers. Our clonoSEQ test volume increased by 45% to 7,698 tests delivered in the three months ended March 31, 2022 from 5,300 tests delivered in the three months ended March 31, 2021.

Cost of Revenue

(in thousands, except percentages)	Three Months Ended March 31,		Change		Percent of Revenue	
	2022	2021	$	%	2022	2021
Cost of revenue	$ 13,192	$ 9,991	$ 3,201	32%	34%	26%

The $3.2 million increase in cost of revenue was primarily attributable to a $1.7 million increase in materials costs resulting from increased revenue sample volume and a $1.2 million increase in labor, overhead and facility costs. Additionally, there was a $0.2 million increase in certain sample collection costs and a $0.2 million increase in shipping costs. These increases were partially offset by a $0.4 million decrease in cost of materials related to mix to lower cost assays.

Research and Development

(in thousands, except percentages)	Three Months Ended March 31,		Change		Percent of Revenue	
	2022	2021	$	%	2022	2021
Research and development	$ 37,839	$ 33,772	$ 4,067	12%	98%	88%

The following table presents disaggregated research and development expenses by cost classification for the periods presented:

(in thousands)	Three Months Ended March 31, 2022	2021	Change
Research and development materials and allocated production laboratory expenses	$ 12,155	$ 12,767	$ (612)
Personnel expenses	18,638	14,675	3,963
Allocable facilities and information technology expenses	1,865	1,526	339
Software and cloud services expenses	641	834	(193)
Depreciation and other expenses	4,540	3,970	570
Total	$ 37,839	$ 33,772	$ 4,067

The $4.1 million increase in research and development expenses was primarily attributable to a $4.0 million increase in personnel costs, of which $0.7 million related to our restructuring activities. The $0.6 million increase in depreciation expense was offset by a $0.6 million decrease in cost of materials and allocated production laboratory expenses driven primarily by decreased investments in drug discovery and clonoSEQ efforts, which were partially offset by increases in T-Detect and TCR-Antigen Map development activities.

Sales and Marketing

(in thousands, except percentages)	Three Months Ended March 31,		Change		Percent of Revenue	
	2022	2021	$	%	2022	2021
Sales and marketing	$ 26,093	$ 20,604	$ 5,489	27%	68%	54%

The $5.5 million increase in sales and marketing expenses was primarily attributable to $5.5 million in additional personnel costs, of which $0.9 million related to our restructuring activities, as well as a $0.4 million increase in travel and customer event related expenses. These increases were partially offset by a $0.7 million decrease in marketing expenses driven primarily by reduced corporate marketing efforts.

General and Administrative

(in thousands, except percentages)	Three Months Ended March 31,		Change		Percent of Revenue	
	2022	2021	$	%	2022	2021
General and administrative	$ 24,144	$ 14,936	$ 9,208	62%	63%	39%

The $9.2 million increase in general and administrative expenses was primarily attributable to a $4.2 million increase in building, facility and depreciation related expenses, as well as a $2.7 million increase in personnel costs, a $1.3 million increase in consultant costs and a $0.7 million increase in computer and software expenses.

Interest and Other Income, Net

(in thousands, except percentages)	Three Months Ended March 31,		Change	
	2022	2021	$	%
Interest and other income, net	$ 271	$ 638	$ (367)	(58)%

The $0.4 million decrease in interest and other income, net was attributable to a decrease in net interest income and investment amortization resulting from reductions in interest rates and related yields of a smaller portfolio.

Liquidity and Capital Resources

We have incurred losses since inception and have incurred negative cash flows from operations since inception through March 31, 2022, with the exception of certain 2019 periods for which we had positive cash flows from operations. As of March 31, 2022, we had an accumulated deficit of $781.6 million.

We have funded our operations to date principally from the sale of convertible preferred stock and common stock and, to a lesser extent, revenue. As of March 31, 2022, we had cash, cash equivalents and marketable securities of $500.7 million.

We believe our existing cash, cash equivalents and marketable securities will be sufficient to fund our operating expenses and capital expenditure requirements through at least the next 12 months. We may consider raising additional capital to expand our business, to pursue strategic investments, to take advantage of financing opportunities or for other reasons.

If our available cash, cash equivalents and marketable securities balances and anticipated cash flows from operations are insufficient to satisfy our liquidity requirements, we may seek to sell additional equity or convertible debt securities, enter into a credit facility or another form of third-party funding or seek other debt financing. The sale of equity and convertible debt securities may result in dilution to our shareholders and, in the case of preferred equity securities or convertible debt, those securities could provide for rights, preferences or privileges senior to those of our common stock. The terms of debt securities issued or borrowings pursuant to a credit agreement could impose significant restrictions on our operations. This additional capital may not be available on reasonable terms, or at all.

We plan to utilize the existing cash, cash equivalents and marketable securities on hand primarily to fund our commercial and marketing activities associated with our clinical products and services, continued research and development initiatives for our pipeline candidates and drug discovery initiatives and ongoing investments in our immune medicine platform. We also expect to make capital expenditures in the near term related to our laboratory space and expect to continue investing in laboratory equipment and operations to support our anticipated growth. Cash in excess of immediate requirements is invested in accordance with our investment policy, primarily with a view to capital preservation and liquidity. Currently, our funds are held in money market funds and marketable securities consisting of U.S. government debt securities and corporate bonds.

There have been no material changes outside the ordinary course of business to our contractual obligations and commitments as previously disclosed in our Annual Report on Form 10-K for the year ended December 31, 2021 filed with the SEC on February 15, 2022. See Note 8 of the accompanying notes to the unaudited condensed consolidated financial statements included elsewhere in this report for more information regarding our contractual obligations relating to lease agreements.

While we may experience variability in revenue in the near term, as long-term revenue from sales of our current and future products and services is expected to grow, we expect our accounts receivable and inventory balances to increase. Any increase in accounts receivable and inventory may not be completely offset by increases in accounts payable and accrued expenses, which could result in greater working capital requirements.

Cash Flows

The following table summarizes our uses and sources of cash for the three months ended March 31, 2022 and 2021 (in thousands):

	Three Months Ended March 31,	
	2022	2021
Net cash used in operating activities	$ (64,453)	$ (58,245)
Net cash provided by investing activities	37,688	93,819
Net cash provided by financing activities	2,749	14,614

Operating Activities

Cash used in operating activities during the three months ended March 31, 2022 was $64.5 million, which was primarily attributable to a net loss of $62.8 million and a net change in operating assets and liabilities of $22.2 million, partially offset by noncash share-based compensation of $12.9 million, noncash depreciation and amortization of $5.9 million and noncash lease expense of $1.8 million. The net change in operating assets and liabilities was primarily driven by a $10.8 million reduction in deferred revenue related primarily to revenue recognized from the Genentech Agreement, a $7.5 million reduction in accounts payable and accrued liabilities driven largely by the payout of our corporate bonus during the three months ended March 31, 2022, a $5.1 million increase in accounts receivable, net, which includes the $3.0 million regulatory milestone recognized during the three months ended March 31, 2022, and a $1.7 million increase in inventory. These changes were partially offset by a $2.0 million increase in operating lease right-of-use assets and liabilities and reductions in prepaid expenses and other assets of $1.0 million.

