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, 2021

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: 001-38753

Moderna, Inc.

(Exact Name of Registrant as Specified in Its Charter)

Delaware	**81-3467528**
(State or Other Jurisdiction of Incorporation or Organization)	(IRS Employer Identification No.)
200 Technology Square **Cambridge, Massachusetts**	**02139**
(Address of Principal Executive Offices)	(Zip Code)

(617) 714-6500

(Registrant's Telephone Number, Including Area Code)

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

Title of each class	Trading symbol(s)	Name of each exchange on which registered
Common stock, par value $0.0001 per share	MRNA	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** o

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** o

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 o	Non-accelerated filer o	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. o

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

As of April 30, 2021, there were 401,527,789 shares of the registrant's common stock, par value $0.0001 per share, outstanding.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Quarterly Report on Form 10-Q ("Form 10-Q"), including the section entitled "Management's Discussion and Analysis of Financial Condition and Results of Operations," contains express or implied forward-looking statements that are based on our management's belief and assumptions and on information currently available to our management. Although we believe that the expectations reflected in these forward-looking statements are reasonable, these statements relate to future events or our future operational or financial performance, and involve known and unknown risks, uncertainties, and other factors that may cause our actual results, performance, or achievements to be materially different from any future results, performance, or achievements expressed or implied by these forward-looking statements. Forward-looking statements in this Form 10-Q include, but are not limited to, statements about:

- our activities with respect to our COVID-19 vaccine, and our plans and expectations regarding future generations of our COVID-19 vaccine, including boosters, that we may develop in response to variants of the SARS-CoV-2 virus, ongoing clinical development, manufacturing and supply, pricing, commercialization, if approved, regulatory matters and third-party and governmental arrangements and potential arrangements;
- our ability to contract with third-party suppliers and manufacturers and their ability to perform adequately, particularly with respect to the timely production and delivery of our COVID-19 vaccine;
- our ability and the ability of third parties with whom we contract to successfully manufacture our commercial products at scale, as well as drug substances, delivery vehicles, development candidates, and investigational medicines for preclinical and clinical use;
- the scope of protection we are able to establish and maintain for intellectual property rights covering our commercial products, investigational medicines and technology;
- the initiation, timing, progress, results, and cost of our research and development programs and our current and future preclinical studies and clinical trials, including statements regarding the timing of initiation and completion of studies or trials and related preparatory work, the period during which the results of the trials will become available, and our research and development programs;
- the ultimate impact of the current coronavirus pandemic, or the COVID-19 pandemic, or any other health epidemic, on our business, manufacturing, clinical trials, research programs, supply chain, regulatory review, healthcare systems or the global economy as a whole;
- risks related to the direct or indirect impact of the COVID-19 pandemic or any future large-scale adverse health event, such as the scope and duration of the outbreak, government actions and restrictive measures implemented in response, material delays in diagnoses, initiation or continuation of treatment for diseases that may be addressed by our development candidates and investigational medicines, or in patient enrollment in clinical trials, potential clinical trials, regulatory review or supply chain disruptions, and other potential impacts to our business, the effectiveness or timeliness of steps taken by us to mitigate the impact of the pandemic, and our ability to execute business continuity plans to address disruptions caused by the COVID-19 pandemic or future large-scale adverse health event;
- our anticipated next steps for our development candidates and investigational medicines that may be slowed down due to the impact of the COVID-19 pandemic, including our resources being significantly diverted towards our COVID-19 vaccine efforts, particularly if the federal government seeks to require us to divert such resources;
- our ability to identify research priorities and apply a risk-mitigated strategy to efficiently discover and develop development candidates and investigational medicines, including by applying learnings from one program to our other programs and from one modality to our other modalities;
- the ability and willingness of our third-party strategic collaborators to continue research and development activities relating to our development candidates and investigational medicines;
- our ability to obtain and maintain regulatory approval of our investigational medicines;
- our ability to successfully commercialize any future products, if approved;
- the pricing and reimbursement of our investigational medicines, if approved;
- the implementation of our business model, and strategic plans for our business, investigational medicines, and technology;

- estimates of our future expenses, revenues, capital requirements, and our needs for additional financing;
- the potential benefits of strategic collaboration agreements, our ability to enter into strategic collaborations or arrangements, and our ability to attract collaborators with development, regulatory, and commercialization expertise;
- future agreements with third parties in connection with the commercialization of our investigational medicines, if approved;
- the size and growth potential of the markets for our investigational medicines, and our ability to serve those markets;
- our financial performance;
- the rate and degree of market acceptance of our investigational medicines;
- regulatory developments in the United States and foreign countries;
- our ability to produce our products or investigational medicines with advantages in turnaround times or manufacturing cost;
- the success of competing therapies that are or may become available;
- our ability to attract and retain key scientific or management personnel;
- the impact of laws and regulations;
- developments relating to our competitors and our industry; and
- other risks and uncertainties discussed in this Form 10-Q.

In some cases, forward-looking statements can be identified by terminology such as “will,” “may,” “should,” “could,” “expects,” “intends,” “plans,” “aims,” “anticipates,” “believes,” “estimates,” “predicts,” “potential,” “continue,” or the negative of these terms or other comparable terminology, although not all forward-looking statements contain these words. These statements are only predictions. You should not place undue reliance on forward-looking statements because they involve known and unknown risks, uncertainties, and other factors, which are, in some cases, beyond our control and which could materially affect results. Factors that may cause actual results to differ materially from current expectations include, among other things, those listed under the section entitled “Risk Factors” and elsewhere in this Form 10-Q. If one or more of these risks or uncertainties occur, or if our underlying assumptions prove to be incorrect, actual events or results may vary significantly from those expressed or implied by the forward-looking statements. No forward-looking statement is a promise or a guarantee of future performance.

The forward-looking statements in this Form 10-Q represent our views as of the date of this Form 10-Q. We anticipate that subsequent events and developments will cause our views to change. However, while we may elect to update these forward-looking statements at some point in the future, we have no current intention of doing so except to the extent required by applicable law. You should therefore not rely on these forward-looking statements as representing our views as of any date subsequent to the date of this Form 10-Q.

This Form 10-Q includes statistical and other industry and market data that we obtained from industry publications and research, surveys, and studies conducted by third parties. Industry publications and third-party research, surveys, and studies generally indicate that their information has been obtained from sources believed to be reliable, although they do not guarantee the accuracy or completeness of such information. We have not independently verified the information contained in such sources.

NOTE REGARDING COMPANY REFERENCES

Unless the context otherwise requires, the terms “Moderna,” “the Company,” “we,” “us,” and “our” in this Form 10-Q refer to Moderna, Inc. and its consolidated subsidiaries.

ADDITIONAL INFORMATION

Our website, www.modernatx.com including the Investor Relations section, www.investors.modernatx.com; and corporate blog www.modernatx.com/moderna-blog; as well as our social media channels: Facebook, www.facebook.com/modernatx; Twitter, www.twitter.com/modernatx; and LinkedIn, www.linkedin.com/company/modernatx; contain a significant amount of information about us, including financial and other information for investors. We encourage investors to visit these websites and social media channels as information is frequently updated and new information is shared.

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Item 1. Financial Statements

MODERNA, INC.
CONDENSED CONSOLIDATED BALANCE SHEETS
(Unaudited, in millions, except per share data)

	March 31, 2021	December 31, 2020
Assets		
Current assets:		
Cash and cash equivalents	$ 5,442	$ 2,624
Investments	2,293	1,984
Accounts receivable	3,210	1,391
Inventory	494	47
Prepaid expenses and other current assets	264	252
Total current assets	11,703	6,298
Investments, non-current	468	639
Property and equipment, net	372	297
Right-of-use assets, operating leases	89	90
Restricted cash, non-current	11	11
Deferred tax assets	50	—
Other non-current assets	1	2
Total assets	$ 12,694	$ 7,337
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	$ 8	$ 18
Accrued liabilities	753	470
Deferred revenue	7,531	3,867
Other current liabilities	149	34
Total current liabilities	8,441	4,389
Deferred revenue, non-current	179	177
Operating lease liabilities, non-current	96	97
Financing lease liabilities, non-current	138	110
Other non-current liabilities	2	3
Total liabilities	8,856	4,776
Commitments and contingencies		
Stockholders' equity:		
Preferred stock, par value $0.0001; 162 shares authorized as of March 31, 2021 and December 31, 2020; no shares issued or outstanding at March 31, 2021 and December 31, 2020	—	—
Common stock, par value $0.0001; 1,600 shares authorized as of March 31, 2021 and December 31, 2020; 401 and 399 shares issued and outstanding as of March 31, 2021 and December 31, 2019, respectively	—	—
Additional paid-in capital	4,860	4,802
Accumulated other comprehensive income	1	3
Accumulated deficit	(1,023)	(2,244)
Total stockholders' equity	3,838	2,561
Total liabilities and stockholders' equity	$ 12,694	$ 7,337

MODERNA, INC.
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS
(Unaudited, in millions, except per share data)

	Three Months Ended March 31,	
	2021	2020
Revenue:		
Product sales	$ 1,733	$ —
Grant revenue	194	4
Collaboration revenue	10	4
Total revenue	1,937	8
Operating expenses:		
Cost of sales	193	—
Research and development	401	115
Selling, general and administrative	77	24
Total operating expenses	671	139
Income (loss) from operations	1,266	(131)
Interest income	4	8
Other expense, net	(10)	(1)
Income (loss) before income taxes	1,260	(124)
Provision for income taxes	39	—
Net income (loss)	$ 1,221	$ (124)
Earnings (loss) per share		
Basic	$ 3.05	$ (0.35)
Diluted	$ 2.84	$ (0.35)
Weighted average common shares used in calculation of earnings (loss) per share		
Basic	400	353
Diluted	430	353

MODERNA, INC.
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)
(Unaudited, in millions)

	Three Months Ended March 31,	
	2021	**2020**
Net income (loss)	$ 1,221	$ (124)
Other comprehensive loss:		
Unrealized loss on available-for-sale debt securities, net of tax of $0 and $0, for the three months ended March 31, 2021 and 2020, respectively	(2)	(8)
Comprehensive income (loss)	$ 1,219	$ (132)

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

MODERNA, INC.
CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
FOR THE THREE MONTHS ENDED MARCH 31, 2021 AND 2020
(Unaudited, in millions)

	Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Income	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount				
Balance at December 31, 2020	399	$ —	$ 4,802	$ 3	$ (2,244)	$ 2,561
Exercise of options to purchase common stock	2	—	28	—	—	28
Stock-based compensation	—	—	30	—	—	30
Other comprehensive loss, net of tax	—	—	—	(2)	—	(2)
Net income	—	—	—	—	1,221	1,221
Balance at March 31, 2021	401	$ —	$ 4,860	$ 1	$ (1,023)	$ 3,838

	Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Income (loss)	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount				
Balance at December 31, 2019	337	$ —	$ 2,670	$ 2	$ (1,497)	$ 1,175
Proceeds from public offering of common stock, net of issuance costs of $1	30	—	550	—	—	550
Exercise of options to purchase common stock	3	—	28	—	—	28
Stock-based compensation	—	—	20	—	—	20
Other comprehensive loss, net of tax	—	—	—	(8)	—	(8)
Net loss	—	—	—	—	(124)	(124)
Balance at March 31, 2020	370	$ —	$ 3,268	$ (6)	$ (1,621)	$ 1,641

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

MODERNA, INC.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(Unaudited, in millions)

	Three Months Ended March 31,	
	2021	**2020**
Operating activities		
Net income (loss)	$ 1,221	$ (124)
Adjustments to reconcile net income (loss) to net cash provided by (used in) operating activities:		
Stock-based compensation	30	20
Depreciation and amortization	15	7
Amortization/accretion of investments	5	1
Deferred income taxes	(50)	—
Changes in assets and liabilities:		
Accounts receivable	(1,819)	(2)
Prepaid expenses and other assets	(12)	(4)
Inventory	(448)	—
Right-of-use assets, operating leases	2	(14)
Accounts payable	(15)	2
Accrued liabilities	285	(12)
Deferred revenue	3,666	(1)
Operating lease liabilities	(2)	15
Other liabilities	93	6
Net cash provided by (used in) operating activities	2,971	(106)
Investing activities		
Purchases of marketable securities	(726)	(621)
Proceeds from maturities of marketable securities	339	269
Proceeds from sales of marketable securities	242	42
Purchases of property and equipment	(35)	(6)
Net cash used in investing activities	(180)	(316)
Financing activities		
Proceeds from public offerings of common stock, net of issuance costs	—	550
Proceeds from issuance of common stock through equity plans, net	28	28
Changes in financing lease liabilities	(2)	—
Net cash provided by financing activities	26	578
Net increase in cash, cash equivalents and restricted cash	2,817	156
Cash, cash equivalents and restricted cash, beginning of year	2,636	248
Cash, cash equivalents and restricted cash, end of period	$ 5,453	$ 404
Non-cash investing and financing activities		
Purchases of property and equipment included in accounts payable and accrued liabilities	$ 21	$ 7
Right-of-use assets obtained through finance lease modifications and reassessments	$ 51	$ —

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

MODERNA, INC.
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

1. Description of the Business

Moderna, Inc. (collectively, with its consolidated subsidiaries, any of Moderna, we, us, or the Company) was incorporated in Delaware on July 22, 2016. We are the successor in interest to Moderna LLC, a limited liability company formed under the laws of the State of Delaware in 2013. Our principal executive office is located at 200 Technology Square, Cambridge, MA.

We are a biotechnology company creating a new generation of transformative medicines based on messenger RNA (mRNA), to improve the lives of patients. mRNA medicines are designed to direct the body's cells to produce intracellular, membrane, or secreted proteins that have a therapeutic or preventive benefit with the potential to address a broad spectrum of diseases. Our platform builds on continuous advances in basic and applied mRNA science, delivery technology, and manufacturing, providing us the capability to pursue in parallel a robust pipeline of new development candidates. We are developing vaccines and therapeutics for infectious diseases, immuno-oncology, rare diseases, autoimmune and cardiovascular diseases, independently and with our strategic collaborators.

On December 18, 2020, we received an Emergency Use Authorization (EUA) from the U.S. Food and Drug Administration (FDA) for the emergency use of the Moderna COVID-19 Vaccine (also referred to as mRNA-1273) in individuals 18 years of age or older. We have also received authorization for our COVID-19 vaccine from health agencies in Canada, Israel, the European Union, the United Kingdom, Switzerland, Singapore, Qatar, Taiwan, and the Philippines, and from the World Health Organization. Additional authorizations are currently under review in other countries.

As of March 31, 2021, we had 24 mRNA development programs in our portfolio with 13 having entered the clinic. We have incurred significant expenses in connection with the discovery, development and commercialization of our products, and we expect to continue to incur significant expenses for the foreseeable future. We anticipate that our expenses will increase significantly in connection with the ongoing development and commercialization of our COVID-19 vaccine and ongoing activities to support our platform research, drug discovery and clinical development, including development of any new generations of boosters and vaccines against variants of SARS-CoV-2, infrastructure and Research Engine and Early Development Engine (which includes our Moderna Technology Center), digital infrastructure, creation of a portfolio of intellectual property, and administrative support. We may finance our future cash needs that exceed our operating costs through a combination of public or private equity offerings, structured financings and debt financings, government funding arrangements, strategic alliances and marketing, manufacturing, distribution and licensing arrangements. We may be unable to raise additional funds or enter into such other agreements on favorable terms, or at all.

We believe that our cash, cash equivalents, and investments as of March 31, 2021 will be sufficient to enable us to fund our projected operations through at least the next 12 months from the issuance of our financial statements. We are subject to numerous risks and uncertainties associated with pharmaceutical development and commercialization, and we are unable to predict the timing or amount of expenses or if we will be able to maintain profitability. If we are unable to sustain profitability on a continuing basis, then we may be unable to continue our operations at planned levels and be forced to reduce our operations.

2. Summary of Basis of Presentation and Recent Accounting Standards

Basis of Presentation and Principles of Consolidation

The accompanying unaudited condensed consolidated financial statements that accompany these notes have been prepared in accordance with U.S. generally accepted accounting principles (GAAP) and applicable rules and regulations of the Securities and Exchange Commission (SEC) for interim financial reporting, consistent in all material respects with those applied in our Annual Report on Form 10-K for the year ended December 31, 2020 (2020 Form 10-K). Any reference in these notes to applicable guidance is meant to refer to the authoritative accounting principles generally accepted in the United States as found in the Accounting Standard Codification (ASC) and Accounting Standards Update (ASU) of the Financial Accounting Standards Board (FASB). This report should be read in conjunction with the consolidated financial statements in our 2020 Form 10-K.

The consolidated financial statements include the Company and its subsidiaries. All intercompany transactions and balances have been eliminated in consolidation.

The significant accounting policies used in preparation of these condensed consolidated financial statements for the three months ended March 31, 2021 are consistent with those described in our 2020 Form 10-K.

Use of Estimates

We have made estimates and judgments affecting the amounts reported in our condensed consolidated financial statements and the accompanying notes. We base our estimates on historical experience and various relevant assumptions that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting periods that are not readily apparent from other sources. Significant estimates relied upon in preparing these financial statements include, but are not limited to, critical accounting policies or estimates related to revenue recognition, research and development expenses, income tax provisions, stock-based compensation, leases, fair value of financial instruments, derivative financial instruments, inventory, and useful lives of property and equipment, income taxes and our valuation allowance on our deferred tax assets. The actual results that we experience may differ materially from our estimates.

Comprehensive Income (Loss)

Comprehensive income (loss) includes net income (loss) and other comprehensive loss for the period. Other comprehensive loss consists of unrealized gains/losses and gains/losses on our investments. Total comprehensive income (loss) for all periods presented has been disclosed in the condensed consolidated statements of comprehensive income (loss).

The components of accumulated other comprehensive income for the three months ended March 31, 2021 are as follows (in millions):

	Unrealized Loss on Available-for-Sale Debt Securities
Accumulated other comprehensive income, balance at December 31, 2020	$ 3
Other comprehensive loss	(2)
Accumulated other comprehensive income, balance at March 31, 2021	$ 1

Restricted Cash

We include our restricted cash balance in the cash, cash equivalents and restricted cash reconciliation of operating, investing and financing activities in the condensed consolidated statements of cash flows.

The following table provides a reconciliation of cash, cash equivalents and restricted cash in the condensed consolidated balance sheets that sum to the total of the same such amounts shown in the condensed consolidated statements of cash flows (in millions):

	March 31,	
	2021	2020
Cash and cash equivalents	$ 5,442	$ 392
Restricted cash	—	1
Restricted cash, non-current	11	11
Total cash, cash equivalents and restricted cash shown in the condensed consolidated statements of cash flows	$ 5,453	$ 404

Recently Issued Accounting Standards Not Yet Adopted

From time to time, new accounting pronouncements are issued by the FASB or other standard setting bodies and adopted by us as of the specified effective date. Unless otherwise discussed, we believe that the impact of recently issued standards that are not yet effective will not have a material impact on our consolidated financial statements and disclosures.

3. Product Sales

In December 2020, we began selling our COVID-19 vaccine to the U.S. Government and international governments. Under the supply agreements with these governments, we received or billed for upfront deposits for our future vaccine supply, which are initially recorded as deferred revenue. We recognize revenue based on the fixed price per dose when control of the product has transferred and customer acceptance has occurred as applicable, unless such acceptance provisions are deemed perfunctory.

Product sales by customer geographic location was as follows (in millions):

	Three Months Ended March 31, 2021
United States	$ 1,358
Rest of world	375
Total	$ 1,733

There were no product sales for the three months ended March 31, 2020. As of March 31, 2021, we had one commercial product authorized for use, our COVID-19 vaccine.

As of March 31, 2021 and December 31, 2020, we had deferred revenue of $7.5 billion and $3.8 billion, respectively, related to customer deposits, classified as current deferred revenue in our consolidated balance sheet. Timing of product manufacturing, delivery and receipt of marketing approval will determine the period in which revenue is recognized.

4. Grant Revenue

In September 2020, we entered into an agreement with the Defense Advanced Research Projects Agency (DARPA) for an award of up to $56 million to fund development of a mobile manufacturing prototype leveraging our existing manufacturing technology that is capable of rapidly producing vaccines and therapeutics. As of March 31, 2021, the committed funding, net of revenue earned was $3 million, with an additional $51 million available if DARPA exercises additional contract options.

In April 2020, we entered into an agreement with the Biomedical Advanced Research and Development Authority (BARDA), a division of the Office of the Assistant Secretary for Preparedness and Response (ASPR) within the U.S. Department of Health and Human Services (HHS), for an award of up to $483 million to accelerate development of mRNA-1273, our vaccine candidate against the novel coronavirus. In July 2020, we amended our agreement with BARDA to provide for an additional commitment of up to $472 million to support late-stage clinical development of mRNA-1273, including the execution of a 30,000 participant Phase 3 study in the U.S. We further amended the agreement in March 2021 to provide for an additional commitment of $63 million to further support late-stage clinical development, including Phase 2/3 mRNA-1273 pediatric studies. As of March 31, 2021, the maximum award from BARDA, inclusive of the March 2021 amendment, was approximately $1.0 billion. Under the terms of the agreement, BARDA will fund the advancement of mRNA-1273 to FDA licensure. All contract options have been exercised. As of March 31, 2021, the remaining available funding net of revenue earned was $317 million. Subsequent to the end of the quarter, on April 18, 2021, we entered into a further amendment to the BARDA agreement, increasing the amount of potential reimbursements by $236 million in connection with costs associated with the Phase 3 clinical trials for mRNA-1273 and pharmacovigilance efforts.

In September 2016, we received an award of up to $126 million from BARDA, to help fund our Zika vaccine program. Three of the four contract options have been exercised. As of March 31, 2021, the remaining available funding net of revenue earned was $69 million, with an additional $8 million available if the final contract option is exercised.

In January 2016, we entered a global health project framework agreement with the Bill and Melinda Gates Foundation (Gates Foundation) to advance mRNA-based development projects for various infectious diseases, including human immunodeficiency virus (HIV). As of March 31, 2021, the available funding net of revenue earned was $11 million, with up to an additional $80 million available if additional follow-on projects are approved.

The following table summarizes grant revenue as of and for the period presented (in millions):

	Three Months Ended March 31,	
	2021	2020
BARDA	$ 192	$ 3
Other grant revenue	2	1
Total grant revenue	$ 194	$ 4

5. Collaboration Agreements

We have entered into collaboration agreements with strategic collaborators to accelerate the discovery and advancement of potential mRNA medicines across therapeutic areas. As of March 31, 2021 and December 31, 2020, we had collaboration agreements with AstraZeneca plc (AstraZeneca), Merck & Co., Inc (Merck), Vertex Pharmaceuticals Incorporated and Vertex Pharmaceuticals (Europe) Limited (together, Vertex), and Chiesi Farmaceutici S.P.A. (Chiesi). Please refer to our 2020 Form 10-K under the heading “Third-Party Strategic Alliances” and Note 5 to our consolidated financial statements for further description of each of the collaboration agreements.

The following table summarizes our total consolidated revenue from our strategic collaborators for the periods presented (in millions):

	Three Months Ended March 31,	
Collaboration Revenue by Strategic Collaborator:	2021	2020
AstraZeneca	$ —	$ 1
Merck	—	1
Vertex	9	2
Other	1	—
Total collaboration revenue	$ 10	$ 4

The following table presents changes in the balances of our receivables and contract liabilities related to our strategic collaboration agreements during the three months ended March 31, 2021 (in millions):

	December 31, 2020	Additions	Deductions	March 31, 2021
Contract Assets:				
Accounts receivable	$ 6	$ 5	$ (2)	$ 9
Contract Liabilities:				
Deferred revenue	$ 240	$ 5	$ (10)	$ 235

As of March 31, 2021, the aggregated amount of the transaction price allocated to performance obligations under our collaboration agreements that are unsatisfied or partially unsatisfied was $314 million.

6. Financial Instruments

Cash and Cash Equivalents and Investments

The following tables summarize our cash and available-for-sale securities by significant investment category at March 31, 2021 and December 31, 2020 (in millions):

	March 31, 2021						
	Amortized Cost	Unrealized Gains	Unrealized Losses	Estimated Fair Value	Cash and Cash Equivalents	Current Marketable Securities	Non-Current Marketable Securities
Cash and cash equivalents	$ 5,442	$ —	$ —	$ 5,442	$ 5,442	$ —	$ —
Available-for-sale:							
Certificates of deposit	413	—	—	413	—	413	—
U.S. treasury securities	374	—	—	374	—	374	—
Debt securities of U.S. government agencies and corporate entities	1,972	3	(1)	1,974		1,506	468
	$ 8,201	$ 3	$ (1)	$ 8,203	$ 5,442	$ 2,293	$ 468

	December 31, 2020						
	Amortized Cost	Unrealized Gains	Unrealized Losses	Estimated Fair Value	Cash and Cash Equivalents	Current Marketable Securities	Non-Current Marketable Securities
Cash and cash equivalents	$ 2,624	$ —	$ —	$ 2,624	$ 2,624	$ —	$ —
Available-for-sale:							
Certificates of deposit	239	—	—	239	—	215	24
U.S. treasury securities	492	—	—	492	—	492	—
Debt securities of U.S. government agencies and corporate entities	1,888	4	—	1,892	—	1,277	615
	$ 5,243	$ 4	$ —	$ 5,247	$ 2,624	$ 1,984	$ 639

The amortized cost and estimated fair value of marketable securities by contractual maturity at March 31, 2021 and December 31, 2020 are as follows (in millions):

	March 31, 2021	
	Amortized Cost	Estimated Fair Value
Due in one year or less	$ 2,291	$ 2,293
Due after one year through five years	468	468
Total	$ 2,759	$ 2,761

	December 31, 2020	
	Amortized Cost	Estimated Fair Value
Due in one year or less	$ 1,981	$ 1,984
Due after one year through five years	638	639
Total	$ 2,619	$ 2,623

In accordance with our investment policy, we place investments in investment grade securities with high credit quality issuers, and generally limit the amount of credit exposure to any one issuer. We evaluate securities for impairment at the end of each reporting period. Impairment is evaluated considering numerous factors, and their relative significance varies depending on the situation. Factors considered include whether a decline in fair value below the amortized cost basis is due to credit-related factors or noncredit-related factors, the financial condition and near-term prospects of the issuer, and our intent and ability to hold the investment to allow for an anticipated recovery in fair value. Any impairment that is not credit related is recognized in other comprehensive loss, net of applicable taxes. A credit-related impairment is recognized as an allowance on the balance sheet with a corresponding adjustment to earnings. We did not recognize any impairment charges related to available-for-sale securities for the three months ended March 31, 2021 and 2020. We did not recognize any credit losses related allowance to available-for-sale securities as of March 31, 2021 and December 31, 2020.

As of March 31, 2021 and December 31, 2020, we did not have material gross unrealized losses. We neither intend to sell these investments, nor do we believe that we are more-likely-than-not to conclude we will have to sell them before recovery of their carrying values. We also believe that we will be able to collect both principal and interest amounts due to us at maturity.

Assets and Liabilities Measured at Fair Value on a Recurring Basis

The following fair value hierarchy is used to classify assets and liabilities based on the observable inputs and unobservable inputs used to value the assets and liabilities:

- Level 1: Unadjusted quoted prices in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities;
- Level 2: Quoted prices for similar assets and liabilities in active markets, quoted prices in markets that are not active, or inputs which are observable, either directly or indirectly, for substantially the full term of the asset or liability; or
- Level 3: Prices or valuation techniques that require inputs that are both significant to the fair value measurement and unobservable (i.e., supported by little or no market activity).

The following tables summarize our financial assets and liabilities measured at fair value on a recurring basis as of March 31, 2021 and December 31, 2020 (in millions):

	Fair Value at March 31, 2021	Fair Value Measurement Using	
		Level 1	Level 2
Assets:			
Money market funds	$ 537	$ 537	$ —
Certificates of deposit	413	—	413
U.S. treasury securities	374	—	374
Debt securities of U.S. government agencies and corporate entities	1,974	—	1,974
Derivative instruments (Note 7)	1	—	1
Total	$ 3,299	$ 537	$ 2,762
Liabilities:			
Derivative instruments (Note 7)	$ 1	$ —	$ 1

	Fair Value at December 31, 2020	Fair Value Measurement Using	
		Level 1	Level 2
Assets:			
Money market funds	$ 621	$ 621	$ —
Certificates of deposit	239	—	239
U.S. treasury securities	492	—	492
Debt securities of U.S. government agencies and corporate entities	1,892	—	1,892
Total	$ 3,244	$ 621	$ 2,623

As of March 31, 2021 and December 31, 2020, we did not have non-financial assets or liabilities measured at fair value on a recurring basis.

7. Derivative Financial Instruments

We transact business in various foreign currencies and have international sales and expenses denominated in foreign currencies. Therefore, we are exposed to certain risks arising from both our business operations and economic conditions. Our risk management strategy includes the use of derivative financial instruments to hedge foreign currency exchange rate fluctuations on monetary assets or liabilities denominated in foreign currencies. We do not enter into derivative financial contracts for speculative or trading purposes. We do not believe that we are exposed to more than a nominal amount of credit risk in our foreign currency hedges, as counterparties are large, global and well-capitalized financial institutions. We classify cash flows from our derivative transactions as cash flows from operating activities in our consolidated statements of cash flows.

Balance Sheet Hedges

Our foreign currency forward contracts, primarily accounts receivable, are not designated for hedge accounting treatment. Therefore, these forward contracts are accounted for as derivatives whereby the fair value of the contracts are reported as other current assets or other current liabilities on our condensed consolidated balance sheets, and gains and losses resulting from changes in the fair value are recorded as a component of other expense, net, in our condensed consolidated statements of operations. The gains and losses on these foreign currency forward contracts generally offset the gains and losses in the underlying foreign currency denominated assets and liabilities, which are also recorded to other expense, net, in our condensed consolidated statements of operations.

Total gross notional amount and fair value for foreign currency derivatives that are not designated as hedging instruments are accounted for as follows (in millions):

	March 31, 2021		
		Fair Value	
	Notional Amount	Asset [1]	Liability [2]
Derivatives not designated as hedging instruments			
Foreign currency forward contracts	$ 1,367	$ 1	$ 1
Total	$ 1,367	$ 1	$ 1

	December 31, 2020		
		Fair Value	
	Notional Amount	Asset [1]	Liability [2]
Derivatives not designated as hedging instruments			
Foreign currency forward contracts	$ 368	$ —	$ —
Total	$ 368	$ —	$ —

[1] As presented in the condensed consolidated balance sheet within other current assets.
[2] As presented in the condensed consolidated balance sheet within other current liabilities.

The effect of foreign currency forward contracts not designated as hedging instruments in our condensed consolidated statements of operations for the three months ended March 31, 2021 was as follows (in millions):

	Statement of Operations Classification	Three Months Ended March 31, 2021
Derivatives not designated as hedging instruments		
Foreign currency forward contracts	Other (expense) income, net	$ 35
Total		$ 35

There were no hedging activities for the three months ended March 31, 2020.

8. Inventory

Inventory as of March 31, 2021 and December 31, 2020 consists of the following (in millions):

	March 31, 2021	December 31, 2020
Raw materials	$ 430	$ 37
Work in progress	52	9
Finished goods	12	1
Total inventory	$ 494	$ 47

9. Property and Equipment, Net

Property and equipment, net, as of March 31, 2021 and December 31, 2020 consists of the following (in millions):

	March 31, 2021	December 31, 2020
Laboratory equipment	$ 125	$ 121
Leasehold improvements	184	180
Furniture, fixtures and other	5	5
Computer equipment and software	15	13
Internally developed software	7	7
Right-of-use asset, financing	108	56
Construction in progress	63	35
	507	417
Less: Accumulated depreciation	(135)	(120)
Property and equipment, net	$ 372	$ 297

Depreciation and amortization expense for the three months ended March 31, 2021 and 2020 was $15 million and $7 million, respectively.

10. Other Balance Sheet Components

Prepaid Expenses and Other Current Assets

Prepaid expenses and other current assets, as of March 31, 2021 and December 31, 2020 consists of the following (in millions):

	March 31, 2021	December 31, 2020
Down payments to manufacturing vendors	$ 224	$ 217
Other prepaid expenses	22	16
Tenant incentives receivables	10	10
Interest receivable on marketable securities	8	9
Prepaid expenses and other current assets	$ 264	$ 252

Accrued Liabilities

Accrued liabilities, as of March 31, 2021 and December 31, 2020 consists of the following (in millions):

	March 31, 2021	December 31, 2020
Clinical trials	$ 181	$ 98
Raw materials	185	78
Royalties	84	—
Development operations	71	29
Manufacturing	119	53
Other external goods and services	58	92
Compensation-related	33	95
Property and equipment	17	18
Commercial	5	7
Accrued liabilities	$ 753	$ 470

Deferred Revenue

The following table summarizes the activities in deferred revenue for the three months ended March 31, 2021 (in millions):

	December 31, 2020	Additions	Deductions	March 31, 2021
Product sales	$ 3,799	$ 4,467	$ (796)	$ 7,470
Grant revenue	5	2	(2)	5
Collaboration revenue	240	5	(10)	235
Total deferred liabilities	$ 4,044	$ 4,474	$ (808)	$ 7,710

11. Leases

We have entered into various long-term non-cancelable lease arrangements for our facilities and equipment expiring at various times through 2032. Certain of these arrangements have free rent periods or escalating rent payment provisions. We recognize lease cost under such arrangements on a straight-line basis over the life of the leases. We have two campuses in Massachusetts, our Cambridge facility and our Moderna Technology Center (MTC), located in Norwood.

Operating Leases

Cambridge facility

We occupy a multi-building campus in Technology Square in Cambridge, Massachusetts with a mix of offices and research laboratory space totaling approximately 175,000 square feet. Our Cambridge facility leases have expiry ranges from 2020 to 2029.

Finance Leases

Moderna Technology Center manufacturing facility (MTC South)

In August 2016, we entered into a lease agreement for approximately 200,000 square feet of office, laboratory, and light manufacturing space, MTC South, in Norwood, Massachusetts. The lease will expire in September 2032. We have the option to extend the term for two extension periods of ten years each at market-based rents. The base rent is subject to increases over the term of the lease.

Moderna Technology Center North (MTC North)

In February 2019, we entered into a lease agreement for office and laboratory space of approximately 200,000 square feet, MTC North, located in Norwood, Massachusetts. The lease commenced in the second quarter of 2019 and had an initial expiration date of 2031. We have the option to extend the lease for up to four additional five-year terms. In May 2020, we entered into an amendment to the lease whereby we exercised an option available in the original lease to receive a tenant improvement allowance in the amount of $22 million to be paid back over the term of the lease with interest and extend the term of the lease to 2035.

Embedded Leases

We have entered into multiple contract manufacturing service agreements with third parties which contain embedded leases within the scope of ASC 842. As of March 31, 2021 and December 31, 2020, we had lease liabilities of $73 million and $24 million, respectively, related to the embedded leases. As of March 31, 2021 and December 31, 2020, we had right-of-use assets of $44 million and zero, as certain embedded leases dedicated to our COVID-19 vaccine program were deemed to have no alternative use prior to the EUA from the FDA in December 2020.

Operating and financing lease right-of-use assets and lease liabilities as of March 31, 2021 and December 31, 2020 were as follows (in millions):

	March 31, 2021	December 31, 2020
Assets:		
Right-of-use assets, operating, net [1] [2]	$ 89	$ 90
Right-of-use assets, financing, net [3] [4]	99	55
Total	$ 188	$ 145
Liabilities:		
Current:		
Operating lease liabilities [5]	$ 7	$ 6
Financing lease liabilities [5]	45	24
Total current lease liabilities	52	30
Non-current:		
Operating lease liabilities, non-current	96	97
Financing lease liabilities, non-current	138	110
Total non-current lease liabilities	$ 234	$ 207
Total	$ 286	$ 237

[1] These assets are real estate related assets, which include land, office and laboratory spaces.
[2] Net of accumulated depreciation.
[3] These assets are real estate assets related to the MTC North and MTC South leases as well as assets related to contract manufacturing service agreements.
[4] Included in property and equipment in the condensed consolidated balance sheets, net of accumulated depreciation.
[5] Included in other current liabilities in the condensed consolidated balance sheets.

Future minimum lease payments under our non-cancelable lease agreements at March 31, 2021, are as follows (in millions):

Fiscal Year	Operating Leases [1]	Financing Leases [1]
2021 (remainder of the year)	$ 12	$ 46
2022	16	48
2023	16	12
2024	16	12
2025	17	13
Thereafter	94	428
Total minimum lease payments	171	559
Less amounts representing interest or imputed interest	(68)	(376) [2]
Present value of lease liabilities	$ 103	$ 183

[1] Includes optional extensions in the MTC North and MTC South lease terms which represent a total of $339 million un-discounted future lease payments.
[2] MTC South interest is based on an imputed interest rate of 17.2%. MTC North and the embedded lease interest is based upon incremental borrowing rates of 8.2% and 0.6% respectively.