Cash used in operating activities during the three months ended March 31, 2021 was $58.2 million, which was primarily attributable to a net loss of $40.6 million and a net change in our operating assets and liabilities of $32.6 million, partially offset by noncash share-based compensation of $8.5 million, noncash depreciation and amortization of $4.8 million and noncash lease expense of $1.7 million. The net change in our operating assets and liabilities was primarily due to a $14.2 million reduction in deferred revenue primarily related to revenue recognized from the Genentech Agreement, an increase in accounts receivable, net of $9.7 million due primarily to $7.0 million in MRD milestones earned, a reduction in accounts payable and accrued liabilities of $7.3 million largely related to the payout of our annual corporate bonus payments and an increase in inventory of $3.4 million, all of which were partially offset by reductions in prepaid expenses and other assets of $1.3 million and an increase in operating lease right-of-use assets and liabilities of $0.8 million.

Investing Activities

Cash provided by investing activities during the three months ended March 31, 2022 was $37.7 million, which was primarily attributable to proceeds from maturities of marketable securities of $101.0 million, partially offset by purchases of marketable securities of $60.2 million and purchases of property and equipment of $3.1 million.

Cash provided by investing activities during the three months ended March 31, 2021 was $93.8 million, which was primarily attributable to proceeds from maturities of marketable securities of $125.0 million, partially offset by purchases of property and equipment of $15.8 million and purchases of marketable securities of $15.3 million.

Financing Activities

Cash provided by financing activities during the three months ended March 31, 2022 was $2.7 million, which was attributable to proceeds from the exercise of stock options.

Cash provided by financing activities during the three months ended March 31, 2021 was $14.6 million, which was primarily attributable to proceeds from the exercise of stock options of $14.2 million.

Net Operating Loss Carryforwards

Utilization of our net operating loss ("NOL") carryforwards and credits may be subject to a substantial annual limitation due to the ownership change limitations provided by Section 382 of the Internal Revenue Code of 1986 ("Section 382") and similar state provisions. The annual limitation may result in the expiration of NOL carryforwards and credits before utilization. If there should be an ownership change, our ability to utilize our NOL carryforwards and credits could be limited. We have completed a Section 382 analysis for changes in ownership through December 31, 2020 and continue to monitor for changes that could trigger a limitation. Based on this analysis, we do not expect to have any permanent limitations on the utilization of our federal NOLs. Under the Tax Cuts and Jobs Act of 2017, federal NOLs incurred in 2018 and future years may be carried forward indefinitely, but the deductibility of such federal NOLs is subject to an annual limitation. NOLs generated prior to 2018 are eligible to be carried forward up to 20 years. Based on the available objective evidence, management determined that it was more likely than not that the net deferred tax assets would not be realizable as of December 31, 2021. Accordingly, management applied a full valuation allowance against net deferred tax assets as of December 31, 2021.

Critical Accounting Policies and Estimates

We have prepared the unaudited condensed consolidated financial statements in accordance with GAAP. Our preparation of these unaudited condensed consolidated financial statements requires us to make estimates, assumptions and judgments that affect the reported amounts of assets, liabilities and related disclosures at the date of the unaudited condensed consolidated financial statements, as well as revenue and expense recorded during the reporting periods. We evaluate our estimates and judgments on an ongoing basis. We base our estimates on historical experience and or other relevant assumptions that we believe to be reasonable under the circumstances. Estimates are used in several areas, including, but not limited to, estimates of progress to date for certain performance obligations and the transaction price for certain contracts with customers, the provision for income taxes, including related reserves, and goodwill, among others. These estimates generally involve complex issues and require judgments, involve the analysis of historical results and prediction of future trends, can require extended periods of time to resolve and are subject to change from period to period. Actual results may differ materially from management's estimates.

While our significant accounting policies are described in more detail in our Annual Report on Form 10-K for the year ended December 31, 2021 filed with the SEC on February 15, 2022, as well as in Note 2 of the accompanying notes to the unaudited condensed consolidated financial statements included elsewhere in this report, we believe the following accounting policies are critical to the judgments and estimates used in the preparation of the unaudited condensed consolidated financial statements:

- revenue recognition; and
- goodwill.

There have been no material changes to our critical accounting policies and estimates as previously disclosed in our Annual Report on Form 10-K for the year ended December 31, 2021 filed with the SEC on February 15, 2022.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

Interest Rate Risk

We are exposed to market risk for changes in interest rates related primarily to our cash, cash equivalents and marketable securities. As of March 31, 2022, there have been no material changes to our market risks as previously disclosed in our Annual Report on Form 10-K for the year ended December 31, 2021 filed with the SEC on February 15, 2022. We do not enter into investments for trading purposes and have not used any derivative financial instruments to manage our interest rate risk exposure.

Item 4. Controls and Procedures

Under the supervision and with the participation of our management, including our chief executive officer and chief financial officer, we evaluated the effectiveness of the design and operation of our disclosure controls and procedures pursuant to Rule 13a-15 under the Securities Exchange Act of 1934, as amended (the "Exchange Act") as of the end of the period covered by this report. Based on that evaluation, our chief executive officer and chief financial officer have concluded that our disclosure controls and procedures were effective as of March 31, 2022. There was not any change in our internal control over financial reporting (as such term is defined in Rule 13a-15(f) under the Exchange Act) during the three months ended March 31, 2022 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II—OTHER INFORMATION

Item 1. Legal Proceedings

From time to time, we may be subject to legal proceedings. We are not currently a party to or aware of any proceedings that we believe will have, individually or in the aggregate, a material adverse effect on our business, financial condition or results of operations. Regardless of outcome, litigation can have an adverse impact on us because of defense and settlement costs, diversion of management resources and other factors.