12. Commitments and Contingencies

Strategic Collaborations

Under our strategic collaboration agreements, we are committed to perform certain research, development, and manufacturing activities. As part of our PCV Agreement and PCV/SAV Agreement with Merck, we are committed to perform certain research, development and manufacturing activities related to PCV products through an initial Phase 2 clinical trial up to a budgeted amount of $243 million for both periods as of March 31, 2021 and December 31, 2020. Please refer to our 2020 Form 10-K Note 5 to our consolidated financial statements.

Legal Proceedings

We are not currently a party to any material legal proceedings.

Indemnification Obligations

As permitted under Delaware law, we indemnify our officers, directors, and employees for certain events, occurrences while the officer, or director is, or was, serving at our request in such capacity. The term of the indemnification is for the officer’s or director’s lifetime.

We have standard indemnification arrangements in our leases for laboratory and office space that require us to indemnify the landlord against any liability for injury, loss, accident, or damage from any claims, actions, proceedings, or costs resulting from certain acts, breaches, violations, or non-performance under our leases.

We enter into indemnification provisions under our agreements with counterparties in the ordinary course of business, typically with business partners, contractors, clinical sites and customers. Under these provisions, we generally indemnify and hold harmless the indemnified party for losses suffered or incurred by the indemnified party as a result of our activities. These indemnification provisions generally survive termination of the underlying agreement. The maximum potential amount of future payments we could be required to make under these indemnification provisions is unlimited.

Through the three months ended March 31, 2021 and the year ended December 31, 2020, we had not experienced any losses related to these indemnification obligations, and no material claims were outstanding. We do not expect significant claims related to these indemnification obligations and, consequently, concluded that the fair value of these obligations is negligible, and no related reserves were established.

Purchase Commitments and Purchase Orders

We enter into agreements in the normal course of business with vendors and contract manufacturing organizations (CMOs) for raw materials and manufacturing services and with vendors for preclinical research studies, clinical trials and other goods or services. As of March 31, 2021, we had $1.0 billion of non-cancelable purchase commitments related to raw materials and manufacturing agreements, including the Lonza agreement, which are expected to be paid through 2022. As of March 31, 2021, we had $30 million of non-cancelable purchase commitments related to clinical services and other goods and services which are expected to be paid through 2024. These amounts represent our minimum contractual obligations, including termination fees.

In addition to purchase commitments, we have agreements with third parties for various services, including services related to clinical operations and support and contract manufacturing, for which we are not contractually able to terminate for convenience and avoid any and all future obligations to the vendors. Certain agreements provide for termination rights subject to termination fees or wind down costs. Under such agreements, we are contractually obligated to make certain payments to vendors, mainly, to reimburse them for their unrecoverable outlays incurred prior to cancellation. At March 31, 2021 and December 31, 2020, we had cancelable open purchase orders of $993 million and $897 million, respectively, in total under such agreements for our significant clinical operations and support and contract manufacturing. These amounts represent only our estimate of those items for which we had a contractual commitment to pay at March 31, 2021 and December 31, 2020, assuming we would not cancel these agreements. The actual amounts we pay in the future to the vendors under such agreements may differ from the purchase order amounts.

Licenses to Patented Technology

On June 26, 2017, we entered into sublicense agreements with Cellscript, LLC and its affiliate, mRNA RiboTherapeutics, Inc. to sublicense certain patent rights. Pursuant to each agreement, we are required to pay certain license fees, annual maintenance fees, minimum royalties on future net sales and milestone payments contingent on achievement of certain development, regulatory and commercial milestones for specified products, on a product-by-product basis. The development and regulatory milestone payments, up to $2 million for therapeutic and prophylactic products and up to $1 million for diagnostic products will be recognized as a cost of the asset acquired upon resolution of the associated contingency and will be capitalized or expensed depending on the nature of the associated asset as of the date of recognition. Conversely, commercial milestone payments, up to $24 million, and royalties based on annual net sales of licensed products for therapeutic and prophylactic products will be accounted for as additional expense of the related product sales in the period in which the corresponding sales occur. We recognized $84 million of royalty expenses associated with our product sales in the first quarter of 2021, which was recorded to cost of sales in our condensed consolidated statements of operations. We did not recognize any such royalties in the first quarter of 2020 as we did not have product sales in that quarter.

Additionally, we have other in-license agreements with third parties which require us to make future development, regulatory and commercial milestone payments for specified products associated with the agreements. The achievement of these milestones was not deemed probable as of March 31, 2021.

13. Stock-Based Compensation

As of March 31, 2021, we had a total of 62 million shares reserved for future issuance under our Equity Plans, of which 35 million shares were reserved for equity awards previously granted, and 27 million shares were available for future grants under the 2018 Equity Plan.

Options

The following table summarizes our option activity during the three months ended March 31, 2021:

	Number of Options (in millions)	Weighted-Average Exercise Price per Share	Weighted-Average Grant Date Fair Value per Share	Weighted-Average Remaining Contractual Term	Aggregate Intrinsic Value [1] (in millions)
Outstanding at Outstanding at Outstanding at December 31, 2020	34.06	$ 17.14	$ 9.12	6.7 years	$ 2,976
Granted	0.87	171.07	75.13		
Exercised	(1.89)	14.80	8.16		
Canceled/forfeited	(0.09)	23.92	11.41		
Outstanding at March 31, 2021	32.95	21.32	10.91	6.6 years	3,649
Exercisable at March 31, 2021	17.65	11.61	6.04	5.4 years	2,107
Expected to vest at March 31, 2021	15.30	32.51	16.52	8.0 years	1,542

[1] Aggregate intrinsic value is calculated as the difference between the exercise price of the underlying options and the fair value of common stock for those options in the money as of March 31, 2021.

The total intrinsic value of options exercised was $250 million for the three months ended March 31, 2021. The aggregate intrinsic value represents the difference between the exercise price and the selling price received by option holders upon the exercise of stock options during the period. The total consideration recorded as a result of stock option exercises was approximately $28 million for the three months ended March 31, 2021.

Restricted Common Stock Units (RSUs) and Performance Stock Units (PSUs)

The following table summarizes our RSU and PSU activity during the three months ended March 31, 2021:

	Units (in millions)	Weighted-Average Fair Value per Unit
Outstanding, non-vested at December 31, 2020	2.19	$ 30.85
Issued	0.46	165.19
Vested	(0.24)	24.77
Canceled/forfeited	(0.02)	32.39
Outstanding, non-vested at March 31, 2021	2.39	57.28

The total fair value of restricted stock units vested during the three months ended March 31, 2021 was $6 million. The total intrinsic value of restricted stock units vested during the three months ended March 31, 2021 was $35 million.

During the first quarter of 2021, we granted PSUs to certain senior executives with vesting that is contingent upon the achievement of specified preestablished goals over the performance period, generally three years. The actual number of common shares ultimately

issued is calculated by multiplying the number of PSUs by a payout percentage ranging from 0% to 200%. The estimated fair value of PSUs is based on the grant date fair value.

2018 Employee Stock Purchase Plan (ESPP)

There were no shares sold under the ESPP during the three months ended March 31, 2021. As of March 31, 2021, 4 million shares were available for future issuance under the ESPP.

The following table presents the components and classification of stock-based compensation expense for the three months ended March 31, 2021 and 2020 as follows (in millions):

	Three Months Ended March 31,	
	2021	2020
Options	$ 22	$ 18
RSUs and PSUs	7	2
ESPP	1	—
Total	$ 30	$ 20
Cost of sales	$ 4	$ —
Research and development	14	12
Selling, general and administrative	12	8
Total	$ 30	$ 20

As of March 31, 2021, there was $337 million of total unrecognized compensation cost related to unvested stock-based compensation with respect to options, RSUs and PSUs granted. That cost is expected to be recognized over a weighted-average period of 3.1 years at March 31, 2021.

14. Income Taxes

We are subject to U.S. federal, state, and foreign income taxes. For the three months ended March 31, 2021 and 2020, we recorded provisions for income taxes of $39 million and an immaterial amount, respectively. Our effective tax rate for the three months ended March 31, 2021 was lower than the U.S. statutory rate primarily due to the benefit of the foreign derived intangible income deduction, the benefit related to the release of the valuation allowance on the majority of our tax attributes and other deferred tax assets, as well as a discrete item for excess tax benefits related to stock-based compensation. Our effective tax rate for the three months ended March 31, 2020 was lower than the U.S. statutory rate primarily due to the valuation allowance.

We recognize deferred tax assets and liabilities for the expected future tax consequences of temporary differences between the financial reporting and tax bases of assets and liabilities. These differences are measured using the enacted statutory tax rates that are expected to be in effect for the years in which differences are expected to reverse. On a periodic basis, we reassess any valuation allowances that we maintain on our deferred tax assets, weighing positive and negative evidence to assess the recoverability of the deferred tax assets. For the three months ended March 31, 2021, we reassessed the valuation allowance noting the increase in positive evidence, including significant revenue growth, expectations regarding future profitability, and successful supply chain and manufacturing capabilities to meet global product demand. After assessing both the positive evidence and negative evidence, we determined it was more likely than not that we will realize the majority of our deferred tax assets. Therefore, we determined we should reverse the majority of our valuation allowance through the annual effective tax rate (AETR) with respect to amounts we expect to realize through current year income. In addition, we have recorded a discrete benefit of $49 million related to the release of the valuation allowance on deferred tax assets that we expect to utilize in future years. We will maintain a valuation allowance on certain state tax attributes that we expect will expire prior to the utilization.

In March 2020, the Coronavirus Aid, Relief and Economic Security Act (CARES Act) was signed into law. The CARES Act includes provisions relating to several aspects of corporate income taxes. We do not currently expect the CARES Act to have a significant impact on our provision for income taxes.

We have reviewed the tax positions taken, or to be taken, in our tax returns for all tax years currently open to examination by a taxing authority. Unrecognized tax benefits represent the aggregate tax effect of differences between tax return positions and the benefits recognized in the financial statements. As of March 31, 2021 and December 31, 2020, we had an immaterial amount of gross unrecognized tax benefits, which would affect our tax rate if recognized. We do not expect that our unrecognized tax benefits will materially increase within the next twelve months. We accrue interest and penalties related to unrecognized tax benefits as a component of our provision for income taxes. We did not recognize any material interest or penalties related to uncertain tax positions during the three months ended March 31, 2021 and 2020.

We file U.S. federal income tax returns and income tax returns in various state, local and foreign jurisdictions. We are not currently subject to any tax assessment from an income tax examination in the United States or any other major taxing jurisdiction since inception.

15. Earnings per Share

The computation of basic earnings per share (EPS) is based on the weighted-average number of our common shares outstanding. The computation of diluted EPS is based on the weighted-average number of our common shares outstanding and potential dilutive common shares outstanding during the period as determined by using the treasury stock method.

Basic and diluted EPS for the three months ended March 31, 2021 and 2020 are calculated as follows (in millions, except per share data):

	Three Months Ended March 31,	
	2021	2020
Numerator:		
Net income (loss)	$ 1,221	$ (124)
Denominator:		
Basic weighted-average common shares outstanding	400	353
Effect of dilutive securities	30	—
Diluted weighted-average common shares outstanding	430	353
Basic EPS	$ 3.05	$ (0.35)
Diluted EPS	$ 2.84	$ (0.35)

The following common stock equivalents, presented based on amounts outstanding as of March 31, 2020 were excluded from the calculation of diluted net loss per share attributable to common stockholders for the periods indicated because their inclusion would have been anti-dilutive (in millions):

	March 31,
	2020
Stock options	45
Restricted common stock units	2
	47

16. Subsequent Events

Subsequent to March 31, 2021, we have entered into additional supply agreements with customers to provide up to 47 million doses of our COVID-19 vaccine based on the initial confirmed volume, subject to modifications.

Subsequent to March 31, 2021, we have entered into additional binding purchase commitments with third-party contractual manufacturing organizations for our COVID-19 vaccine under existing or newly executed agreements. We are currently committed to minimum non-cancelable purchase obligations of $284 million related to these agreements, which are expected to be paid through 2022.

Additionally, on April 18, 2021, we entered into a further amendment to our existing agreement with BARDA, pursuant to which BARDA has agreed to fund the advancement of mRNA-1273 to potential licensure, including funding for clinical studies and manufacturing scale-up. The amendment increases the amount of potential reimbursements by $236 million in connection with costs associated with the Phase 3 clinical trials for mRNA-1273 and pharmacovigilance efforts, bringing the total BARDA support to approximately $1.3 billion.

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

You should read the following discussion and analysis of our financial condition and results of operations together with our unaudited financial information and related notes included in this Form 10-Q and our consolidated financial statements and related notes and other financial information in our Annual Report on Form 10-K for the year ended December 31, 2020, which was filed with the SEC on February 26, 2021 (the "2020 Form 10-K"). Some of the information contained in this discussion and analysis or set forth elsewhere in this Form 10-Q, including information with respect to our plans and strategy for our business, includes forward-looking statements that involve risks and uncertainties. As a result of many factors, including those factors set forth in Part II, Item 1A - Risk Factors in this Form 10-Q, 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 a biotechnology company pioneering messenger RNA (mRNA) therapeutics and vaccines to create a new generation of transformative medicines to improve the lives of patients. mRNA medicines are designed to direct the body's cells to produce intracellular, membrane, or secreted proteins that have a therapeutic or preventive benefit with the potential to address a broad spectrum of diseases. Our platform builds on continuous advances in basic and applied mRNA science, delivery technology, and manufacturing, providing us the capability to pursue in parallel a robust pipeline of new development candidates. We are developing therapeutics and vaccines for infectious diseases, immuno-oncology, rare diseases, autoimmune diseases and cardiovascular diseases, independently and with our strategic collaborators.

Within our platform, we develop technologies that enable the development of mRNA medicines for diverse applications. When we identify technologies that we believe could enable a new group of potential mRNA medicines with shared product features, we call that group a "*modality.*" While the programs within a modality may target diverse diseases, they share similar mRNA technologies, delivery technologies, and manufacturing processes to achieve shared product features. The programs within a modality will also generally share similar pharmacology profiles, including the desired dose response, the expected dosing regimen, the target tissue for protein expression, safety and tolerability goals, and pharmaceutical properties. Programs within a modality often have correlated technology risk, but because they pursue diverse diseases they often have uncorrelated biology risk. We have created six modalities to date:

- prophylactic vaccines;
- systemic secreted and cell surface therapeutics;
- cancer vaccines;
- intratumoral immuno-oncology;
- localized regenerative therapeutics; and
- systemic intracellular therapeutics.

We have designated our prophylactic vaccines and systemic secreted and cell surface therapeutics modalities as our "core modalities". In these core modalities, our strategy is to invest in additional development candidates using our accumulated innovations in technology, our process insights and our preclinical and clinical experience. Our exploratory modalities continue to be a critical part of advancing our strategy to maximize the application of our potential mRNA medicines.

Business Highlights

Moderna COVID-19 Vaccine

On December 18, 2020, the U.S. FDA authorized the emergency use of the Moderna COVID-19 Vaccine in individuals 18 years of age or older. We have also received authorization for our COVID-19 vaccine from health agencies in Canada, Israel, the European Union, the United Kingdom, Switzerland, Singapore, Qatar, Taiwan, and the Philippines, and from the World Health Organization. Additional authorizations are currently under review in other countries and by the World Health Organization. We plan to initiate the rolling submission of data to the U.S. FDA for a Biologics License Application for our COVID-19 vaccine in May 2021.

We have entered into supply agreements with the U.S. Government and several other governments outside the United States for the supply of our COVID-19 vaccine. The agreements are generally subject to receipt of authorization or approval for the use and distribution of the vaccine from the relevant regulatory authority in each jurisdiction. Under these agreements, we are entitled to upfront deposits for our COVID-19 vaccine supply, initially recorded as deferred revenue. As of March 31, 2021, we had approximately $7.5 billion in deferred revenue in connection with the supply agreements with the U.S. Government and other governments, which will be recognized as revenue when revenue recognition criteria have been met.

For the first quarter of 2021, we delivered approximately 88 million doses of our COVID-19 vaccine to the U.S. government and approximately 14 million doses to other governments, and recognized $1.7 billion in product sales.

In the fourth quarter of 2020, we delivered approximately 17 million doses of our COVID-19 vaccine to the U.S. government. Through April 12, 2021, we cumulatively delivered approximately 132 million doses globally, including approximately 117 million doses to the U.S. government and approximately 15 million doses delivered to other governments from our ex-U.S. supply chain. We remain on track to deliver the second 100 million doses to the U.S. government by end of May 2021 followed by another 100 million additional doses by end of July 2021.

On April 29, 2021, we announced additional investments to facilitate the increased supply of our COVID-19 vaccine from our own and partnered manufacturing facilities. We anticipate these investments will increase our global 2022 capacity for the vaccine to up to 3 billion doses, depending upon the mix between the COVID-19 vaccine at the current 100 µg dose level and potentially lower doses of our variant booster candidates and pediatric vaccines, which are subject to further regulatory approval and authorization. These investments are expected to facilitate a doubling of drug substance manufacturing from Lonza's Switzerland-based facility, a more than doubling of formulation, fill and finish and drug substance manufacturing at Rovi's Spain-based facility, as well as a 50% increase of drug substance at Moderna's facilities in the U.S. When completed, the investments are expected to also result in an increase in safety stock of raw materials and finished product used to deliver committed volumes. These forecasted increases to our supply are subject in part to performance by our manufacturing partners, which will require ramping-up capabilities at their own facilities and the hiring of qualified manufacturing personnel. On April 29, 2021, we also announced an increase in our projected supply of the COVID-19 vaccine for 2021 to between 800 million and 1 billion doses.

Moderna COVID-19 Vaccine Clinical Studies

An updated review of adjudicated cases has identified over 900 cases of COVID-19 in the Phase 3 clinical trial for mRNA-1273, which we refer to as the COVE study, as of April 9, 2021, including over 100 cases of severe COVID-19, as defined in the protocol, with a median follow-up of approximately 6 months after the second dose. Vaccine efficacy starting two weeks following the second dose and based on the updated adjudicated cases remains consistent with prior updates, including greater than 90% efficacy against all cases of COVID-19, and greater than 95% efficacy against severe cases of COVID-19. The COVE study is ongoing and reported results remain preliminary.

The Phase 2/3 TeenCOVE study of mRNA-1273 in adolescents ages 12-17 years has completed enrollment in the U.S. An initial analysis of 3,235 participants randomized 2:1 in the TeenCOVE study showed a vaccine efficacy rate of 96% in seronegative participants who received at least one injection. The analysis included 12 cases starting 14 days after the first dose and based on the CDC definition of COVID-19. Because the incidence rate of COVID-19 is lower in adolescents, the case definition is less stringent than for the Phase 3 COVE study, resulting in vaccine efficacy against milder disease. The median duration for follow-up in this initial analysis was 35 days following the second dose. mRNA-1273 was generally well tolerated. The majority of adverse events were mild or moderate in severity. No serious safety concerns have been identified to date. The most common solicited local adverse event was injection site pain. The most common solicited systemic adverse events after the second dose of mRNA-1273 were headache, fatigue, myalgia and chills. We are continuing to collect data in the TeenCOVE study and are in discussions with regulators about a potential amendment to our regulatory filings.

The Phase 2/3 KidCOVE study of mRNA-1273 in the pediatric population ages 6 months-11 years is currently enrolling. We expect to enroll 6,750 healthy pediatric participants in the U.S. and Canada into this two-part, dose escalation study. In Part 1, each participant ages 2 years to less than 12 years may receive one of two dose levels (50 µg or 100 µg). Also in Part 1, each participant ages six months to less than 2 years may receive one of three dose levels (25 µg, 50 µg and 100 µg). An interim analysis will be conducted to determine which dose will be used in Part 2, the placebo-controlled expansion portion of the study.

Variant-Specific Booster Candidates

On February 24, we announced that we had completed manufacturing of clinical trial material for our variant-specific vaccine candidate, mRNA-1273.351, against the SARS-CoV-2 variant known as B.1.351 (first identified in the Republic of South Africa) and that this vaccine had been shipped to the National Institutes of Health (NIH) for a Phase 1 clinical trial to be led and funded by the NIH's National Institute of Allergy and Infectious Diseases. We are also developing a multivalent booster candidate, mRNA-1273.211, which combines mRNA-1273 (Moderna's authorized vaccine against ancestral strains) and mRNA-1273.351 in a single vaccine.

Initial data from our Phase 2 study showed that a single 50 µg dose of mRNA-1273 or mRNA-1273.351 given as a booster to previously vaccinated individuals increased neutralizing antibody titer responses against SARS-CoV-2, B.1.351 and P.1 (another variant of concern, first identified in Brazil). A booster dose of mRNA-1273.351, the Company's strain-matched booster, achieved higher neutralizing antibody titers against the B.1.351 variant of concern than a booster dose of mRNA-1273. Safety and tolerability profiles following third dose booster injections of 50 µg of mRNA-1273 or mRNA-1273.351 were generally comparable to those observed after the second dose of mRNA-1273 in the previously reported Phase 2 and Phase 3 studies. Our Phase 2 study to evaluate three approaches to boosting is ongoing.

In preclinical studies, both mRNA-1273.351 and mRNA-1273.211 demonstrated increased neutralizing titers against SARS-CoV-2 variants of concern in mice. Specifically, this preclinical data confirms improved neutralizing titers with the mRNA-1273.351 vaccine primary series. The multi-valent vaccine provided the broadest level of immunity in mice. A boost at 6 months with mRNA-1273.351 closed the neutralizing titer gap for the variants of concern. Following the mRNA-1273.351 boost, neutralizing titers were comparable between the ancestral strain and the new B.1.351 variant.

Key Updates for our Other Development Candidates

- **CMV vaccine (mRNA-1647):** Our vaccine against cytomegalovirus, or CMV (mRNA-1647) is a vaccine combining six mRNAs in a single vial, which encode for two antigens located on the surface of CMV: five mRNAs encoding the subunits that form the membrane-bound pentamer complex and one mRNA encoding the full-length membrane-bound glycoprotein B (gB). Both the pentamer and gB are essential for CMV to infect barrier epithelial surfaces and gain access to the body. mRNA-1647 is designed to produce an immune response against both the pentamer and gB for the prevention of CMV infection.

  In April 2021, we announced seven-month data from the Phase 2 study of mRNA-1647 at the 50 µg, 100 µg and 150 µg dose levels. mRNA-1647 was generally well tolerated. The most common solicited local adverse reaction (AR) was injection site pain and the most common solicited systemic ARs were headache, fatigue, myalgia, arthralgia and chills. Rates of Grade 3 solicited ARs after the third vaccination were similar to, or lower than the rates of Grade 3 solicited ARs after the second vaccination. In CMV-seronegative participants in mRNA-1647 treatment groups after the third vaccination, neutralizing antibody geometric mean titers (GMTs) against epithelial cell infection were at least 20-fold higher than the baseline GMT of the CMV-seropositive group, and neutralizing antibody GMTs against fibroblast infection approximated the baseline GMT of the CMV-seropositive group. In CMV positive participants in mRNA-1647 treatment groups after the third vaccination, neutralizing antibody GMTs against epithelial cell infection increased to at least 6.8-fold over baseline, and neutralizing antibody GMTs against fibroblast infection increased to approximately 2-fold over baseline.

  Based on the interim analysis of the Phase 2 study, the 100 µg dose has been chosen for the Phase 3 pivotal study for mRNA-1647, which will evaluate the prevention of primary CMV infection in seronegative women ages 16-40 years. We plan to enroll approximately 8,000 participants from approximately 150 sites across the U.S., Europe and Asia-Pacific into the Phase 3 study, which is expected to begin in 2021. Moderna owns worldwide commercial rights for mRNA-1647.

- **Pediatric respiratory syncytial virus (RSV) vaccine (mRNA-1345):** mRNA-1345 is a vaccine against RSV encoding for a prefusion F glycoprotein, which elicits a superior neutralizing antibody response compared to the postfusion state. The Phase 1 study of mRNA-1345 to evaluate the tolerability and reactogenicity of mRNA-1345 in younger adults, older adults and children is ongoing. All four cohorts of younger adults (ages 18-49 years) are fully enrolled. Dosing in the older adult cohort (ages 65-79 years) is ongoing. The age range of toddlers in this de-escalation Phase 1 study is 12-59 months.

In April 2021, we announced the first interim analysis of the Phase 1 study of mRNA-1345, through 1-month post-vaccination, of the younger adult cohorts. A single mRNA-1345 vaccination of 50 µg (N=19) or 100 µg (N=20) was generally well-tolerated in younger adults (ages 18-49 years). Ten participants received placebo. The most common local solicited adverse reaction was injection site pain, and the most common systemic solicited adverse reactions were headache, fatigue and myalgia. The majority of solicited adverse reactions occurred within 1-3 days after vaccination and resolved after 1-4 days. There were no deaths, no severe adverse events, no study discontinuations due to adverse events, and no adverse events that led to a study pause. mRNA-1345 was shown to increase RSV neutralizing antibodies in seropositive younger adults. Neutralizing antibodies were confirmed to be present at baseline in all participants, as expected. A single vaccination of mRNA-1345 at the 50 or 100 µg dose level boosted neutralizing antibody titers against both serotypes of RSV-A and RSV-B with no apparent dose response. At month 1, the geometric mean fold rise in neutralizing antibody relative to baseline was at least 20.5 for RSV-A and at least 11.7 for RSV-B. At the 100 µg dose level, the geometric mean fold rise (95% CI) in RSV-A neutralizing antibody titer at month 1 relative to baseline was 2.7 (2.1, 3.4) with mRNA-1777, our previous RSV vaccine candidate, compared to 21.0 (13.9, 31.8) with mRNA-1345. Both mRNA-1777 and mRNA-1345 encode for the prefusion RSV-F. We also intend to evaluate the potential of combinations of mRNA-1345 with our vaccines against other respiratory pathogens in children and separately in older adults. There is no approved vaccine for RSV. Moderna owns worldwide commercial rights to mRNA-1345.

- **Seasonal influenza (flu) (mRNA-1010, mRNA-10202 and mRNA-1030):** In January 2021, we announced our plans to test three development candidates for a seasonal influenza vaccine (mRNA-1010, mRNA-1020 and mRNA-1030), which will allow us to identify a candidate to take forward into pivotal efficacy studies. The vaccine will be administered as a single dose and will aim to elicit protection from all seasonal influenza viruses. Our first-generation flu program will evaluate multiple candidates comprising multiple antigen combinations against the four seasonal viruses recommended by the World Health Organization. In the future we also plan to evaluate the combination of a seasonal influenza vaccine with vaccines against other respiratory viruses with similar epidemiology. We also plan to explore potential combination vaccines against flu, SARS-CoV-2, RSV and human metapneumovirus (hMPV). We expect to begin a Phase 1 clinical trial for the seasonal influenza program in 2021.

- **Epstein-Barr virus (EBV) vaccine (mRNA-1189):** mRNA-1189 is a vaccine against EBV containing five mRNAs that encode viral proteins (gp350, gB, gp42, gH and gL) in EBV. Similar to our CMV vaccine (mRNA-1647), the viral proteins in mRNA-1189 are expressed in their native membrane-bound form for recognition by the immune system. We are planning to begin a Phase 1 study of mRNA-1189 in 2021. There is no approved vaccine for EBV. Moderna owns worldwide commercial rights to mRNA-1189.

- **Propionic acidemia (PA) (mRNA-3927):** The first participant has been dosed in the Phase 1 clinical trial for mRNA-3927, our therapy for the treatment of propionic acidemia, or PA. The Phase 1 study is designed to evaluate the safety and tolerability of mRN-3927 in patients with PA. PA, is a rare, life-threatening, inherited metabolic disorder due to a defect in the mitochondrial enzyme propionyl-CoA carboxylase, or PCC. It primarily affects the pediatric population. There is no approved therapy for PA, including no approved enzyme replacement therapy. We have received Rare Pediatric Disease Designation and Orphan Drug Designation from the FDA and Orphan Drug Designation from the European Commission for the PA program. The FDA has also granted Fast Track designation to mRNA-3927. We implemented a novel design for the Phase 1/2 study in 2020 to identify the optimal dose in the most efficient manner and to make the study less burdensome on patients, their families and clinical partners. This is the first development candidate to enter the clinic in our intracellular therapeutics modality.

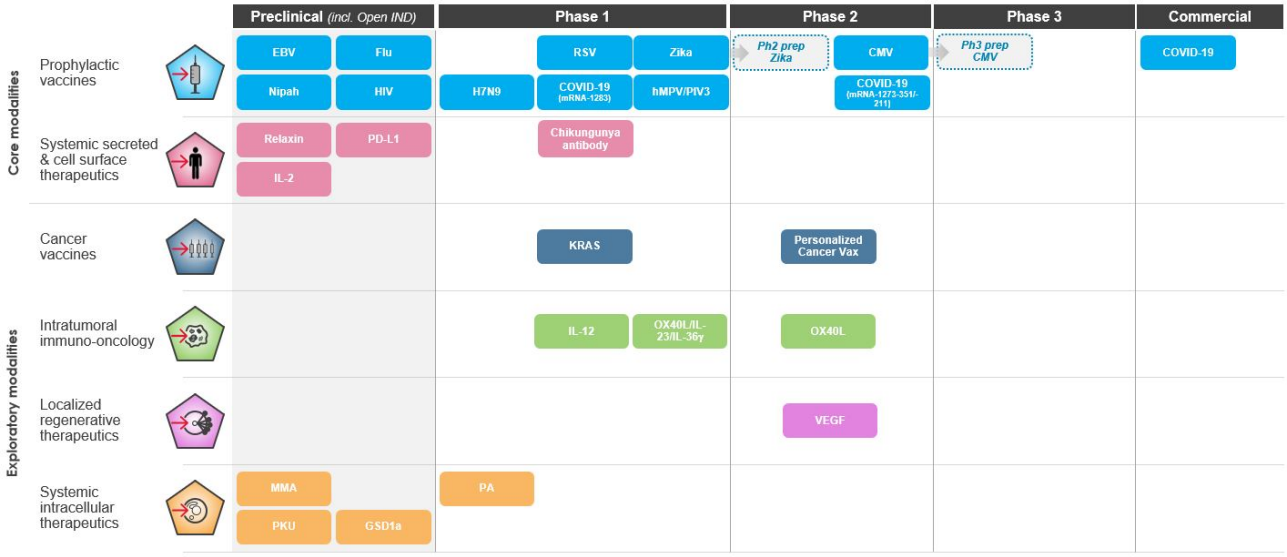
- **hMPV/PIV3 vaccine (mRNA-1653):** The first 10 subjects in the Phase 1b age de-escalation clinical trial of mRNA-1653 were enrolled and dosed prior to a COVID-19 related pause. The first two cohorts in the Phase 1b trial are fully enrolled and two further cohorts are enrolling.

- **Human immunodeficiency virus (HIV) (mRNA-1644 and mRNA-1574):** In January 2021, we announced two vaccine programs against HIV. mRNA-1644 is a novel approach to HIV vaccine strategy in humans designed to elicit broadly neutralizing HIV-1 antibodies (bNAbs) and is being developed in collaboration with the International AIDS Vaccine Initiative (IAVI) and the Bill and Melinda Gates Foundation (BMGF). A Phase 1 study for mRNA-1644 will use iterative human testing to validate the approach and antigens and multiple novel antigens will be used for germline-targeting and immuno-focusing. A second approach, mRNA-1574, is being evaluated in collaboration with the National Institutes of Health (NIH) and includes multiple native-like trimer antigens. We currently expect to begin phase 1 clinical trials for both mRNA-1644 and mRNA-1574 in 2021.

- **Nipah virus (mRNA-1215):** In January 2021, we announced a program to develop a vaccine against the Nipah virus, a zoonotic virus transmitted to humans from animals, contaminated food, or through direct human-to-human transmission and causes a range of illnesses including fatal encephalitis. The vaccine is being co-developed with the NIH's Vaccine Research Center. We intend to initiate a Phase 1 clinical trial of mRNA-1215 in 2021, and anticipate the study will be sponsored by the NIH.

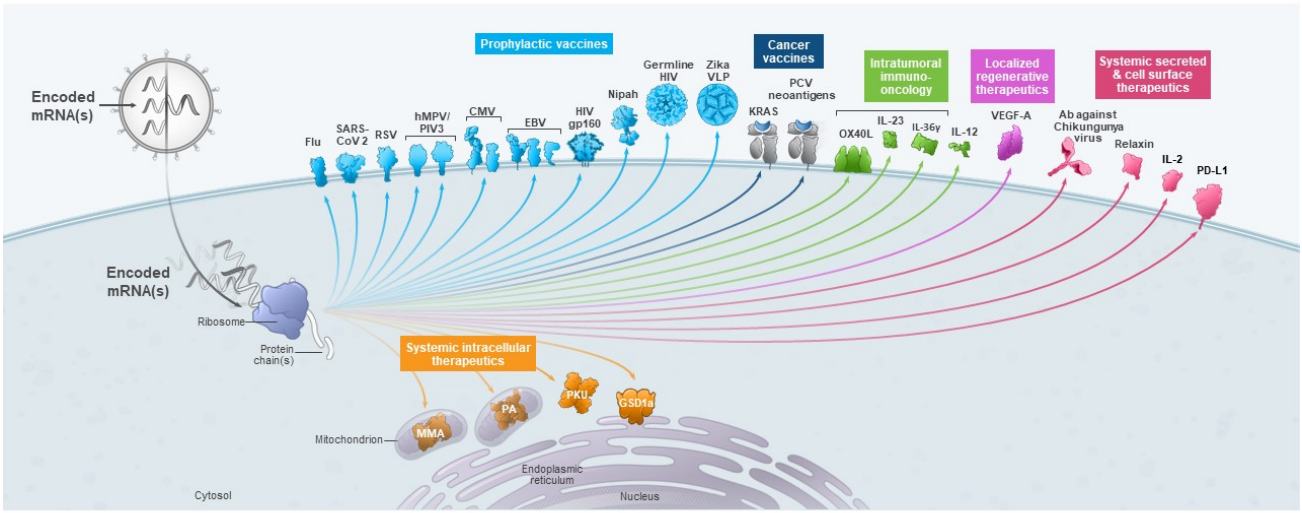
Our Pipeline

The following chart shows our current pipeline of 24 development programs, grouped into modalities—first our two core modalities where we believe we have reduced the technology risk, followed by our four exploratory modalities in which we are continuing to investigate the clinical use of mRNA medicines.



Abbreviations: GSD1a, Glycogen storage disease type 1a; H7N9, H7N9 influenza vaccine; IL-2, Interleukin 2: IL-12, interleukin 12; IL-23, interleukin 23; IL-36γ, interleu; OX40L, wildtype OX40 ligand; PD-L1, programmed death-ligand-1; VEGF-A, vascular endothelial growth factor A.

The breadth of biology addressable using mRNA technology is reflected in our current development pipeline of 24 programs. The diversity of proteins made from mRNA within our development pipeline is shown in the figure below.



We have developed six modalities, which are summarized as follows:

- **Prophylactic vaccines:** Our prophylactic vaccines modality currently includes ten programs, six of which have entered into clinical trials and demonstrated desired pharmacology, in the form of immunogenicity, in positive Phase 1 clinical trials: H7N9 vaccine (mRNA-1851), RSV vaccine (mRNA-1777), human metapneumovirus (hMPV)/parainfluenza virus type 3 (PIV3) vaccine (mRNA-1653), Zika vaccine (mRNA-1893), CMV vaccine (mRNA-1647) and COVID-19 vaccine (mRNA-1273). We have ongoing Phase 1 trials for the Zika vaccine (mRNA-1893), pediatric RSV vaccine (mRNA-1345), hMPV/PIV3 vaccine (mRNA-1653) and Merck is conducting a Phase 1 trial for an additional RSV vaccine (mRNA-1172), which will be transitioned to Moderna after completion. Our COVID-19 vaccine (mRNA-1273) is described in detail above. Two other vaccines being developed as part of public health programs—H10N8 vaccine (mRNA-1440) and Chikungunya vaccine (mRNA-1388)—also produced positive Phase 1 clinical trial results, but are not being further developed without government or other funding. Our four pre-clinical programs within our prophylactic vaccines modality are for Epstein-Barr virus (mRNA-1189), seasonal influenza (mRNA-1010, mRNA-1020 and mRNA-1030), Nipah virus (mRNA-1215) and HIV (mRNA-1644 and mRNA-1574).

- **Systemic secreted and cell surface therapeutics:** We have four systemic secreted and cell surface therapeutics development candidates in our pipeline. Our secreted programs include our antibody against Chikungunya virus (mRNA-1944), Relaxin (mRNA-0184) for cardiac disorders, PD-L1 (mRNA-6981) for autoimmune hepatitis and IL-2 (mRNA-6231) for autoimmune disorders. Our antibody against Chikungunya virus (mRNA-1944) has had positive Phase 1 readouts to date. The remaining programs for Relaxin (mRNA-0184), PD-L1 (mRNA-6981) and IL-2 (mRNA-6231) are currently in preclinical development.

- **Cancer vaccines:** We are currently developing two programs within our cancer vaccines modality. Our personalized cancer vaccine program mRNA-4157 is being developed in collaboration with Merck and is in a multiple-arm Phase 1 trial and a randomized Phase 2 trial. Our second program within this modality, mRNA-5671, is a KRAS vaccine. Our strategic collaborator Merck has a Phase 1 clinical trial ongoing for mRNA-5671.