Item 1A. Risk Factors

Investing in our common stock involves a high degree of risk. We operate in a rapidly changing environment that involves a number of risks that could materially affect our business, financial condition or future results, some of which are beyond our control. In addition to the other information set forth in this report, the risks and uncertainties that we believe are most important for you to consider are discussed in Part I, Item 1A under the caption "Risk Factors" in our Annual Report on Form 10-K for the year ended December 31, 2021 filed with the SEC on February 15, 2022. The risk factors may be important to understanding other statements in this report and should be read in conjunction with the unaudited condensed consolidated financial statements and related notes in this report. The occurrence of any single risk or any combination of risks could materially and adversely affect our business, operations, product pipeline, operating results, financial condition or liquidity, and consequently, the value of our securities. Further, additional risks that we currently do not know about or that we currently believe to be immaterial may also impair our business, financial condition, operating results and prospects.

There have been no material changes to the risk factors described in our Annual Report on Form 10-K for the year ended December 31, 2021 filed with the SEC on February 15, 2022.

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

Not applicable.

Item 3. Defaults Upon Senior Securities

Not applicable.

Item 4. Mine Safety Disclosures

Not applicable**.**

Item 5. Other Information

Not applicable.

Item 6. Exhibits

Exhibit Number	Exhibit Title	Incorporated by Reference				Filed/ Furnished with This Report
		Form	File No.	Exhibit	Filing Date	
3.1	Amended and Restated Articles of Incorporation	8-K	001-38957	3.1	7/1/2019	
3.2	Amended and Restated Bylaws	8-K	001-38957	3.2	7/1/2019	
4.1	Seventh Amended and Restated Investors' Rights Agreement among the Registrant and certain of its shareholders, dated May 30, 2019	S-1	333-231838	4.1	5/30/2019	
10.1*	Form of Performance Units Agreement and Notice of Grant of Performance Units					X
31.1	Certification of Principal Executive Officer pursuant to Rule 13a-14(a) or Rule 15d-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002					X
31.2	Certification of Principal Financial Officer pursuant to Rule 13a-14(a) or Rule 15d-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002					X
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					X
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					X
101.INS	Inline XBRL Instance Document – the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.					X
101.SCH	Inline XBRL Taxonomy Extension Schema Document					X
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document					X
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document					X
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document					X
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document					X
104	Cover Page Interactive Data File (formatted in Inline XBRL and included in Exhibit 101)					X

* Management contract or compensation plan or arrangement.

SIGNATURES

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

ADAPTIVE BIOTECHNOLOGIES CORPORATION

Date: May 4, 2022

By: ***/s/ Chad Robins***

Chad Robins
Chief Executive Officer and Director (Principal Executive Officer)

Date: May 4, 2022

By: ***/s/ Kyle Piskel***

Kyle Piskel
Interim Chief Financial Officer and Principal Accounting Officer (Principal Financial Officer)

ADAPTIVE BIOTECHNOLOGIES CORPORATION
PERFORMANCE UNITS AGREEMENT
(For U.S. Participants)

Adaptive Biotechnologies Corporation has granted to the Participant named in the *Notice of Grant of Performance Units* (the *"**Grant Notice**"*) to which this Performance Units Agreement (the *"**Agreement**"*) is attached an Award consisting of Performance Units (each a *"**Unit**"*) subject to the terms and conditions set forth in the Grant Notice and this Agreement. The Award has been granted pursuant to and shall in all respects be subject to the terms and conditions of the Adaptive Biotechnologies Corporation 2019 Equity Incentive Plan (the *"**Plan**"*), as amended to the Date of Grant, the provisions of which are incorporated herein by reference. By signing the Grant Notice, the Participant: (a) acknowledges receipt of and represents that the Participant has read and is familiar with the Grant Notice, this Agreement, the Plan and a prospectus for the Plan prepared in connection with the registration with the Securities and Exchange Commission of the shares issuable pursuant to the Award (the *"**Plan Prospectus**"*), (b) accepts the Award subject to all of the terms and conditions of the Grant Notice, this Agreement and the Plan and (c) agrees to accept as binding, conclusive and final all decisions or interpretations of the Committee upon any questions arising under the Grant Notice, this Agreement or the Plan.

1. **DEFINITIONS AND CONSTRUCTION.**

1.1 **Definitions.** Unless otherwise defined herein, capitalized terms shall have the meanings assigned to such terms in the Grant Notice or the Plan.

1.2 **Construction.** Captions and titles contained herein are for convenience only and shall not affect the meaning or interpretation of any provision of this Agreement. Except when otherwise indicated by the context, the singular shall include the plural and the plural shall include the singular. Use of the term "or" is not intended to be exclusive, unless the context clearly requires otherwise.

2. **ADMINISTRATION.**

All questions of interpretation concerning the Grant Notice, this Agreement, the Plan or any other form of agreement or other document employed by the Company in the administration of the Plan or the Award shall be determined by the Committee. All such determinations by the Committee shall be final, binding and conclusive upon all persons having an interest in the Award, unless fraudulent or made in bad faith. Any and all actions, decisions and determinations taken or made by the Committee in the exercise of its discretion pursuant to the Plan or the Award or other agreement thereunder (other than determining questions of interpretation pursuant to the preceding sentence) shall be final, binding and conclusive upon all persons having an interest in the Award. Any Officer shall have the authority to act on behalf of the Company with respect to any matter, right, obligation, or election which is the responsibility of or which is allocated to the Company herein, provided the Officer has apparent authority with respect to such matter, right, obligation, or election.

3. **THE AWARD.**

3.1 **Grant of Units.** On the Date of Grant, the Participant shall acquire, subject to the provisions of this Agreement, the Target Number of Units set forth in the Grant Notice,

which, depending on the Participant's performance during the Performance Periods, may result in the Participant having the opportunity to earn as little as zero (0) Units or as many as the Maximum Number of Units set forth in the Grant Notice, subject to adjustment as provided in Section 8. Each Unit represents a right to receive on a date determined in accordance with the Grant Notice and this Agreement one (1) share of Stock.

3.2 **No Monetary Payment Required.** The Participant is not required to make any monetary payment (other than applicable tax withholding, if any) as a condition to receiving the Units or shares of Stock issued upon settlement of the Units, the consideration for which shall be past services actually rendered or future services to be rendered to a Participating Company or for its benefit. Notwithstanding the foregoing, if required by applicable law, the Participant shall furnish consideration in the form of cash or past services rendered to a Participating Company or for its benefit having a value not less than the par value of the shares of Stock issued upon settlement of the Units.

4. **VESTING OF UNITS**.

Units acquired pursuant to this Agreement shall become Vested Units as provided in the Grant Notice. For purposes of determining the number of Vested Units following an Ownership Change Event, credited Service shall include all Service with any corporation which is a Participating Company at the time the Service is rendered, whether or not such corporation is a Participating Company both before and after the Ownership Change Event.