- **Intratumoral immuno-oncology:** We have three programs in this modality. The first program in this modality, OX40L (mRNA-2416), was designed to overcome technological challenges in advancing this modality, including engineering the mRNA sequence to minimize off-target effects, utilizing our proprietary lipid nanoparticles (LNPs) to enhance safety and tolerability, and to demonstrate expression of a membrane protein in patients. OX40L (mRNA-2416) is currently being evaluated in an ongoing Phase 1/2 trial in the United States and Israel, and protein expression has been demonstrated in a number of patients. Our second program, OX40L/IL-23/IL-36γ (Triplet) (mRNA-2752), is currently in a Phase 1 study that is designed as an open-label, multicenter study of intratumoral injections of Triplet (mRNA-2752) alone or in combination with durvalumab (anti-PD-L1) with sites in the United States and Israel. Our third program, IL-12 (MEDI1191), is being developed in collaboration with AstraZeneca. AstraZeneca is currently enrolling an open-label multicenter Phase 1 clinical trial of intratumoral injections of MEDI1191 alone and in combination with the checkpoint inhibitor, durvalumab.

- **Localized regenerative therapeutics:** Our localized VEGF-A program, AZD8601, which is being developed by AstraZeneca, has completed a Phase 1a/b trial to describe its safety, tolerability, protein production, and activity in diabetic patients. The study has met its primary objectives of describing safety and tolerability and secondary objectives of demonstrating protein production and changes in blood flow post AZD8601 administration. We believe these data provide clinical proof of mechanism for our mRNA technology outside of the vaccine setting. AstraZeneca has initiated a Phase 2a study of AZD8601 for VEGF-A for ischemic heart disease in patients undergoing coronary artery bypass grafting (CABG) surgery with moderately impaired systolic function, and the trial is ongoing.

- **Systemic intracellular therapeutics:** We have four systemic intracellular therapeutics development candidates in our pipeline. Our intracellular programs address propionic acidemia, or PA (mRNA-3927), methylmalonic acidemia, or MMA (mRNA-3705), phenylketonuria, or PKU (mRNA-3283), and glycogen storage disorder type 1a, or GSD1a (mRNA-3745). The first patient has been dosed in the Phase 1 clinical trial of mRNA-3927, our intracellular program to address PA. We plan to file new IND and CTA applications for our next-generation MMA candidate, mRNA-3705. mRNA-3705 received a Breakthrough Designation from the FDA. PKU (mRNA-3283) and GSD1a (mRNA-3745) are currently in preclinical development.

Financial Operations Overview

Revenue

The following table summarizes revenue for each period presented (in millions):

	Three Months Ended March 31,	
	2021	2020
Revenue:		
Product sales	$ 1,733	$ —
Grant revenue	194	4
Collaboration revenue	10	4
Total revenue	$ 1,937	$ 8

We began to record product sales for our COVID-19 vaccine subsequent to its authorization for emergency use by the FDA and Health Canada in December 2020. For the three months ended March 31, 2021, we recognized $1.7 billion of product sales from our COVID-19 vaccine, of which $1.4 billion was generated in the United States and $375 million was generated from the rest of the world.

Other than product sales, our revenue has been primarily derived from government-sponsored and private organizations including BARDA, DARPA and the Gates Foundation and from strategic alliances with AstraZeneca, Merck and Vertex to discover, develop, and commercialize potential mRNA medicines.

Grant revenue was comprised as follows for the periods presented (in millions):

	Three Months Ended March 31,	
	2021	2020
Grant revenue:		
BARDA [(1)]	$ 192	$ 3
Other	2	1
Total grant revenue	$ 194	$ 4

[(1)] For the three months ended March 31, 2021, $190 million of BARDA grant revenue was related to our mRNA-1273 program and $2 million was related to our Zika vaccine program.

Collaborative revenue from our strategic alliances was comprised as follows for the periods presented (in millions):

	Three Months Ended March 31,	
	2021	2020
Collaboration revenue:		
AstraZeneca	$ —	$ 1
Merck	—	1
Vertex	9	2
Other	1	—
Total collaboration revenue	$ 10	$ 4

We expect our product sales to significantly increase in 2021 compared to 2020. As of March 31, 2021, we had signed supply agreements of approximately $17.3 billion for the future supply of our COVID-19 vaccine and had deferred revenue of $7.5 billion associated with customer deposits received or billable under these agreements. Additional supply agreements have been agreed upon since March 31, 2021, and others are under discussion for 2021 and 2022 deliveries. In addition, we expect to continue to receive funding from our contract with BARDA. As of March 31, 2021, the remaining available funding net of revenue earned was $317 million. On April 18, 2021, we signed an amendment to our agreement with BARDA to increase total reimbursements by up to an additional $236 million. To the extent that existing or potential future products generate revenue, our revenue may vary due to many uncertainties in the independent development of our mRNA medicines and pursuant to our strategic alliances and other factors.

Cost of sales

Cost of Sales includes raw materials, personnel and facility and other costs associated with manufacturing our commercial product. These costs include production materials, production costs at our manufacturing facilities, third-party manufacturing costs, and final formulation and packaging costs. Cost of Sales also includes shipping costs and royalties payable to third parties based on sales of our products.

Research and development expenses

The nature of our business and primary focus of our activities generate a significant amount of research and development costs.
Research and development expenses represent costs incurred by us for the following:

- cost to develop our platform;
- discovery efforts leading to development candidates;
- preclinical, nonclinical, and clinical development costs for our programs;
- cost to develop our manufacturing technology and infrastructure; and
- digital infrastructure costs.

The costs above comprise the following categories:

- personnel-related expenses, including salaries, benefits, and stock-based compensation expense;
- expenses incurred under agreements with third parties, such as consultants, investigative sites, contract research organizations (CROs) that conduct our preclinical studies and clinical trials, and in-licensing arrangements;
- expenses associated with developing manufacturing capabilities and acquiring materials for preclinical studies and clinical trials, including both internal manufacturing and third-party contract manufacturing organizations (CMOs);
- expenses incurred for the procurement of materials, laboratory supplies, and non-capital equipment used in the research and development process; and
- facilities, depreciation, and amortization, and other direct and allocated expenses incurred as a result of research and development activities.

We use our employee and infrastructure resources for the advancement of our platform, and for discovering and developing programs. Due to the number of ongoing programs and our ability to use resources across several projects, indirect or shared operating costs incurred for our research and development programs are generally not recorded or maintained on a program- or modality-specific basis. The following table reflects our research and development expenses, including direct program-specific expenses summarized by modality and indirect or shared operating costs summarized under other research and development expenses during the three months ended March 31, 2021 and 2020 (in millions):

	Three Months Ended March 31,	
	2021	2020
Program expenses by modality:		
Prophylactic vaccines	$ 248	$ 9
Cancer vaccines	17	4
Intratumoral immuno-oncology	6	2
Systemic secreted and cell surface therapeutics	1	1
Systemic intracellular therapeutics	5	7
Total program-specific expenses by modality [(1)]	277	23
Other research and development expenses:		
Discovery programs	13	10
Platform research	25	22
Technical development and unallocated manufacturing expenses	33	29
Shared discovery and development expenses	39	19
Stock-based compensation	14	12
Total research and development expenses	$ 401	$ 115

(1) Include a total of 30 and 24 development candidates at March 31, 2021 and 2020, respectively. Program-specific expenses include external costs and allocated manufacturing costs of pre-launch inventory, mRNA supply and consumables, and are reflected as of the beginning of the period in which the program was internally advanced to development or removed if development was ceased.

A *"modality"* refers to a group of programs with common product features and the associated combination of enabling mRNA technologies, delivery technologies, and manufacturing processes. The program-specific expenses by modality summarized in the table above include expenses we directly attribute to our programs, which consist primarily of external costs, such as fees paid to outside consultants, central laboratories, investigative sites, and CROs in connection with our preclinical studies and clinical trials, CMOs, and allocated manufacturing costs of inventory, mRNA supply and consumables. Costs to acquire and manufacture inventory, mRNA supply for preclinical studies and clinical trials are recognized and included in unallocated manufacturing expenses when incurred, and subsequently allocated to program-specific manufacturing costs after completion of the program-specific production. The timing of allocating manufacturing costs to the specific program varies depending on the program development and production schedule. We generally do not allocate personnel-related costs, including stock-based compensation, costs associated with our general platform research, technical development, and other shared costs on a program-specific basis. These costs were therefore excluded from the summary of program-specific expenses by modality.

Discovery program expenses are costs associated with research activities for our programs in the preclinical discovery stage, and primarily consist of external costs for CROs and lab services, and allocated manufacturing cost of preclinical mRNA supply and consumables.

Platform research expenses are mainly costs to develop technical advances in mRNA science, delivery science, and manufacturing process design. These costs include personnel-related costs, computer equipment, facilities, preclinical mRNA supply and consumables, and other administrative costs to support our platform research. Technology development and unallocated manufacturing expenses are primarily related to non-program-specific manufacturing process development and manufacturing costs.

Shared discovery and development expenses are research and development costs such as personnel-related costs and other costs, which are not otherwise included in development programs, discovery programs, platform research, technical development and unallocated manufacturing expenses, stock-based compensation, and other expenses.

The largest component of our total operating expenses has historically been our investment in research and development activities, including development of our platform, mRNA technologies, and manufacturing technologies. We expense research and development costs as incurred and cannot reasonably estimate the nature, timing, and estimated costs required to complete the development of the development candidates and investigational medicines we are currently developing or may develop in the future. There are numerous risks and uncertainties associated with the research and development of such development candidates and investigational medicines, including, but not limited to:

- scope, progress, and expense of developing ongoing and future development candidates and investigational medicines;
- entry in and completion of related preclinical studies;
- enrollment in and completion of subsequent clinical trials;
- safety and efficacy of investigational medicines resulting from these clinical trials;
- changes in laws or regulations relevant to the investigational medicines in development;
- receipt of the required regulatory approvals; and
- commercialization, including establishing manufacturing and marketing capabilities.

As we continue to progress mRNA-1273 through the development process toward a Biologics License Application approval, indication expansion of mRNA-1273 and variant-specific vaccine candidates during the current pandemic, we expect to continue to incur significant additional expenses. At this time, the magnitude of these potential expenditures is not known. In connection with the BARDA agreement to accelerate development of mRNA-1273, significant grant revenue and expenses are expected in 2021. BARDA's funding is expected to offset those expenses that are covered under the BARDA agreement, subject to our obtaining reimbursement from BARDA. As of March 31, 2021, the remaining available funding net of revenue earned was $317 million. On April 18, 2021, we signed an amendment to our agreement with BARDA, increasing the potential reimbursements thereunder by up to an additional $236 million in connection with the conduct of the Phase 3 clinical trial for mRNA-1273 and pharmacovigilance efforts.

Changes in expectations or outcomes of any of the known or unknown risks and uncertainties may materially impact our expected research and development expenditures. Continued research and development is central to the ongoing activities of our business. Investigational medicines in later stages of clinical development, such as our CMV vaccine (mRNA-1647) and our COVID-19 vaccine, generally have higher development costs than those in earlier stages of clinical development, primarily due to the increased size and duration of later-stage clinical trials. We expect our research and development costs to continue to increase in the foreseeable future as our investigational medicines progress through the development phases and identify and develop additional programs. There are numerous factors associated with the successful commercialization of any of our investigational medicines, including future trial

design and various regulatory requirements, many of which cannot be determined with accuracy at this time due to the early stage of development of our investigational medicines. Moreover, future commercial and regulatory factors beyond our control will impact our clinical development programs and plans.

Selling, general and administrative expenses

We started to incur sales and marketing expenses in the fourth quarter of 2020 to prepare for commercial operations in connection with the sale of our COVID-19 vaccine. Selling, general and administrative expenses consist primarily of personnel-related costs, including stock-based compensation, for executives, finance, legal, human resources, business development and other administrative and operational functions, professional fees, accounting and legal services, sales and marketing, information technology and facility-related costs, and expenses associated with obtaining and maintaining intellectual property, or IP. These costs relate to the operation of the business, unrelated to the research and development function, or any individual program.

We anticipate selling, general and administrative expenses will increase as we continue to expand the number of programs in development and to establish our commercial activities both within and outside the United States. We have already incurred additional expenses related to building out a regulatory, sales and marketing team to support the sale, marketing and distribution of our COVID-19 vaccine. If we obtain regulatory approval for any of our other investigational medicines, and do not enter into one or more third-party commercialization collaboration and manufacturing arrangements, we will incur significant additional expenses related to building out these functions.

We have a broad IP portfolio covering our development and commercialization of mRNA vaccine and therapeutic programs, including those related to mRNA design, formulation, and manufacturing platform technologies. We regularly file patent applications to protect innovations arising from our research and development. We also hold trademarks and trademark applications in the United States and foreign jurisdictions. Costs to secure and defend our IP are expensed as incurred and are classified as selling, general and administrative expenses.

Interest income

Interest income consists of interest generated from our investments in cash and cash equivalents, money market funds, and high-quality fixed income securities.

Other expense, net

Other expense, net consists of interest expense, gains (losses) from the sale of investments in marketable securities, foreign currency transaction and remeasurement gains (losses), and other income and expense unrelated to our core operations. Interest expense is primarily derived from our finance leases related to our Moderna Technology Center manufacturing facility (MTC South), Moderna Technology Center North (MTC North), and certain contract manufacturing service agreements.

We expect to continue to incur significant expenses as we continue our research and development and commercialization efforts. We expect our programs to mature and advance to later stage clinical development, and we expect expenses to increase as we seek regulatory approvals for our investigational medicines and commercialize any approved mRNA medicines. If we fail to sustain profitability on a continuing basis, we may incur losses in the future.

Critical accounting policies and significant judgments and estimates

Our management’s discussion and analysis of our financial condition and results of operations is based on our condensed consolidated financial statements, which have been prepared in accordance with U.S. generally accepted accounting principles. The preparation of these condensed consolidated financial statements requires us to make judgments and estimates that affect the reported amounts of assets, liabilities, revenues, and expenses and the disclosure of contingent assets and liabilities in our condensed consolidated financial statements. We base our estimates on historical experience, known trends and events, and various other factors that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions. On an ongoing basis, we evaluate our judgments and estimates in light of changes in circumstances, facts, and experience. The effects of material revisions in estimates, if any, are reflected in the condensed consolidated financial statements prospectively from the date of change in estimates.

There have been no material changes in our critical accounting policies and estimates in the preparation of our condensed consolidated financial statements during the three months ended March 31, 2021 compared to those disclosed in our Annual Report on Form 10-K for the year ended December 31, 2020, or 2020 Form 10-K.

Recently issued accounting pronouncements

We have reviewed all recently issued standards and have determined that such standards will not have a material impact on our financial statements or do not otherwise apply to our operations.

Results of operations

The following table summarizes our condensed consolidated statements of operations for each period presented (in millions):

	Three Months Ended March 31,		Change 2021 vs. 2020	
	2021	2020	$	%
Revenue:				
Product revenue	$ 1,733	$ —	$ 1,733	100%
Grant revenue	194	4	190	4750%
Collaboration revenue	10	4	6	150%
Total revenue	1,937	8	1,929	24113%
Operating Expenses:				
Cost of sales	193	—	193	100%
Research and development	401	115	286	249%
Selling, general and administrative	77	24	53	221%
Total operating expenses	671	139	532	383%
Income (loss) from operations	1,266	(131)	1,397	(1066)%
Interest income	4	8	(4)	(50)%
Other expense, net	(10)	(1)	(9)	900%
Income (loss) before income taxes	1,260	(124)	1,384	(1116)%
Provision for income taxes	39	—	39	100%
Net income (loss)	$ 1,221	$ (124)	$ 1,345	(1085)%

Revenue

Total revenue increased by $1.9 billion, for the three months ended March 31, 2021 compared to the same period in 2020, due to increases in product sales and grant revenue. Product revenue was $1.7 billion for the three months ended March 31, 2021 from sales of our COVID-19 vaccine. For the three months ended March 31, 2021, we delivered approximately 88 million doses to the U.S. government and approximately 14 million doses to other governments. We did not have product sales until December 2020. Grant revenue increased by $190 million for the three months ended March 31, 2021 compared to the same period in 2020, mainly driven by an increase in revenue from BARDA related to our mRNA-1273 vaccine development.

Operating expenses

Cost of sales

We began capitalizing our COVID-19 vaccine inventory costs in December 2020, in connection with an EUA from the FDA, and based upon our expectation that these costs would be recoverable through commercialization of our COVID-19 vaccine. Prior to the capitalization of our COVID-19 vaccine inventory costs, such costs were recorded as research and development expenses in the period incurred. We expensed $242 million of pre-launch inventory costs in 2020. Our cost of sales were $193 million, or 11%, of our product sales, for the three months ended March 31, 2021, including third-party royalties of $84 million. A portion of the inventory costs associated with our products sales for the three months ended March 31, 2021 was expensed previously. If inventory sold for the three months ended March 31, 2021 was valued at cost, our cost of sales for the period would have been $377 million, or 22% of our product sales. As of March 31, 2021, we had substantially utilized our zero-cost COVID-19 vaccine inventory. We expect that in future periods our cost of sales as a percentage of our product sales will increase, reflecting the full cost of manufacturing.

Research and development expenses

Research and development expenses increased by $286 million, or 249%, for the three months ended March 31, 2021 compared to the same period in 2020. The increase was primarily attributable to an increase in clinical trial expenses of $219 million, an increase in manufacturing expenses related to our clinical trials of $25 million, an increase in personnel-related costs of $25 million, and an increase in consulting and outside services of $21 million.

These increases for the three-month period in 2021 were largely attributable to increased mRNA-1273 clinical development and headcount.

Selling, general and administrative expenses

Selling, general and administrative expenses increased by $53 million, or 221%, for the three months ended March 31, 2021 compared to the same period in 2020. The increase was mainly due to an increase in consulting and outside services of $17 million, an increase in personnel-related costs of $11 million, an increase in marketing and other expenses of $10 million, an increase in legal and other licensing expenses of $7 million, and an increase in stock-based compensation of $4 million.

These increases for the three-month period in 2021 were primarily attributable to increased headcount and our COVID-19 vaccine commercialization-related activities.

Interest income

Interest income decreased by $4 million, or 50%, for the three months ended March 31, 2021 compared to the same period in 2020. The decrease in interest income from our investments in marketable securities for the three-month period in 2021 was mainly driven by an overall lower interest rate environment.