5. **COMPANY REACQUISITION RIGHT.**

5.1 **Grant of Company Reacquisition Right.** Except to the extent otherwise provided by the Superseding Agreement, if any, in the event that the Participant's Service terminates for any reason or no reason, with or without cause, the Participant shall forfeit and the Company shall automatically reacquire all Units which are not, as of the time of such termination, Vested Units (*"**Unvested Units**"*), and the Participant shall not be entitled to any payment therefor (the *"**Company Reacquisition Right**"*).

5.2 **Ownership Change Event, Non-Cash Dividends, Distributions and Adjustments.** Upon the occurrence of an Ownership Change Event, a dividend or distribution to the shareholders of the Company paid in shares of Stock or other property, or any other adjustment upon a change in the capital structure of the Company as described in Section 8, any and all new, substituted or additional securities or other property (other than regular, periodic cash dividends paid on Stock pursuant to the Company's dividend policy) to which the Participant is entitled by reason of the Participant's ownership of Unvested Units shall be immediately subject to the Company Reacquisition Right and included in the terms "Units" and "Unvested Units" for all purposes of the Company Reacquisition Right with the same force and effect as the Unvested Units immediately prior to the Ownership Change Event, dividend, distribution or adjustment, as the case may be. For purposes of determining the number of Vested Units following an Ownership Change Event, dividend, distribution or adjustment, credited Service shall include all Service with any corporation which is a Participating Company at the time the Service is rendered, whether or not such corporation is a Participating Company both before and after any such event.

6. **SETTLEMENT OF THE AWARD.**

6.1 **Issuance of Shares of Stock.** Subject to the provisions of Section 6.3, the Company shall issue to the Participant on the Settlement Date with respect to each Vested Unit to be settled on such date one (1) share of Stock. The Settlement Date with respect to a Unit shall be the date on which such Unit becomes a Vested Unit as provided by the Grant Notice (an *"**Original Settlement Date**"*); provided, however, that if the tax withholding obligations of a Participating Company, if any, will not be satisfied by the share withholding method described in Section 7.3 and the Original Settlement Date would occur on a date on which a sale by the Participant of the shares to be issued in settlement of the Vested Units would violate the Trading Compliance Policy of the Company, then the Settlement Date for such Vested Units shall be deferred until the next day on which the sale of such shares would not violate the Trading Compliance Policy, but in any event on or before the 15th day of the third calendar month following calendar year of the Original Settlement Date. Shares of Stock issued in settlement of Units shall not be subject to any restriction on transfer other than any such restriction as may be required pursuant to Section 6.3, Section 7 or the Company's Trading Compliance Policy.

6.2 **Beneficial Ownership of Shares; Certificate Registration.** The Participant hereby authorizes the Company, in its sole discretion, to deposit any or all shares acquired by the Participant pursuant to the settlement of the Award with the Company's transfer agent, including any successor transfer agent, to be held in book entry form, or to deposit such shares for the benefit of the Participant with any broker with which the Participant has an account relationship of which the Company has notice. Except as provided by the foregoing, a certificate for the shares acquired by the Participant shall be registered in the name of the Participant, or, if applicable, in the names of the heirs of the Participant.

6.3 **Restrictions on Grant of the Award and Issuance of Shares.** The grant of the Award and issuance of shares of Stock upon settlement of the Award shall be subject to compliance with all applicable requirements of federal, state or foreign law with respect to such securities. No shares of Stock may be issued hereunder if the issuance of such shares would constitute a violation of any applicable federal, state or foreign securities laws or other law or regulations or the requirements of any stock exchange or market system upon which the Stock may then be listed. The inability of the Company to obtain from any regulatory body having jurisdiction the authority, if any, deemed by the Company's legal counsel to be necessary to the lawful issuance of any shares subject to the Award shall relieve the Company of any liability in respect of the failure to issue such shares as to which such requisite authority shall not have been obtained. As a condition to the settlement of the Award, the Company may require the Participant to satisfy any qualifications that may be necessary or appropriate, to evidence compliance with any applicable law or regulation and to make any representation or warranty with respect thereto as may be requested by the Company.

6.4 **Fractional Shares.** The Company shall not be required to issue fractional shares upon the settlement of the Award.

7. **TAX WITHHOLDING.**

7.1 **In General.** At the time the Grant Notice is executed, or at any time thereafter as requested by a Participating Company, the Participant hereby authorizes withholding from payroll and any other amounts payable to the Participant, and otherwise agrees to make adequate provision for, any sums required to satisfy the federal, state, local and foreign tax

(including any social insurance) withholding obligations of the Participating Company, if any, which arise in connection with the Award, the vesting of Units or the issuance of shares of Stock in settlement thereof. The Company shall have no obligation to deliver shares of Stock until the tax withholding obligations of the Participating Company have been satisfied by the Participant.

7.2 **Assignment of Sale Proceeds.** Subject to compliance with applicable law and the Company's Trading Compliance Policy, if permitted by the Company, the Participant may satisfy the Participating Company's tax withholding obligations in accordance with procedures established by the Company providing for delivery by the Participant to the Company or a broker approved by the Company of properly executed instructions, in a form approved by the Company, providing for the assignment to the Company of the proceeds of a sale with respect to some or all of the shares being acquired upon settlement of Units.

7.3 **Withholding in Shares.** The Company shall have the right, but not the obligation, to require the Participant to satisfy all or any portion of a Participating Company's tax withholding obligations by deducting from the shares of Stock otherwise deliverable to the Participant in settlement of the Award a number of whole shares having a fair market value, as determined by the Company as of the date on which the tax withholding obligations arise, not in excess of the amount of such tax withholding obligations determined by the applicable minimum statutory withholding rates if required to avoid liability classification of the Award under generally accepted accounting principles in the United States.

8. **ADJUSTMENTS FOR CHANGES IN CAPITAL STRUCTURE.**

Subject to any required action by the shareholders of the Company and the requirements of Section 409A of the Code to the extent applicable, in the event of any change in the Stock effected without receipt of consideration by the Company, whether through merger, consolidation, reorganization, reincorporation, recapitalization, reclassification, stock dividend, stock split, reverse stock split, split-up, split-off, spin-off, combination of shares, exchange of shares, or similar change in the capital structure of the Company, or in the event of payment of a dividend or distribution to the shareholders of the Company in a form other than Stock (other than regular, periodic cash dividends paid on Stock pursuant to the Company's dividend policy) that has a material effect on the Fair Market Value of shares of Stock, appropriate and proportionate adjustments shall be made in the number of Units subject to the Award and/or the number and kind of shares or other property to be issued in settlement of the Award, in order to prevent dilution or enlargement of the Participant's rights under the Award. For purposes of the foregoing, conversion of any convertible securities of the Company shall not be treated as "effected without receipt of consideration by the Company." Any and all new, substituted or additional securities or other property (other than regular, periodic cash dividends paid on Stock pursuant to the Company's dividend policy) to which the Participant is entitled by reason of ownership of Units acquired pursuant to this Award will be immediately subject to the provisions of this Award on the same basis as all Units originally acquired hereunder. Any fractional Unit or share resulting from an adjustment pursuant to this Section shall be rounded down to the nearest whole number. Such adjustments shall be determined by the Committee, and its determination shall be final, binding and conclusive.

9. **RIGHTS AS A SHAREHOLDER, DIRECTOR, EMPLOYEE OR CONSULTANT.**

The Participant shall have no rights as a shareholder with respect to any shares which may be issued in settlement of this Award until the date of the issuance of such shares (as

evidenced by the appropriate entry on the books of the Company or of a duly authorized transfer agent of the Company). No adjustment shall be made for dividends, distributions or other rights for which the record date is prior to the date the shares are issued, except as provided in Section 8. If the Participant is an Employee, the Participant understands and acknowledges that, except as otherwise provided in a separate, written employment agreement between a Participating Company and the Participant, the Participant's employment is "at will" and is for no specified term. Nothing in this Agreement shall confer upon the Participant any right to continue in the Service of a Participating Company or interfere in any way with any right of the Participating Company Group to terminate the Participant's Service at any time.

10. **LEGENDS.**

The Company may at any time place legends referencing any applicable federal, state or foreign securities law restrictions on all certificates representing shares of stock issued pursuant to this Agreement. The Participant shall, at the request of the Company, promptly present to the Company any and all certificates representing shares acquired pursuant to this Award in the possession of the Participant in order to carry out the provisions of this Section.

11. **COMPLIANCE WITH SECTION 409A.**

It is intended that any election, payment or benefit which is made or provided pursuant to or in connection with this Award that may result in Section 409A Deferred Compensation shall comply in all respects with the applicable requirements of Section 409A (including applicable regulations or other administrative guidance thereunder, as determined by the Committee in good faith) to avoid the unfavorable tax consequences provided therein for non-compliance. In connection with effecting such compliance with Section 409A, the following shall apply:

11.1 **Separation from Service; Required Delay in Payment to Specified Employee.** Notwithstanding anything set forth herein to the contrary, no amount payable pursuant to this Agreement on account of the Participant's termination of Service which constitutes a "deferral of compensation" within the meaning of the Treasury Regulations issued pursuant to Section 409A of the Code (the *"**Section 409A Regulations**"*) shall be paid unless and until the Participant has incurred a "separation from service" within the meaning of the Section 409A Regulations. Furthermore, to the extent that the Participant is a "specified employee" within the meaning of the Section 409A Regulations as of the date of the Participant's separation from service, no amount that constitutes a deferral of compensation which is payable on account of the Participant's separation from service shall be paid to the Participant before the date (the *"**Delayed Payment Date**"*) which is first day of the seventh month after the date of the Participant's separation from service or, if earlier, the date of the Participant's death following such separation from service. All such amounts that would, but for this Section, become payable prior to the Delayed Payment Date will be accumulated and paid on the Delayed Payment Date.

11.2 **Other Changes in Time of Payment.** Neither the Participant nor the Company shall take any action to accelerate or delay the payment of any benefits under this Agreement in any manner which would not be in compliance with the Section 409A Regulations.

11.3 **Amendments to Comply with Section 409A; Indemnification.** Notwithstanding any other provision of this Agreement to the contrary, the Company is authorized to amend this Agreement, to void or amend any election made by the Participant under this

Agreement and/or to delay the payment of any monies and/or provision of any benefits in such manner as may be determined by the Company, in its discretion, to be necessary or appropriate to comply with the Section 409A Regulations without prior notice to or consent of the Participant. The Participant hereby releases and holds harmless the Company, its directors, officers and shareholders from any and all claims that may arise from or relate to any tax liability, penalties, interest, costs, fees or other liability incurred by the Participant in connection with the Award, including as a result of the application of Section 409A.

11.4 **Advice of Independent Tax Advisor.** The Company has not obtained a tax ruling or other confirmation from the Internal Revenue Service with regard to the application of Section 409A to the Award, and the Company does not represent or warrant that this Agreement will avoid adverse tax consequences to the Participant, including as a result of the application of Section 409A to the Award. The Participant hereby acknowledges that he or she has been advised to seek the advice of his or her own independent tax advisor prior to entering into this Agreement and is not relying upon any representations of the Company or any of its agents as to the effect of or the advisability of entering into this Agreement.

12. **MISCELLANEOUS PROVISIONS.**

12.1 **Termination or Amendment.** The Committee may terminate or amend the Plan or this Agreement at any time; provided, however, that except as provided in the Grant Notice, in connection with a Change in Control, no such termination or amendment may have a materially adverse effect on the Participant's rights under this Agreement without the consent of the Participant unless such termination or amendment is necessary to comply with applicable law or government regulation, including, but not limited to, Section 409A. No amendment or addition to this Agreement shall be effective unless in writing.

12.2 **Nontransferability of the Award.** Prior to the issuance of shares of Stock on the applicable Settlement Date, neither this Award nor any Units subject to this Award shall be subject in any manner to anticipation, alienation, sale, exchange, transfer, assignment, pledge, encumbrance, or garnishment by creditors of the Participant or the Participant's beneficiary, except transfer by will or by the laws of descent and distribution. All rights with respect to the Award shall be exercisable during the Participant's lifetime only by the Participant or the Participant's guardian or legal representative.

12.3 **Further Instruments.** The parties hereto agree to execute such further instruments and to take such further action as may reasonably be necessary to carry out the intent of this Agreement.

12.4 **Binding Effect.** This Agreement shall inure to the benefit of the successors and assigns of the Company and, subject to the restrictions on transfer set forth herein, be binding upon the Participant and the Participant's heirs, executors, administrators, successors and assigns.

12.5 **Delivery of Documents and Notices.** Any document relating to participation in the Plan or any notice required or permitted hereunder shall be given in writing and shall be deemed effectively given (except to the extent that this Agreement provides for effectiveness only upon actual receipt of such notice) upon personal delivery, electronic delivery at the e-mail address, if any, provided for the Participant by a Participating Company, or upon deposit in the U.S. Post Office or foreign postal service, by registered or certified mail, or with a nationally recognized overnight courier service, with postage and fees prepaid, addressed to the

other party at the address of such party set forth in the Grant Notice or at such other address as such party may designate in writing from time to time to the other party.