Other expense, net

The following table summarizes other expense, net for each period presented (in millions):

	Three Months Ended March 31,		Change 2021 vs. 2020	
	2021	2020	$	%
Interest expense	(3)	(1)	(2)	200%
Other expense, net	(7)	—	(7)	100%
Total other expense, net	$ (10)	$ (1)	$ (9)	900%

Total other expense, net increased by $9 million, or 900%, for the three months ended March 31, 2021 compared to the same period in 2020. The increase in other expense, net for the period in 2021 was primarily due to losses in foreign currency transactions and remeasurements, partially offset by our balance sheet hedge activities. Our interest expense is primarily related to our finance leases.

Income taxes

Our provision for income taxes for the three months ended March 31, 2021 was $39 million as compared to an insignificant amount for the same period in 2020. Our effective tax rate for the three months ended March 31, 2021 was lower than the U.S. statutory rate primarily due to the benefit of the foreign derived intangible income deduction, the benefit related to the release of the valuation allowance on the majority of our tax attributes and other deferred tax assets, as well as a discrete item for excess tax benefits related to stock-based compensation. Our effective tax rate for the three months ended March 31, 2020 was lower than the U.S. statutory rate primarily due to the valuation allowance.

On a periodic basis, we reassesses any valuation allowances that we maintain on our deferred tax assets, weighing positive and negative evidence to assess the recoverability of the deferred tax assets. In the first quarter of 2021, we reassessed the valuation allowance noting the increase in positive evidence, including significant revenue growth, expectations regarding future profitability, and successful supply chain and manufacturing capabilities to meet global product demand. After assessing both the positive evidence and negative evidence, we determined it was more likely than not that we will realize the majority of our deferred tax assets. Therefore, in the first quarter of 2021, we released our valuation allowance on the majority of our federal and state net operating losses and other deferred tax assets through the annual effective tax rate (AETR) as income is earned, resulting in a reduction in the AETR. In addition, we have recorded a discrete benefit of $49 million related to the deferred tax assets that we expect to utilize in future years. As of March 31, 2021, we continue to maintain a valuation allowance on certain state tax attributes.

Liquidity and capital resources

As of March 31, 2021, we had cash, cash equivalents and investments of $8.2 billion. Cash, cash equivalents and investments are invested in accordance with our investment policy, primarily with a view to liquidity and capital preservation. Investments, consisting primarily of government and corporate debt securities, are stated at fair value. As of March 31, 2021, we had current and non-current investments of approximately $2.3 billion and $468 million, respectively.

We historically funded our operations primarily from the sale of equity instruments and from proceeds from certain strategic alliance arrangements and grant agreements. Starting in August 2020, we have entered into supply agreements with the U.S. Government and several governments outside the United States for the supply of our COVID-19 vaccine and receive upfront deposits. As of March 31, 2021, we had $7.5 billion in deferred revenue related to customer deposits received or billable. In addition, as of March 31, 2021, BARDA has committed to fund up to $1.0 billion to accelerate the clinical development and manufacturing process scale-up of our COVID-19 vaccine. Under the terms of the agreement, BARDA will fund the advancement of mRNA-1273 to FDA licensure and the scale-up of manufacturing processes. As of March 31, 2021, the remaining available funding net of revenue earned was $317 million. On April 18, 2021, we signed an amendment to our agreement with BARDA to increase total reimbursements by up to an additional $236 million.

We continue to work toward the large-scale technical development, manufacturing scale-up in several countries and larger scale deployment of our COVID-19 vaccine. To support the scale-up, we have expended and will need to continue to expend significant resources and capital.

Cash flow

The following table summarizes the primary sources and uses of cash for each period presented (in millions):

	Three Months Ended March 31,	
	2021	2020
Net cash provided by (used in):		
Operating activities	$ 2,971	$ (106)
Investing activities	(180)	(316)
Financing activities	26	578
Net increase in cash, cash equivalents and restricted cash	$ 2,817	$ 156

Operating activities

We derive cash flows from operations primarily from cash collected from customer deposits related to our COVID-19 vaccine supply agreements as well as certain government-sponsored and private organizations and strategic alliances. Our cash flows from operating activities are significantly affected by our use of cash for operating expenses and working capital to support the business. Prior to 2020, we historically experienced negative cash flows from operating activities as we have invested in mRNA technologies, development pipeline, digital infrastructure, manufacturing technology and infrastructure.

Net cash provided by operating activities for the three months ended March 31, 2021 was $3.0 billion and consisted of net income of $1.2 billion and non-cash adjustments, plus a net change in assets and liabilities of $1.8 billion. Non-cash items included deferred income taxes of $50 million, stock-based compensation of $30 million, depreciation and amortization of $15 million, and amortization of investment premium and discount of $5 million. The net change in assets and liabilities was mainly due to an increase in deferred revenue of $3.7 billion, an increase in accrued liabilities of $285 million, and an increase in other liabilities of $93 million, partially offset by an increase in accounts receivable of $1.8 billion, an increase in inventory of $448 million, an decrease in accounts payable of $15 million, and an increase in prepaid expenses and other assets of $12 million.

Net cash used in operating activities for the three months ended March 31, 2020 was $106 million and consisted of net loss of $124 million and non-cash adjustments of $28 million, minus a net change in assets and liabilities of $10 million. Non-cash items primarily included stock-based compensation of $20 million and depreciation and amortization of $7 million. The net change in assets and liabilities was primarily due to an increase of right-of-use assets relating to operating leases of $14 million and a decrease in accrued liabilities of $12 million, partially offset by an increase in operating lease liabilities of $15 million.

Investing activities

Our primary investing activities consist of purchases, sales, and maturities of our investments and capital expenditures for manufacturing, laboratory, computer equipment and software.

Net cash used in investing activities for the three months ended March 31, 2021 was $180 million, which included purchases of marketable securities of $726 million and purchases of property and equipment of $35 million, partially offset by proceeds from maturities of marketable securities of $339 million and proceeds from sales of marketable securities of $242 million.

Net cash used in investing activities for the three months ended March 31, 2020 was $316 million, which included purchases of marketable securities of $621 million and purchases of property and equipment of $6 million, partially offset by proceeds from maturities of marketable securities of $269 million and proceeds from sales of marketable securities of $42 million.

Financing activities

We generated cash from financing activities of $26 million for the three months ended March 31, 2021, primarily from net proceeds from the issuance of common stock in connection with the exercise of stock options under our equity plans of $28 million.

We generated cash from financing activities of $578 million for the three months ended March 31, 2020, from net proceeds from an equity offering of $550 million and net proceeds from the issuance of common stock in connection with the exercise of stock options under our equity plans of $28 million.

Operation and funding requirements

From our inception to the end of 2020, we incurred significant losses and negative cash flows from operations due to our significant research and development expenses. We generated net income in the first quarter of 2021 in connection with our product sales. We have an accumulated deficit of $1.0 billion as of March 31, 2021. We expect our expenses to increase in connection with our ongoing activities, particularly as we continue research and development of our development candidates and clinical activities for our investigational medicines. We also expect our expenses to increase associated with manufacturing costs, including our arrangements with our international supply and manufacturing partners. Our ongoing work on mRNA-1273 will require significant cash outflows during 2021, most of which may not be reimbursed or otherwise paid for by our partners or collaborators.

We believe that our cash, cash equivalents, and investments as of March 31, 2021, will be sufficient to enable us to fund our projected operations through at least the next 12 months from the issuance of our financial statements. We are subject to all the risks related to the development and commercialization of novel medicines, and we may encounter unforeseen expenses, difficulties, complications, delays, and other unknown factors including expenses related to the ongoing coronavirus pandemic, which may adversely affect our business. Our forecast of the period of time through which our financial resources will be adequate to support our operations is a forward-looking statement and involves risks and uncertainties, and actual results could vary as a result of a number of factors. We have based this estimate on assumptions that may prove to be wrong, and we could utilize our available capital resources sooner than we currently expect.

If we are unable to sustain profitability on a continuing basis, we may be required to finance future cash needs through a combination of public or private equity offerings, structured financings and debt financings, government funding arrangements, potential future strategic alliances from which we receive upfront fees, milestone payments, and other forms of consideration, and marketing, manufacturing, distribution and licensing arrangements. If we are required to finance future cash needs, additional capital may not be available on reasonable terms, if at all. If we are unable to raise additional capital in sufficient amounts or on terms acceptable to us, we may have to significantly delay, scale back, or discontinue the development or commercialization of one or more of our investigational medicines, or slow down or cease work on one or more of our programs. If we raise additional funds through the issuance of additional equity or debt securities, it could result in dilution to our existing stockholders or increased fixed payment obligations, and any such securities may have rights senior to those of our common stock. If we incur indebtedness, we could become subject to covenants that would restrict our operations and potentially impair our competitiveness, such as limitations on our ability to incur additional debt, limitations on our ability to acquire, sell or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business. If we raise funds through strategic alliances or marketing, distribution, or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams, research programs, or investigational medicines or grant licenses on terms that may not be favorable to us. Any of these events could significantly harm our business, financial condition, and prospects.

Contractual Obligations

As of March 31, 2021, other than disclosed at Note 11 and Note 12 to our condensed consolidated financial statements, there have been no material changes to our contractual obligations and commitments from those described under “Management’s Discussion and Analysis of Financial Condition and Results of Operations” included in our 2020 Form 10-K.

Off balance sheet arrangements

As of March 31, 2021, we did not have any off-balance sheet arrangements, as defined in Item 303(a)(4)(ii) of Regulation S-K.

Item 3. Quantitative and Qualitative Disclosures about Market Risk

Interest Rate Risk

As of March 31, 2021 and December 31, 2020, we had cash, cash equivalents, and investments in marketable securities of $8.2 billion and $5.2 billion, respectively. Our investment portfolio is comprised of money market funds and marketable debt securities (including U.S. Treasury securities, debt securities of U.S. government agencies and corporate entities, and commercial paper), which are classified as available-for-sale securities. Our primary investment objectives are the preservation of capital and the maintenance of liquidity and our investment policy defines allowable investments based on quality of the institutions and financial instruments designed to minimize risk exposure. Our exposure to interest rate sensitivity is affected by changes in the general level of U.S. interest rates. Our available-for-sale securities are subject to interest rate risk and will fall in value if market interest rates increase. We generally hold investments in marketable debt securities to maturity to limit our exposure to interest rate risk. Due to the short-term maturities and low risk profiles of our investments, we do not anticipate a significant exposure to interest rate risk. If market interest rates were to increase immediately and uniformly by one percentage point from levels at March 31, 2021, the net fair value of our interest sensitive marketable securities would not experience a material change.

Foreign Currency Risk

Our revenue generating activities and operations have been primarily denominated in U.S. dollars. As we expand internationally, our results of operations and cash flows will become increasingly subject to fluctuations due to changes in foreign currency exchange rates. To help manage the exposure to foreign currency exchange rate fluctuations, we have implemented a balance sheet hedging program.

Balance Sheet Hedging Activities

We use foreign currency forward contracts to mitigate foreign currency exchange risk associated with foreign currency-denominated monetary assets and liabilities. Notwithstanding our efforts to mitigate some foreign currency exchange risks, there can be no assurance that our hedging activities will adequately protect us against the risks associated with foreign currency fluctuations. We believe the counterparties to our foreign currency forward contracts are creditworthy multinational commercial banks. While we believe the risk of counterparty nonperformance is not material, a sustained decline in the financial stability of financial institutions as a result of disruption in the financial markets could affect our ability to secure creditworthy counterparties for our foreign currency hedging programs.

As of March 31, 2021, a hypothetical adverse movement of 10 percent in foreign currency exchange rates compared to the U.S. dollars across all maturities would have resulted in potential declines in the fair value on our foreign currency forward contracts used in balance sheet hedging of approximately $136 million. We expect that any increase or decrease in the fair value of the portfolio would be substantially offset by increases or decreases in the underlying exposures being hedged.

Item 4. Controls and Procedures

Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and our Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures as of March 31, 2021. The term “disclosure controls and procedures,” as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, or the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC’s rules and forms.

Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company's management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of March 31, 2021, our Chief Executive Officer and Chief Financial Officer concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) during the three months ended March 31, 2021, which have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Inherent Limitations on Effectiveness of Controls

Our management, including our Chief Executive Officer and Chief Financial Officer, believes that our disclosure controls and procedures and internal control over financial reporting are designed to provide reasonable assurance of achieving their objectives and are effective at the reasonable assurance level. However, our management does not expect that our disclosure controls and procedures or our internal control over financial reporting will prevent all errors and all fraud. A control system, no matter how well-conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, have been detected. These inherent limitations include the realities that judgments in decision making can be faulty, and that breakdowns can occur because of a simple error or mistake. Additionally, controls can be circumvented by the individual acts of some persons, by the collusion of two or more people or by a management override of the controls. The design of any system of controls also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions; over time, controls may become inadequate because of changes in conditions, or the degree of compliance with policies or procedures may deteriorate. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

PART II

Item 1. Legal Proceedings

From time to time, we may be subject to legal proceedings and claims in the ordinary course of business. We are not currently a party to any material legal proceedings.

Item 1A. Risk Factors

Investing in our common stock involves a high degree of risk. Information regarding risk and uncertainties related to our business appears in Part I, Item 1A. "Risk Factors" of our Annual Report on Form 10-K for the year ended December 31, 2020, which was filed with the Securities and Exchange Commission, or the SEC, on February 26, 2021. There have been no material changes from the risk factors previously disclosed in the Annual Report on Form 10-K. You should carefully consider the risks and uncertainties described below, together with all of the other information contained in this Quarterly Report on Form 10-Q, including "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the condensed consolidated financial statements and the related notes. If any of the risks actually occur, it could harm our business, prospects, operating results and financial condition and future prospects. In such event, the market price of our common stock could decline and you could lose all or part of your investment. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also impair our business operations. This Quarterly Report on Form 10-Q also contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in the forward-looking statements as a result of factors that are described below and elsewhere in this Quarterly Report.

Item 6. Exhibits

The Exhibits listed below are filed or incorporated by reference as part of this Form 10-Q.

Exhibit No.	Exhibit Index
10.1*†	Amendment No. 6, dated February 16, 2021, to Agreement No. HHSO100201600029C, by and between ModernaTX, Inc. and the Biomedical Advanced Research and Development Authority, dated as of April 16, 2020
10.2*†	Amendment No. 7, dated March 12, 2021, to Agreement No. HHSO100201600029C, by and between ModernaTX, Inc. and the Biomedical Advanced Research and Development Authority, dated as of April 16, 2020
10.3*†	Form of Performance-Based Restricted Stock Unit Award Agreement under the 2018 Stock Option and Incentive Plan
10.4*†	Amended and Restated Non-Employee Director Compensation Policy, effective April 28, 2021
31.1*	Certification of Principal Executive Officer pursuant to Rule 13a-14(a) and Rule 15d-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2*	Certification of Principal Financial Officer pursuant to Rule 13a-14(a) and Rule 15d-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1+	Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS*	XBRL Instance Document - The instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document
101.SCH*	XBRL Taxonomy Extension Schema Document
101.CAL*	XBRL Taxonomy Extension Calculation Document
101.DEF*	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB*	XBRL Taxonomy Extension Label Linkbase Document
101.PRE*	XBRL Taxonomy Extension Presentation Link Document
104*	Cover Page Interactive Data File (formatted as Inline XBRL with applicable taxonomy extension information contained in Exhibits 101.*)

* Filed herewith

\+ The certification furnished in Exhibit 32.1 hereto is deemed to accompany this Form 10-Q and will not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended. Such certification will not be deemed to be incorporated by reference into any filings under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, except to the extent that the Registrant specifically incorporates it by reference.

† Portions of this exhibit (indicated by asterisks) have been omitted in accordance with the rules of the Securities and Exchange Commission.

SIGNATURES

Pursuant to the requirements of the Section 13 or 15(d) 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.

MODERNA, INC.

Date:
May 6, 2021

By: /s/ Stéphane Bancel

Stéphane Bancel
Chief Executive Officer and Director
(*Principal Executive Officer)*

Date:
May 6, 2021

By: /s/ David W. Meline

David W. Meline
Chief Financial Officer
(*Principal Financial Officer)*

CERTAIN CONFIDENTIAL PORTIONS OF THIS EXHIBIT HAVE BEEN OMITTED AND REPLACED WITH "[***]". SUCH IDENTIFIED INFORMATION HAS BEEN EXCLUDED FROM THIS EXHIBIT BECAUSE IT IS (I) NOT MATERIAL AND (II) WOULD LIKELY CAUSE COMPETITIVE HARM TO THE COMPANY IF DISCLOSED

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		1 CONTRACT ID CODE	PAGE OF PAGES 1 | 3
2. AMENDMENT/MODIFICATION NO. P00006	3. EFFECTIVE DATE See Block 16C	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. *(If applicable)*

6. ISSUED BY CODE ASPR-BARDA	7 ADMINISTERED BY *(If other than Item 6)* CODE ASPR-BARDA02
ASPR-BARDA 200 Independence Ave., S.W. Room 640-G Washington DC 20201	US DEPT OF HEALTH & HUMAN SERVICES ASST SEC OF PREPAREDNESS & RESPONSE ACQ MANAGEMENT, CONTRACTS, & GRANTS O'NEILL HOUSE OFFICE BUILDING Washington DC 20515

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP code)*			
MODERNATX, INC 1492235 Attn: [***] MODERNATX, INC. 200 TECHNOLOGY 200 TECHNOLOGY SQ CAMBRIDGE MA 021393578		(x)	9A. AMENDMENT OF SOLICITATION NO.
			9B. DATED *(SEE ITEM 11)*
		x	10A. MODIFICATION OF CONTRACT/ORDER NO. 75A50120C00034
CODE 1492235	FACILITYCODE		10B. DATED *(SEE ITEM 13)* 04/03/2020

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended. ☐ is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended , by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted ; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted , such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (if required)
See Schedule

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	
	A THIS CHANGE ORDER IS ISSUED PURSUANT TO: *(Specify authority)* THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES *(such as changes in paying office, appropriation data, etc.)* SET FORTH IN ITEM 14. PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTALAGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER *(Specify type of modification and authority)* FAR 43.103(a)

E. IMPORTANT: Contractor ☐ is not ☒ is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION *(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

Tax ID Number: 27-0226313

DUNS Number: 069723520

The purpose of this modification is to

1)Identify the batches/lots and doses that have been transferred from Moderna [***] to CDC or designee [***] and

2)Establish when PPQ activities become outside of the scope of this contract and will not be funded by BARDA.

This modification is not a funding action. All other contract terms and conditions remain unchanged.

Period of Performance: 04/03/2020 to 08/31/2023

Continued ...

Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A NAME AND TITLE OF SIGNER *(Type or print)*		16A. NAME AND TITLE OF CONTRACTING OFFICER/Type or *print)*	
Stephane Bancel, CEO		[***]	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
/s/ Stephane Bancel *(Signature of person authorized to sign)*	2/16/2021	_ *(Signature of Contracting Officer)*	

Previous edition unusable

STANDARD FORM 30 (REV 11/2016)
Prescribed by GSA FAR(48 CFR) 53.243

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	Change Item 2 to read as follows (amount shown is tie obligated amount):				
2	Base CLIN 0002 - Development of mRNA vaccine to BLA				0.00
	Accounting Info: 2020.199COV1.25103 Appr. Yr.: 2020 CAN: 199COV1 Object Class: 25103 Funded: $0.00				
	Accounting Info: 2020.199C014.25103 Appr. Yr.: 2020 CAN: 199C014 Object Class: 25103 Funded: $0.00				

CONTINUATION PAGE

1) The table below identifies the batches/lots and doses transferred under this contract from Moderna [***] to CDC or designee [***].

[***]

2) Identification of when PPQ activities become outside of the scope of this contract

[***]

CERTAIN CONFIDENTIAL PORTIONS OF THIS EXHIBIT HAVE BEEN OMITTED AND REPLACED WITH "[***]". SUCH IDENTIFIED INFORMATION HAS BEEN EXCLUDED FROM THIS EXHIBIT BECAUSE IT IS (I) NOT MATERIAL AND (II) WOULD LIKELY CAUSE COMPETITIVE HARM TO THE COMPANY IF DISCLOSED

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT	1 CONTRACT ID CODE	PAGE OF PAGES 1 | 10

2. AMENDMENT/MODIFICATION NO. P00007	3. EFFECTIVE DATE See Block 16C	4. REQUISITION/PURCHASE REQ. NO. [***]	5. PROJECT NO. *(If applicable)*

6. ISSUED BY CODE ASPR-BARDA	7 ADMINISTERED BY *(If other than Item 6)* CODE ASPR-BARDA02
ASPR-BARDA 200 Independence Ave., S.W. Room 640-G Washington DC 20201	US DEPT OF HEALTH & HUMAN SERVICES ASST SEC OF PREPAREDNESS & RESPONSE ACQ MANAGEMENT, CONTRACTS, & GRANTS O'NEILL HOUSE OFFICE BUILDING Washington DC 20515

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP code)*		(x)	9A. AMENDMENT OF SOLICITATION NO.
MODERNATX, INC 1492235 Attn: [***] MODERNATX, INC. 200 TECHNOLOGY 200 TECHNOLOGY SQ CAMBRIDGE MA 021393578			9B. DATED *(SEE ITEM 11)*
		x	10A. MODIFICATION OF CONTRACT/ORDER NO. 75A50120C00034
CODE 1492235	FACILITYCODE		10B. DATED *(SEE ITEM 13)* 04/03/2020

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended. ☐ is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment and is received prior to the opening hour and dale specified.

12. ACCOUNTING AND APPROPRIATION DATA (if required) Net increase: $62,705,357.06
See Schedule

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	
	A THIS CHANGE ORDER IS ISSUED PURSUANT TO: *(Specify authority)* THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES *(such as changes in paying office, appropriation data, etc.)* SET FORTH IN ITEM 14. PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTALAGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER *(Specify type of modification and authority)* FAR 43.103(a)

E. IMPORTANT: Contractor ☐ is not ☒ is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION *(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

Tax ID Number: 27-0226313

DUNS Number: 069723520

The purpose of this modification is to support the additional scope of the Clinical Development Plan (CLIN 0002) which includes direct increases to the clinical subcontractors on the P201(Work Breakdown Structure 1.4.2.1), the pediatric studies P203 (WBS 1.4.2.3), and program management WBS (1.1) to support expansion into this critical population.

This modification adds $62,705,357 to CLIN 0002 and increases CLIN 0002 to $961,387,795 from $898,682,438. CLIN 0002 remains cost plus fixed fee (CPFF). Fee was not applied to the additional scope

Continued ...

Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A NAME AND TITLE OF SIGNER *(Type or print)*		16A. NAME AND TITLE OF CONTRACTING OFFICER/Type or *print)*	
Stephane Bancel, CEO		[***]	
15B. CONTRACTOR/OFFEROR */s/ Stephane Bancel* *(Signature of person authorized to sign)*	15C. DATE SIGNED 3/12/2021	16B. UNITED STATES OF AMERICA [***] *(Signature of Contracting Officer)*	16C. DATE SIGNED 03/12/2021

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)

	Prior Contract Value	Additional Funding	Revised Contract Value
CLIN 0001	$ 3,212,541	$ -	$ 3,212,541
CLIN 0002	$ 898,682,438	$ 62,705,357	$ 961,387,795
CLIN 0003	$ 53,000,000	$ -	$ 53,000,000
Total	$ 954,894,979	$ 62,705,357	$1,017,600,336

All other contract terms and conditions remain unchanged.
Period of Performance: 04/03/2020 to 08/31/2023

Change Item 2 to read as follows (amount shown is tie obligated amount):

2	Base CLIN 0002 - Development of mRNA vaccine to BLA	62,705,357.06

Accounting Info:
2020.199COV1.25103 Appr. Yr.: 2020 CAN: 199COV1 Object Class: 25103
Funded: $0.00

Accounting Info:
2020.199C014.25103 Appr. Yr.: 2020 CAN: 199C014 Object Class: 25103
Funded: $0.00

Accounting Info:
2021.199C035.25103 Appr. Yr.: 2021 CAN: 199C035 Object Class: 25103
Funded: $62,705,357.06

C. Statement of Work
Updated with Modification P00007

Independently, and not as an agent of the United States Government, the contractor shall furnish all necessary services, qualified professional, technical, and administrative personnel, material, equipment and facilities, not otherwise provided by the Government under the terms of this contract, as needed to perform the tasks set forth below.

mRNA-1273 Vaccine Development (WBS 1.0)

The Contractor, Moderna, Inc. ("Moderna") shall execute the preclinical, clinical, and chemistry, manufacturing and controls (CMC) activities required to license a vaccine against the SARS-CoV-2 virus (hereafter referred to as "mRNA-1273"). Building upon early clinical development already underway, this proposal will support the late stage development, including the demonstration of clinical efficacy and generation of a dataset supportive of licensure. Moderna will additionally evaluate the platform manufacturing capabilities relative to the needs for supply in response to a pandemic.

** ***Program Management (WBS 1.1) — Updated with Mod P00007***

mRNA-1273 Program Management (WBS 1.1.1)

Moderna's mRNA-1273 program team is composed of a multidisciplinary, highly matrixed, group of functional leads with experience in, and responsibility for, integrating plans and operationalizing strategies across Research, Toxicology, CMC, Regulatory Affairs, Clinical Development, Medical Affairs, Market Access and Launch Readiness in support of vaccine deployment under Emergency Use Authorization and Quality. Collectively, the team has advanced ten programs to first-in-human studies within five years. The group will be led by a program lead (PL) who will oversee and coordinate the activities necessary to meet the program objective of licensure. The PL will be the point of accountability for the development and deployment of mRNA-1273. [***]. The Sub Principal Investigator will be responsible for ensure sufficient manufacturing capacity and production of mRNA-1273. A program management office (PMO) will be responsible for managing the cost and schedule constraints of the contract via an integrated master schedule and corresponding budget, identifying and managing program risk, and ensuring contract compliance. With the input from the mRNA-1273 project team, the PMO will be responsible for coordinating the drafting of and management to an integrated development plan. Upon execution of the contract, weekly meetings with BARDA will be held to monitor program performance and monthly and annual reports will be will delivered to BARDA for the record.

In addition to funding provided by BARDA, Moderna will contribute by funding some of the subcontractor program management effort to support the contract. Note, this is not a cost sharing contract however this is to account for the funds contributed by Moderna.

Nonclinical Toxicology (WBS 1.2)

Development and Reproductive Toxicology of mRNA-1273 (WBS 1.2.2.1)

To assess the risk of administering the vaccine to pregnant women, a complete GLP rat developmental and reproductive toxicology (DART) study is planned. Female Sprague Dawley rats will be dosed at the highest anticipated clinical dose level and include a control arm of

phosphate-buffered saline (PBS). As is typical for DART evaluations for vaccines, the animals will be immunized three times prior to mating and two times during gestation. Each group will have two cohorts (one group will undergo Cesarean section with examination of the uteri and embryos; the other group will have natural delivery and will be terminated at weaning).

Nonclinical (WBS 1.3)

For the purposes of this proposal it is assumed that the VRC continues to support nonclinical activities to develop murine and non-human primate efficacy studies, and animal models to assess the potential of vaccine- enhanced disease. The scope of work below will execute additional robustness experiments in these developed models.

Assess Disease Enhancement (WBS 1.3.3.1)

The CoV spike protein expressed by the mRNA-1273 vaccine is stabilized in the prefusion conformation which should be optimal for inducing high quality antibody responses with low binding antibody to neutralizing antibody ratios. mRNA delivery and induction of CD8 T cells and Th1 CD4 T cells will avoid Th2-biased responses. The SARS-CoV-2 S protein expressed by the mRNA-1273 vaccine is stabilized in the pre-fusion conformation which should be optimal for inducing high functional antibody responses with low binding antibody to neutralizing antibody ratios, as it has been seen in RSV DS-Cav1 clinical trials and 2P-stabilized CoV S animal studies. In addition, mRNA vaccines induce Th1 skewed response as has been evident in several pre-clinical and clinical vaccine programs at Moderna, including pandemic flu and CMV (PMID 28457665, 29456015). By expressing pre-fusion SARS-CoV-2 S delivered with mRNA we should induce CD8 T cells and Th1-biased CD4 T cell responses as shown in both human, NHP, and murine studies, thus avoiding a Th2- biased response.
We plan to perform studies in mouse and NHPs to assess the theoretical risk of vaccine induced disease enhancement triggered by CoV infection following vaccination with imRNA-1273.

[***]

Establish a Surrogate of Protection (WBS 1.3.3.2)

The primary endpoint for accelerated approval of a SARS-CoV-2 vaccine would be a neutralization assay. This endpoint must be supported with a body of pre-clinical work that demonstrates a correlation between

neutralizing titers and efficacy and that quantifies a protective serologic threshold titer using the same neutralization assay. Murine and NHP efficacy models are being developed in parallel to the Phase 1 clinical study. Building on data from these preliminary models and studies, Moderna will conduct NHP efficacy and murine passive transfer studies to confirm and refine the surrogate of protection.

Clinical (WBS 1.4)

A Phase 1 study of mRNA-1273 in 120 healthy subjects 18-55 years of age will evaluate the safety and immunogenicity of two injections (28 days apart) at four dose levels (25, 50, 100 and 250 µg). The proposed Phase 2 study will enroll n=600 healthy subjects (>18 years) to receive two injections, 28 days apart, of placebo or 50 or 100 pg mRNA-1273, at 1:1:1, age stratified (18-55 yrs; >55 yrs).

The total safety database from the mRNA-1273 Phase 1 and Phase 2 studies will be approximately 445 adult participants exposed and approximately 245 adult participants at the highest dose level. The proposed Phase 2 study (synopsis included below) is intended to support entry to subsequent Phase 3 study(ies). [***]

Phase 2 Safety and Immunogenicity Study (WBS 1.4.2.1) — Updated with Mod P00007

Immediately following dose selection in the initial Phase 1 study the program will initiate a Phase 2 clinical study. The P201 study will confirm the safety and immunogenicity results from the open-label Phase 1, again testing a two-dose administration series 28d apart. Its assumed that 600 participants, randomized 1:1:1 active: placebo, testing a two dose levels of mRNA-1273. Enrollment will be age-stratified participants 18 year of age and above into two age cohorts. Primary objectives will include standard clinical safety evaluation with conventional safety and SARS-CoV-2-specific IgG endpoints though a neutralizing antibody assay would be preferred if available. Secondary objectives will evaluate of the specific humoral response against SARS-CoV-2 by binding and neutralizing antibody (nAb) response. Safety will be followed through 6 months post-last vaccination and primary immunogenicity endpoint will be measured at D57. The study will enroll in the US under IND. The study will assess COVID-19 as exploratory endpoint which may extend the duration of followup accordingly. Clinical trial assessments will include measurement of SARS-CoV-2 S-specific binding antibody and neutralizing activity in sera. This will provide an indication of vaccine-induced antibody quality and relative potency. Historically, immune-complex mediated lung pathology has been associated with a high ratio of binding to functional antibody activity. In addition, vaccine-induced T cell responses will be evaluated by peptide pool stimulation to define the pattern of cytokine production. [***]. To support the EUA, an interim clinical study synopsis will be drafted based on D57 safety and immunogenicity data.

***** Pediatrics (WBS 1.4.2.3) - Updated with Mod P00007***

Moderna will conduct an initial pediatric study plan (PSP) under Pediatric Research Equity Act requirements during the IND phase. A deferral will be requested for children less than 6 months

of age at the time of initial BLA approval. Having demonstrated the mRNA-1273 is safe, tolerated, and effective in adults, Moderna will test the safety and immunogenicity of mRNA-1273 in a pediatric population with an aged-based step-down design. The P203 study is a Phase 2/3, randomized, observer-blind, placebo controlled, study to evaluate the safety, reactogenicity, and effectiveness of mRNA-1273 SARS-CoV-2 vaccine in 3000 healthy adolescents 12 to < 18 years of age. Participants will be randomly assigned to receive injections of either 100 µg of mRNA-1273 vaccine or a placebo control in a 2:1 randomization ratio. The goal of the study is to seek an indication for use of mRNA 1273 (100 pg IM, given as 2 injections, 28 days apart) in the 12 to < 18 year age group. The basis for demonstrating vaccine effectiveness is proposed to be met by serum antibody (Ab) response measured in this adolescent age group. The approach to inferring vaccine effectiveness will depend on whether or not an accepted serum Ab threshold conferring protection against COVID-19 has been established. If an Ab threshold of protection has been established, effectiveness will be inferred based on the proportion of adolescent study participants with serum Ab levels (on study Day 57) meeting or exceeding the Ab threshold. If an Ab threshold of protection has not been established, effectiveness will be inferred based on demonstrating non-inferiority of the geometric mean value of serum nAb from adolescent participants compared to the geometric mean value of serum nAb from adults enrolled in the ongoing clinical endpoint efficacy trial (Study P301).

This adolescent study will monitor all participants for a total of 12 months following the second dose of vaccine or placebo. Safety assessments will include solicited ARs (7 days post each injection), unsolicited AEs (28 days post each injection), medically attended adverse events (MAAEs), serious adverse events (SAEs), and adverse event of special interest (AESI) (pediatric MIS C) throughout the study period.

Phase 3 Pivotal Study (WBS 1.4.3.1)

Phase 3 Pivotal Study (WBS 1.4.3.1). The Phase 3 mRNA-1273-P301 study will confirm the trends observed during the Phase 1 and 2 trials, evaluating safety and efficacy in a larger number of subjects aged 18 and above. Approximately 30,000 subjects will be enrolled according to 1:1 randomization (active: placebo). Primary objectives will be 1) to demonstrate the efficacy of mRNA-1273 to prevent COVID-19 and 2) to evaluate the safety and reactogenicity of 2 injections of the mRNA-1273 vaccine given 28 days apart. Secondary objectives will evaluate: the efficacy of mRNA-1273 to prevent severe COVID-19; the efficacy of mRNA-1273 to prevent virologically confirmed SARS-CoV-2 infection or COVID-19 regardless of symptomatology or severity; VE against a broad definition of COVID-19 disease; VE to prevent death due to COVID-19 disease; VE against allcause mortality; the efficacy of mRNA-1273 to prevent COVID-19 after the first dose of investigational product (IP); the efficacy of mRNA-1273 to prevent COVID-19 in all study participants, regardless of evidence of prior SARS-CoV-2 infection; the efficacy of mRNA-1273 to prevent asymptomatic SARS-CoV-2 infection.

The sample size of this Phase 3 is driven by the total number of cases to demonstrate VE (mRNA-1273 vs. placebo) to prevent COVID-19. [***]

On issuance of the EUA, in agreement with the FDA and OWS, the P301 study will offer vaccine to participants that were randomized to receive placebo and the study will transition to

an open label study. All 30K participants will return for a Participant Decision Visit. Participants will complete an updated ICF, a sera and NP swab sample will be collected to test for asymptomatic infection, and participants randomized to the placebo arm will be offered vaccine. After unblinding the sponsor will continue to leverage the clinical trial infrastructure. Doubling the exposed population will reduce the incidence of rare events potentially detectable with high confidence in the trial to approximately 1/10,000 or 0.01%.

Lot to Lot Consistency (WBS 1.4.3.2)
Based on FDA feedback received on 27 Aug this study is no longer required for licensure.

Pediatrics (WBS 1.4.3.3)
Moderna plans to conduct an initial pediatric investigational plan under Pediatric Research Equity Act requirements during the IND phase. A deferral will be requested for children less than 17 years of age at the time of initial BLA approval. Having demonstrated the mRNA-1273 is safe, tolerated and effective in adults, Moderna will test the safety and immunogenicity of mRNA-1273 in a pediatric population with an aged-based step-down design: children will be randomized into one of six treatment arms starting with the adolescents 1017 years of age, then 5-9 years of age, ending with children less than 5. In each age group, approximately 300 children will receive mRNA-1273 vaccine and 100 a placebo as control, for a total of 1200 children in P101. It is assumed subjects will receive a standard dose and regimen of vaccine matched to the adult dose and schedule.

Regulatory (WBS 1.5)

IND Preparation and Filing (WBS 1.5.1.1)
Moderna's Regulatory Affairs group, in close collaboration with BARDA, will work to draft a comprehensive regulatory master plan to guide the preclinical, CMC and clinical development of mRNA-1273 within the first 90 days of the contract. An original investigational new drug application (IND) will be filed with the United States Food and Drug Administration (FDA) to support the clinical development of the Moderna product from Phase 2 onwards.

IND Maintenance (WBS 1.5.1.2)
The Moderna-owned IND will be maintained to support the desired clinical development plan. As needed, meetings will be conducted to receive feedback and gain concurrence on the specifics of the development activities with the FDA. Moderna will file for Emergency Use Authorization, following the FDA guidance of EUA for COVID-19 vaccines. A product-specific VRBPAC will be held.

BLA Submission (WBS 1.5.2.1)
Moderna will submit a Biologics License Application (BLA) and seek approval for the mRNA-1273 vaccine.