(a) ***Description of Electronic Delivery and Signature.*** The Plan documents, which may include but do not necessarily include: the Plan, the Grant Notice, this Agreement, the Plan Prospectus, and any reports of the Company provided generally to the Company's shareholders, may be delivered to the Participant electronically. In addition, if permitted by the Company, the Participant may deliver electronically the Grant Notice to the Company or to such third party involved in administering the Plan as the Company may designate from time to time. Such means of electronic delivery may include but do not necessarily include the delivery of a link to a Company intranet or the Internet site of a third party involved in administering the Plan, the delivery of the document via e-mail or such other means of electronic delivery specified by the Company. Any and all such documents and notices may be electronically signed.

(b) ***Consent to Electronic Delivery and Signature.*** The Participant acknowledges that the Participant has read Section 12.5(a) of this Agreement and consents to the electronic delivery of the Plan documents and, if permitted by the Company, the delivery of the Grant Notice, as described in Section 12.5(a). The Participant agrees that any and all such documents requiring a signature may be electronically signed and that such electronic signature shall have the same effect as handwritten signature for the purposes of validity, enforceability and admissibility. The Participant acknowledges that he or she may receive from the Company a paper copy of any documents delivered electronically at no cost to the Participant by contacting the Company by telephone or in writing. The Participant further acknowledges that the Participant will be provided with a paper copy of any documents if the attempted electronic delivery of such documents fails. Similarly, the Participant understands that the Participant must provide the Company or any designated third party administrator with a paper copy of any documents if the attempted electronic delivery of such documents fails. The Participant may revoke his or her consent to the electronic delivery of documents described in Section 12.5(a) or may change the electronic mail address to which such documents are to be delivered (if Participant has provided an electronic mail address) at any time by notifying the Company of such revoked consent or revised e-mail address by telephone, postal service or electronic mail. Finally, the Participant understands that he or she is not required to consent to electronic delivery of documents described in Section 12.5(a).

12.6 **Integrated Agreement.** The Grant Notice, this Agreement and the Plan, together with any Superseding Agreement and any change of control agreement, shall constitute the entire understanding and agreement of the Participant and the Participating Company Group with respect to the subject matter contained herein or therein and supersede any prior agreements, understandings, restrictions, representations, or warranties among the Participant and the Participating Company Group with respect to such subject matter. To the extent contemplated herein or therein, the provisions of the Grant Notice, this Agreement and the Plan shall survive any settlement of the Award and shall remain in full force and effect.

12.7 **Applicable Law.** This Agreement shall be governed by the laws of the State of Washington as such laws are applied to agreements between Washington residents entered into and to be performed entirely within the State of Washington.

12.8 **Counterparts.** The Grant Notice may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

ADAPTIVE BIOTECHNOLOGIES CORPORATION
NOTICE OF GRANT OF PERFORMANCE UNITS
(For U.S. Participants)

Adaptive Biotechnologies Corporation (the *"**Company**"*) has granted to the Participant an award (the *"**Award**"*) of certain Performance Units ("***PSUs***") pursuant to the Adaptive Biotechnologies Corporation 2019 Equity Incentive Plan (the *"**Plan**"*). The Award is subject to all of the terms and conditions of this Performance Stock Unit Grant Notice, the Performance Goals and Vesting Criteria set forth on Attachment I to this Grant Notice, and the Performance Units Agreement (collectively, including all attachments and exhibits, the "***Award Agreement***") and the Plan

Participant: **Employee ID:**

Date of Grant:

Vesting Commencement Date:

Target Number of PSUs:

Maximum Number of PSUs:

Superseding Agreement: None

Vesting Schedule: As provided in the Performance Goals and Vesting Criteria set forth on Attachment I.

Issuance Schedule: If a PSU vests, the Company will deliver one share of Stock in settlement of each vested PSU as set forth in Section 6 of the Performance Units Agreement.

By their signatures below or by electronic acceptance or authentication in a form authorized by the Company, the Company and the Participant agree that the Award is governed by this Grant Notice and by the provisions of the Award Agreement and the Plan, both of which are made a part of this document, and by the Superseding Agreement, if any. The Participant acknowledges that copies of the Plan, the Award Agreement and the prospectus for the Plan are available on the Company's internal web site and may be viewed and printed by the Participant for attachment to the Participant's copy of this Grant Notice. The Participant represents that the Participant has read and is familiar with the provisions of the Award Agreement and the Plan, and hereby accepts the Award subject to all of their terms and conditions.

ADAPTIVE BIOTECHNOLOGIES CORPORATION	**PARTICIPANT**
By:	
Name:	Signature
Title:	
	Date
Address:	
	Address

ATTACHMENTS: Attachment I; Attachment II; 2019 Equity Incentive Plan, as amended to the Date of Grant; Performance Units Agreement and Plan Prospectus

Attachment I

Performance Goals and Vesting Criteria

A. General

In order for any Performance Unit subject to the Award to vest and be earned, each of the Service Vesting Requirement and the Performance Goals as described herein must be satisfied. Any PSUs which may not potentially vest based on application of the Service Vesting Requirement and/or Performance Goals will be immediately forfeited.

For all purposes of this Award, the following terms have the following meanings:

"Good Reason" means without your written consent, (i) a material reduction in your authority, duties or responsibilities with the Company relative to your authority, duties or responsibilities in effect immediately prior to such reduction; provided, however, any change immediately following a Change in Control to a functionally comparable position with the Company's successor or within its group of controlled corporations shall not constitute Good Reason hereunder, (ii) a material reduction in the your base compensation, other than in connection with simultaneous reductions in all other senior executives at the vice president level or above of equal or greater amount in percentage terms, (iii) a material change in the geographic location at which you must perform your duties (which, for purposes of this Agreement, means a change of geographic location from which the you are principally employed to a location more than fifty (50) miles from the location of your principal employment immediately prior to the relocation); or (iv) a material breach by the Company of the terms of this Award or any other agreement between you and the Company; provided, however, that in order for your resignation to have been implemented for "Good Reason" you must provide written notice to the Board within 30 days immediately following such events described in (i) through (iv) hereof, the Company must fail to cure such event within 30 days after receipt of such notice, and your resignation must be effective not later than 90 days after the expiration of such period to cure.

"***Index Group***" means the group of companies which are members of the S&P Biotechnology Select Industry Index as determined of the Date of Grant (each an "***Index Company***"), subject to modification set forth in Attachment II.

"Qualified Termination" means an involuntary termination of your employment by the Company without Cause or your resignation for Good Reason and which occurs no later than twelve months following a Change in Control. A Qualified Termination does not include a termination of your employment due to death or disability.

"Qualified Pre-CIC Termination" means a Qualified Termination that occurs within the three-month period immediately preceding a Change in Control

Other capitalized terms used herein have the meanings set forth in the Plan unless otherwise defined herein.

B. Service Vesting Requirement

Except as otherwise expressly provided in Sections F and G below, vesting of any portion of your Award is generally subject to your continuous Service through [ ] (the "***Service Vesting Requirement***"). If your continuous Service terminates for any reason prior to your satisfaction of the Service Vesting Requirement except as expressly provided in Sections F and G below, no portion of your Award is eligible to vest, and the PSUs subject to your Award will immediately terminate and be forfeited upon such termination of your continuous Service.

C. Performance Goals

The number of PSUs subject to your Award that may vest will be determined by reference to the total shareholder return ("***TSR***") of the Company over a three-year performance period from [ ] through [ ] (the "***Performance Period***") as measured as a relative percentile of the TSR performance of the Index Group during the Performance Period. The number of PSUs subject to your Award that may vest will be determined by reference to the Company's TSR Percentile Rank during the Performance Period as indicated in the chart below, with linear interpolation between the designated performance levels, subject to adjustment as provided herein (the "***Performance Goals***"). For such purposes, "***Company TSR Percentile Rank***" means the TSR Percentile Rank of the Company relative to TSR Percentile Rank of the Index Group as determined by the Committee for the Performance Period and "***TSR Percentile Rank***" means the percentile performance of the Company and each member of the Index Group based on the TSR for such company as determined by the Committee for the Performance Period.

Company TSR Percentile Rank Compared to Index Group	% Multiplier*	Payout Level
[ ]	[ ]	0%
[ ]	[ ]	Threshold
[ ]	[ ]	Target
[ ]	[ ]	Maximum

*The Multiplier is applied to the Target Number of PSUs. Multiplier subject to linear interpolation between percentiles.

TSR will be calculated as provided in Section D below. If the Company's TSR is negative, the maximum number of PSUs that may vest is capped at [ ]% of the Target Number of PSUs, regardless of Company's percentile rank compared to the Index. In all cases, the Maximum Number of PSUs that may vest is capped at [ ]% of the Target Number of PSUs.

D. TSR Calculation Criteria:

For purposes of computing TSR during the Performance Period, for Company and each Index Company, the following formula will be used, as adjusted for stock splits or similar changes in capital structure which occur during the Performance Period.

- Beginning Stock Price = Average daily closing stock price of last 20 trading days immediately preceding the start of the Performance Period
- Ending Stock Price = Average daily closing stock price of the last 20 trading days of the Performance Period
- Dividends = Reinvested dividends and dividend equivalents

However, if a Change in Control occurs prior to expiration of the Performance Period, TSR will instead be measured through the date of the Change in Control in calculating the portion of your Award that may vest (See Section G.1).

E. Vesting Determination and Settlement Dates

No Stock will be issued in settlement of your Award prior to the date of the Committee's determination of the level of attainment of the Performance Goals and the number of your PSUs that will vest. In the absence of a Change in Control, as soon as practicable within the 60-day period following completion of the Performance Period, the Committee will determine the applicable Company TSR during the Performance Period as measured versus the TSR of the Index during the Performance Period and the applicable number of your PSUs that will vest, subject to your satisfaction of the Service Vesting Requirement. The date of the Committee's determination is the "***Determination Date***." Except as specifically provided below, Stock will be issued in respect of the number of the PSUs that vest as soon as practicable within the 30-day period following such Determination Date. Any portion of the Award that does not vest on the Determination Date will immediately terminate and be forfeited on the Determination Date.

F. Impact of Certain Terminations, Death or Disability

1. Pro-Rata Vesting in Connection with a Certain Terminations Before Expiration of the Performance Period. Subject to Section F.2 below, following any termination of your employment by the Company due to your Disability or death that occurs prior to expiration of the Performance Period, the number of PSUs that will vest on the Determination Date will be a pro-rata portion of the number of PSUs that would have vested had you remained in Continuous Service through the last day of the Performance Period. Such pro-rata portion will be determined by taking the number of PSUs that would have vested based on the level of attainment of the Performance Goals had your remained in such continuous service through the last day of the Performance Period (the "***Default Number of PSUs***") and multiplying it by the percentage determined by taking the number of calendar days of continuous Service you completed during the Performance Period prior to the such termination and dividing such number by the total number of calendar days in the

Performance Period (the "***Pro-Rata Reduction***"). Any portion of the Award that does not vest on the Determination Date will immediately terminate and be forfeited on the Determination Date.

2. Impact of Death or Disability Terminations Followed By Change in Control.

In the event that termination of your employment by the Company due to your Disability or death is followed by a Change in Control that precedes the scheduled end of the Performance Period, the number of PSUs that will vest upon the Change in Control will be determined on a pro-rata basis as calculated in Section F.1 above, except that a number of PSUs corresponding to the Change in Control Determined Units (as defined in Section G.1) will be substituted for the Default Number of PSUs in such formula before applying the Pro-Rata Reduction. Any portion of the Award that does not vest upon the Change in Control will immediately terminate and be forfeited on such date and shares of Stock will be issued to you immediately prior to the Change in Control in settlement of the vested number of PSUs.

G. Impact of Change in Control.

1. Impact of Change in Control. In the event of a Change in Control that occurs before the scheduled end of the Performance Period, the number of PSUs that may potentially vest will be determined immediately by the Board as constituted immediately prior to the Change in Control based upon the Company's TSR performance as measured versus the Index's TSR performance during the portion of the Performance Period that precedes the effective date of the Change in Control (the "***CIC Achievement Level***"). For purposes of such determination, the Company's ending stock price will be the sale price of the per share of Stock in the Change in Control and the ending stock price of each Index Company will be such Index Company's closing stock price on the effective date of the Change in Control (such CIC Achievement Level determined number of PSUs are the "***Change in Control Determined Units***"). Any portion of the Award that does not vest based upon the CIC Achievement Level will immediately terminate and be forfeited upon the Change in Control.

In the event of termination of your employment by the Company occurs due to a Qualified Pre-CIC Termination and is followed by a Change in Control that precedes the scheduled end of the Performance Period, upon such Change in Control the PSUs will vest with respect to the applicable number of Change in Control Determined Units, and shares of Stock will be issued to you immediately prior to the Change in Control in settlement of the vested number of PSUs.

2. Change in Control Continued Service Condition.

In the event of a Change in Control that precedes the scheduled expiration date of the Performance Period where the surviving corporation or the acquiring corporation assumes, continues or substitutes the Award on substantially the same terms and conditions as in effect prior to the Change in Control, except as provided below, you must remain in continuous Service with the Company or an Affiliate through the scheduled expiration date of the Performance Period in order for the Change in Control Determined Units to vest (the "***Change in Control Continued Service Requirement***"), and the Change in Control Determined Units shall vest on the scheduled expiration date of the Performance Period. For the avoidance of doubt, in connection with any

such assumption, continuation or substitution, the Change in Control Determined Units are automatically converted into a time-based vesting award and the performance goals shall no longer apply.

Notwithstanding the foregoing, if you are terminated by the Company due to your death, Disability or a Qualified Termination upon or following the Change in Control, the Change in Control Continued Service Requirement will be waived and the Change in Control Determined Units will immediately vest on the date of such termination, and shares of Stock will be issued upon or as soon as practicable following such termination, but in all cases within 60 days following such termination (unless such issuance is not practicable within such 60 day period and a later issuance date is permitted without triggering adverse tax consequences under Section 409A of the Code).

In the event of a Change in Control where the surviving corporation or the acquiring corporation will not assume, continue or substitute the Award on substantially the same terms and conditions as in effect prior to the Change in Control, the Change in Control Determined Units will vest immediately prior to the Change in Control and, subject to satisfaction of the requirements set forth in Section H below, the shares of Stock will be issued in settlement of the vested Change in Control Determined Units immediately prior to the Change in Control. For purposes of this Agreement, if the Company is the surviving corporation or the acquiring corporation, if applicable, it shall be deemed to have assumed the Award in the Change in Control unless it takes explicit action to the contrary.

H. Application of Section 409A.

The Award is intended to be exempt from the requirements of Section 409A of the Code as providing for payment in the form of issuance of shares of Stock in settlement of any vested portion of the Award within the period permitted by the short-term deferral period exemption available under Treasury Regulations Section 1.409A-1(b)(4).

To the extent the Award is not exempt from the requirements of Section 409A of the Code, the Award is intended to comply with the requirements of Section 409A of the Code, and the following provisions shall apply. The Award is intended to comply with Section 409A as providing for payment in the form of an issuance of shares in all cases upon the earliest of the following Section 409A permitted payment dates or events: (i) the same taxable year as the scheduled expiration date of the Performance Period, (ii) if the payment acceleration exemption permitted under Treasury Regulation 1.409A-3(j)(ix)(B) is available and elected, upon a Change in Control that is also a change in the ownership or effective control of the Company or a change in the ownership of a substantial portion of the assets of the Company as described in Code Section 409A(a)(2)(A)(iv) (a "***409A CIC***"), or (iii) upon a qualifying separation from service that occurs after a 409A CIC. Accordingly, the following provisions shall apply and shall supersede anything to the contrary set forth herein, in the Agreement and in the Plan to the extent an exemption from the requirements of Section 409A of the Code is not available and as required for the Award to comply with the requirements of Section 409A of the Code in order to avoid application of its adverse tax consequences to you:

- If you are a "specified employee" within the meaning of Section 409A of the Code at the time of your separation from service, then to the extent required to be delayed pursuant to Section 409A(a)(2)(B) of the Code, the shares will not be issued to you in connection with your separation from service until 6 months and 1 day following the date of your separation from service.

- In a Change in Control the Award must be assumed, continued or substituted by the surviving corporation or the acquiring corporation and any shares of Stock scheduled to be issued upon the scheduled expiration date of the Performance Period may not be earlier issued in settlement of any Change in Control Determined Units upon the Change in Control unless the Change in Control is a 409A CIC and an exemption is available and elected under Treasury Regulation 1.409A-3(j)(ix)(B) or such earlier issuance of the shares of Stock is otherwise permitted by Section 409A of the Code.

- "Disability" must also constitute a "disability" as set forth in Treasury Regulations Section 1.409A-3(i)(4).

In all cases, the Company retains the right to provide for earlier issuance of shares of Stock in settlement of any vested portion of the Award to the extent permitted by Section 409A of the Code.

Attachment II

TREATMENT OF INDEX COMPANIES DURING PERFORMANCE PERIOD

The companies comprising the Index Group is determined as of the Grant Date, and, if applicable, whether a company is an Index Company and such Index Company's TSR for the Performance Period, will only be modified during the Performance Period as follows:

- An Index Company that becomes bankrupt during the Performance Period will remain an Index Company, but its TSR for the Performance Period will be deemed to equal negative 100% and it will be placed at the bottom of the benchmark set.
- An Index Company that is acquired, ceases to be the surviving company in a merger, or ceases to be publicly traded for a reason other than bankruptcy during the Performance Period will in each case be excluded from the Index.
- An Index Company that distributes a portion of its business in a spin-off transaction during the Performance Period and that remains publicly traded will be retained in the Index, but the company that is spun off will not be included in the Index.

Exhibit 31.1

CERTIFICATION OF THE CHIEF EXECUTIVE OFFICER
PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Chad Robins, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Adaptive Biotechnologies 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(s) 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)) 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) 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

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

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

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

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

Date: May 4, 2022

By: /s/ Chad Robins
Chad Robins
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION OF THE CHIEF FINANCIAL OFFICER
PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Kyle Piskel, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Adaptive Biotechnologies 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(s) 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)) 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) 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

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

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

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

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

Date: May 4, 2022

By: /s/ Kyle Piskel
Kyle Piskel
Interim Chief Financial Officer and
Principal Accounting Officer
(Principal 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 of Adaptive Biotechnologies Corporation (the "Company") on Form 10-Q for the quarterly period ended March 31, 2022 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

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

Date: May 4, 2022

By: /s/ Chad Robins
Chad Robins
Chief Executive Officer
(Principal Executive Officer)

The foregoing certification is being furnished solely to accompany the Report pursuant to 18 U.S.C. § 1350, and is not being filed for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, and is not to be incorporated by reference into any filing of the Company, whether made before or after the date hereof, regardless of any general incorporation language in such filing.

Exhibit 32.2

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

In connection with the Quarterly Report of Adaptive Biotechnologies Corporation (the "Company") on Form 10-Q for the quarterly period ended March 31, 2022 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

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

Date: May 4, 2022

By: /s/ Kyle Piskel
Kyle Piskel
Interim Chief Financial Officer and
Principal Accounting Officer
(Principal Financial Officer)

The foregoing certification is being furnished solely to accompany the Report pursuant to 18 U.S.C. § 1350, and is not being filed for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, and is not to be incorporated by reference into any filing of the Company, whether made before or after the date hereof, regardless of any general incorporation language in such filing.