CMC (WBS 1.6)

CTM Manufacture for Phase 2 (WBS 1.6.3.2)
[***]

Process Development for Late Stage Clinical Supply (WBS 1.6.3.3)
mRNA Process Development
Technical Development will confirm and optimize the process parameters for mRNA manufacture. [***]

[***]

BLA Readiness (WBS 1.6.3.8)

In support of the Biologics License Application (BLA) due to the nature of the proposed timeline, it is likely that Moderna will need to complete some of process validation activities, primarily process characterization, after the completion of process performance qualification and before BLA filing. Moderna intends to rapidly develop a robust process for clinical manufacturing and PPQ, and then fully describe the acceptable design space for the process prior to BLA filing. Other activities to support this BLA filing, such as completing raw material qualification activities; if not included in the BLA submission, will require a supplement to the initial BLA. In the initial BLA filing Moderna will describe its control strategy to cover the gap between initial BLA filing and the BLA supplement.

Process Development for Full Commercial Scale (WBS 1.6.4.1)

The following section outlines the process development activities [***]. The goal of this work is to demonstrate the capability to produce mRNA-1273 at a scale that can support clinical demand.

[***]

Controls (Analytical and Validation) (WBS 1.6.5)
Potency Assay Development and Implementation (WBS 1.6.5.1)

[***]

Analytical Method Development and Validation (WBS 1.6.5.2)
Moderna has established a set of analytical methods that are applied to the release and stability testing of intermediates and DP. These methods are sufficient to assure the identity, strength, quality, purity and potency of the final product, and will have been qualified for use for mRNA-1273 as part of the Phase 2 CTM campaign. Robustness of product release and stability methods, structural characterization and identification of impurities to further support product specifications, product comparability assessment will continue to support Phase 3 development and licensure.

Characterization Assay Development and Implementation (WBS 1.6.5.3)
A heightened characterization panel of analytical techniques will be used to assess any process modifications and to confirm process reproducibility for both drug substance and drug product during process development and scale up. As the applicability of the methods used in the heightened panel to elucidate quality attributes of drug substance and drug product is determined, these methods may be elevated to the respective release panel.

Stability Studies (WBS 1.6.5.4)
Throughout the program, many studies will be undertaken [***]. This includes studies using development bench scale material, engineering lot material, and GMP material. This body of data will be used to apply interim and long-term shelf life to the drug product and process intermediates.

PERFORMANCE-BASED RESTRICTED STOCK UNIT AWARD AGREEMENT FOR COMPANY EMPLOYEES UNDER THE MODERNA, INC. 2018 STOCK OPTION AND INCENTIVE PLAN

Name of Grantee:

Target Number of
Restricted Stock Units:

Grant Date:

Pursuant to the Moderna, Inc. 2018 Stock Option and Incentive Plan as amended through the date hereof (the "Plan"), Moderna, Inc. (the "Company") hereby grants an award for the target number of Restricted Stock Units listed above (an "Award" and such target number, the "Target Award") to the Grantee named above. Each Restricted Stock Unit shall relate to one share of Common Stock, par value $0.0001 per share (the "Stock") of the Company.

1. Restrictions on Transfer of Award. This Award may not be sold, transferred, pledged, assigned or otherwise encumbered or disposed of by the Grantee, and any shares of Stock issuable with respect to the Award may not be sold, transferred, pledged, assigned or otherwise encumbered or disposed of until (i) the Restricted Stock Units have vested as provided in Paragraph 2 of this Agreement and (ii) shares of Stock have been issued to the Grantee in accordance with the terms of the Plan and this Agreement.

2. Vesting of Restricted Stock Units. The restrictions and conditions of Paragraph 1 of this Agreement shall lapse on the Vesting Date specified in the vesting schedule attached as Appendix A to this Agreement. If a series of Vesting Dates is specified, then the restrictions and conditions in Paragraph 1 shall lapse only with respect to the number of Restricted Stock Units specified as vested on such date.

The Administrator may at any time accelerate the vesting schedule specified in this Paragraph 2.

3. Termination of Service Relationship. If the Grantee's Service Relationship with the Company or a Subsidiary terminates for any reason (including death or disability) prior to the first anniversary of the Grant Date listed above, then rights to any Restricted Stock Units under this Award shall be automatically and without notice terminate and be forfeited, and neither the Grantee nor any of his or her successors, heirs, assigns, or personal representatives will thereafter have any further rights or interests in such unvested Restricted Stock Units. If the Grantee's Service Relationship with the Company or a Subsidiary terminates on or subsequent to the first

anniversary of the Grant Date listed above and prior to the Vesting Date, the Grantee shall be entitled to vesting of the Award solely as contemplated by Appendix A hereto.

4. Issuance of Shares of Stock. Subject to Appendix A, as soon as practicable following the Vesting Date (but in no event later than two and one-half months following the Vesting Date), the Company shall issue to the Grantee the number of shares of Stock equal to the aggregate number of Restricted Stock Units that have vested pursuant to Paragraph 2 of this Agreement on such date and the Grantee shall thereafter have all the rights of a stockholder of the Company with respect to such shares.

5. Incorporation of Plan. Notwithstanding anything herein to the contrary, this Agreement shall be subject to and governed by all the terms and conditions of the Plan, including the powers of the Administrator set forth in Section 2(b) of the Plan. Capitalized terms in this Agreement shall have the meaning specified in the Plan, unless a different meaning is specified herein.

6. Tax Withholding. The Grantee shall, not later than the date as of which the receipt of this Award becomes a taxable event for Federal income tax purposes, pay to the Company or make arrangements satisfactory to the Administrator for payment of any Federal, state, and local taxes required by law to be withheld on account of such taxable event. The Company shall have the authority to cause the required minimum tax withholding obligation to be satisfied, in whole or in part, by withholding from shares of Stock to be issued to the Grantee a number of shares of Stock with an aggregate Fair Market Value that would satisfy the withholding amount due.

7. Section 409A of the Code. This Agreement shall be interpreted in such a manner that all provisions relating to the settlement of the Award are either exempt from the requirements of Section 409A of the Code as “short-term deferrals” as described in Section 409A of the Code or otherwise comply with the requirements of Section 409A of the Code.

8. No Obligation to Continue Service Relationship. Neither the Company nor any Subsidiary is obligated by or as a result of the Plan or this Agreement to continue the Grantee’s Service Relationship with the Company or a Subsidiary and neither the Plan nor this Agreement shall interfere in any way with the right of the Company or any Subsidiary to terminate the Grantee’s Service Relationship with the Company or a Subsidiary at any time.

9. Integration. This Agreement constitutes the entire agreement between the parties with respect to this Award and supersedes all prior agreements and discussions between the parties concerning such subject matter.

10. Data Privacy Consent. In order to administer the Plan and this Agreement and to implement or structure future equity grants, the Company, its subsidiaries and affiliates and certain agents thereof (together, the “Relevant Companies”) may process any and all personal or professional data, including but not limited to Social Security or other identification number, home address and telephone number, date of birth and other information that is necessary or

desirable for the administration of the Plan and/or this Agreement (the "Relevant Information"). By entering into this Agreement, the Grantee (i) authorizes the Company to collect, process, register and transfer to the Relevant Companies all Relevant Information; (ii) waives any privacy rights the Grantee may have with respect to the Relevant Information; (iii) authorizes the Relevant Companies to store and transmit such information in electronic form; and (iv) authorizes the transfer of the Relevant Information to any jurisdiction in which the Relevant Companies consider appropriate. The Grantee shall have access to, and the right to change, the Relevant Information. Relevant Information will only be used in accordance with applicable law.

11. Notices. Notices hereunder shall be mailed or delivered to the Company at its principal place of business and shall be mailed or delivered to the Grantee at the address on file with the Company or, in either case, at such other address as one party may subsequently furnish to the other party in writing.

12. Clawback Policy. This Award shall be subject to the terms and conditions of the Company's Policy for Recoupment of Executive Incentive Compensation, to the extent applicable and as in effect from time to time.

Moderna, Inc.

By:
Name:
Title:

The foregoing Agreement is hereby accepted, and the terms and conditions thereof hereby agreed to by the undersigned. Electronic acceptance of this Agreement pursuant to the Company's instructions to the Grantee (including through an online acceptance process) is acceptable.

Acceptance Date:

Appendix A

Vesting Schedule

The Target Award shall initially be unvested.

The Compensation and Talent Committee, at its first regularly scheduled meeting following the conclusion of the Performance Measurement Period shall determine the actual number of Restricted Stock Units that shall be credited as of the final day of such Performance Measurement Period (the last day of such Performance Measurement Period, the "Vesting Date"). The number of Restricted Stock Units credited for such period shall equal the Target Award multiplied by the Performance Multiplier, as further multiplied by the Goal as Percent of Total shown below for the Award as a whole, subject to the terms and conditions hereof. The Performance Multiplier shall be determined as set forth in the table below. The number of Restricted Stock Units credited for a Performance Measurement Period (if any) shall be rounded up to the nearest whole share of Stock.

Performance Metric		Performance Metric Goals		Performance Multiplier	Target Qty of RSU	Goal as Percent of Total
A	[***]	Maximum	[***]	200%		[***]
		Target	[***]	100%		
		Threshold	[***]	50%		
B	[***]	Maximum	[***]	200%		[***]
		Target	[***]	100%		
		Threshold	[***]	50%		
C	[***]	Maximum	[***]	200%		[***]
		Target	[***]	100%		
		Threshold	[***]	50%		

Subject to the Grantee's continued Service Relationship with the Company or a Subsidiary until the Vesting Date, as soon as practicable on or following the Vesting Date (but in no event later than two and one-half months following the Vesting Date), the Company shall issue to the Grantee a number of shares of Stock equal to the total number of Restricted Stock Units that have vested. Notwithstanding the foregoing, if the Grantee terminates employment on or subsequent to the first anniversary of the Grant Date, but prior to the Vesting Date, then the Grantee shall be credited, subject to achievement of the applicable Performance Metric Goal during the Performance Measurement Period, in the number of Restricted Stock Units equal to the Target Award, multiplied by the applicable Performance Multiplier, multiplied by a fraction, where the numerator equals the number of days that the Grantee was in a Service Relationship with the Company during the Performance Measurement Period and the denominator equals the number of days in the Performance Measurement Period, and such credited Restricted Stock Units shall vest on the Vesting Date and be settled in a number of shares of Stock no later than two and one-half months after the Vesting Date; *provided*, however, that no portion of the Award

shall vest pursuant to this sentence if: (a) the Grantee is terminated for Cause (as defined in the Company's Amended and Restated Executive Severance Plan, as last amended November 4, 2018 and as further amended from time to time), or (b) the Grantee is not in compliance with any contractual obligation to the Company, including non-compete or non-solicitation obligations, in each case, as determined in the sole discretion of the Compensation and Talent Committee.

Furthermore, notwithstanding the foregoing, in the event of a Sale Event during the Performance Measurement Period where the Award will not be assumed, continued or substituted by the Company's successor or acquirer, the Performance Measurement Period shall be shortened such that the period shall be deemed to have concluded as of the closing of the Sale Event (the "Sale Event Closing Date") and the Grantee shall vest, on the Sale Event Closing Date in a number of Restricted Stock Units equal to the greater of: (a) the number of Restricted Stock Units equal to the Target Award multiplied by the applicable Performance Multiplier based upon performance through a date within one month of the Sale Event Closing Date, and (b) the number of Restricted Stock Units equal to the Target Award, subject to the Grantee's continued Service Relationship with the Company or a Subsidiary on the Sale Event Closing Date (or as otherwise contemplated by the prior paragraph), and such vested Restricted Stock Units shall be settled immediately prior to the Sale Event Closing Date.

If the Performance Metric is between two of the Performance Metric Goals above, then the Performance Multiplier shall be determined by using linear interpolation between the two Performance Metric Goals.

Definitions

For purposes of Appendix A,

[***]

[***]

"Performance Measurement Period" shall mean the period from January 1, 2021 to December 31, 2023.

Moderna, Inc.

Amended and Restated Non-Employee Director Compensation Policy

The purpose of this Amended and Restated Non-Employee Director Compensation Policy (the "Policy") of Moderna, Inc., a Delaware corporation (the "Company"), is to provide a total compensation package that enables the Company to attract and retain, on a long-term basis, high-caliber directors who are not employees or officers of the Company or its subsidiaries ("Outside Directors"). In furtherance of the purpose stated above, all Outside Directors shall be paid compensation for services provided to the Company as set forth below:

I. Cash Retainers

(a) Annual Retainer for Board Membership: $60,000 for general availability and participation in meetings and on conference calls of our Board of Directors (the "Board of Directors"). No additional compensation for attending individual Board of Director meetings.

(b) Additional Annual Retainer for Non-Executive Chairman of the Board of Directors: $65,000

(c) Additional Annual Retainers for Committee Membership:

Audit Committee Chairperson:	$25,000
Audit Committee non-Chairperson member:	$12,000
Compensation & Talent Committee Chairperson:	$20,000
Compensation & Talent Committee non-Chairperson member:	$10,000
Nominating and Corporate Governance Committee Chairperson:	$15,000
Nominating and Corporate Governance Committee non-Chairperson member:	$7,500
Product Development Committee Chairperson:	$15,000
Product Development non-Chairperson member:	$10,000

No additional compensation for attending individual committee meetings. All cash retainers will be paid quarterly, in arrears, or upon the earlier resignation or removal of the Outside Director. Cash retainers owing to Outsider Directors shall be annualized, meaning that with respect to Outside Directors who join the Board of Directors during the calendar year, such amounts shall be pro-rated based on the number of calendar days served by such director.

II. Equity Retainers

All grants of equity retainer awards to Outside Directors pursuant to this Policy will be automatic and nondiscretionary and will be made in accordance with the following provisions:

i. Value. For purposes of this Policy, "Value" means with respect to (i) any award of stock options the grant date fair value of the option (i.e., Black-Scholes Value) determined in accordance with the reasonable assumptions and methodologies employed by the Company for

calculating the fair value of options under ASC 718 and which shall generally reflect, when calculating the fair value, the average closing market price on the Nasdaq Global Market (or such other market on which the Company's common stock is then principally listed) (the "NASDAQ") of one share of the Company's common stock over the preceding 20 trading days, up to and including the last trading day immediately preceding the grant date; and (ii) any award of restricted stock and restricted stock units ("RSUs') the product of (A) the average closing market price on the NASDAQ over the preceding 20 trading days, up to and including the last trading day immediately preceding the grant date of one share of the Company's common stock on the grant date and (B) the aggregate number of shares pursuant to such award.

ii. Revisions. The Compensation & Talent Committee (the "Compensation Committee") in its discretion may change and otherwise revise the terms of awards to be granted under this Policy, including, without limitation, the number of shares subject thereto, for awards of the same or different type granted on or after the date the Compensation Committee determines to make any such change or revision.

iii. Sale Event Acceleration. In the event of a Sale Event (as defined in the Company's 2018 Stock Option and Incentive Plan (as amended from time to time, the "Stock Plan")), the equity retainer awards granted to Outside Directors pursuant to this Policy shall become 100% vested and exercisable.

iv. Initial Grant. Upon initial election to the Board of Directors, each new Outside Director will receive an initial, one-time equity grant (the "Initial Grant") with a Value of $400,000, of which 75% of the Value shall be delivered in the form of a non-statutory stock option and 25% of the Value shall be delivered in the form of RSUs. The portion of the Initial Grant delivered as a stock option shall have an exercise price per share equal to the closing price of a share of the Company's common stock on the date of grant and a term of ten years, and shall vest in full on the one-year anniversary of the grant date. The portion of the Initial Grant delivered as RSUs shall vest in full on the one-year anniversary of the grant date. All vesting of the Initial Grant shall cease if the director resigns from our Board of Directors or otherwise ceases to serve as a director, unless the Board of Directors determines that the circumstances warrant continuation of vesting.

v. Annual Grant. On the date of the Company's Annual Meeting of Stockholders, each Outside Director who will continue as a member of the Board of Directors following such Annual Meeting of Stockholders will receive an equity grant on the date of such Annual Meeting of Stockholders (the "Annual Grant") with a Value of $425,000, of which 75% of the Value shall be delivered in the form of a non-statutory stock option, and 25% of the Value shall be delivered in the form of RSUs. The portion of the Annual Grant delivered as a stock option shall have an exercise price per share equal to the closing price of a share of the Company's common stock on the date of grant and a term of ten years, and shall vest in full on the earlier of (i) the one-year anniversary of the grant date or (ii) the next Annual Meeting of Stockholders. The portion of the Annual Grant delivered as RSUs shall vest in full on the earlier of (i) the one-year anniversary of the grant date or (ii) the next Annual Meeting of Stockholders. All vesting of the Annual Grant shall cease if the director resigns from our Board of Directors or otherwise ceases to serve as a

director, unless the Board of Directors determines that the circumstances warrant continuation of vesting. If a new Outside Director joins our Board of Directors on a date other than the date of the Company's Annual Meeting of Stockholders, then such Outside Director will be granted a pro-rata portion of the Annual Grant based on the time between such Outside Director's appointment and the next Annual Meeting of Stockholders, on the first eligible grant date following such Outside Director's appointment to our Board of Directors.

III. Expenses

The Company will reimburse all reasonable out-of-pocket expenses incurred by Outside Directors in attending meetings of the Board of Directors or any committee thereof.

IV. Maximum Annual Compensation

The aggregate amount of compensation, including both equity compensation and cash compensation, paid to any Outside Director in a calendar year period shall not exceed $1,500,000 for the first year of service and $1,000,000 for each year of service thereafter (or such other limits as may be set forth in Section 3(b) of the Stock Plan or any similar provision of a successor plan). For this purpose, the "amount" of equity compensation paid in a calendar year shall be determined based on the grant date fair value thereof, as determined in accordance with ASC 718 or its successor provision, but excluding the impact of estimated forfeitures related to service-based vesting conditions.

Date Amended and Restated Policy Approved: March 21, 2019, as amended March 27, 2020 and as further amended April 28, 2021.

Exhibit 31.1

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

CERTIFICATIONS

I, Stéphane Bancel, certify that:

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

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

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

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

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

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

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

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

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

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

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

Date: May 6, 2021

By: /s/ Stéphane Bancel
Stéphane Bancel
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

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

CERTIFICATIONS

I, David W. Meline, certify that:

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

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

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

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

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

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

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

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

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

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

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

Date: May 6, 2021

By: /s/ David W. Meline

David W. Meline
Chief Financial 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 on Form 10-Q of Moderna, Inc. (the "Company") for the period ended March 31, 2021 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), we, Stéphane Bancel, Chief Executive Officer of the Company, and David W. Meline, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of our 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 results of operations of the Company.

Date: May 6, 2021

By: /s/ Stéphane Bancel
Stéphane Bancel
Chief Executive Officer
(Principal Executive Officer)

Date: May 6, 2021

By: /s/ David W. Meline
David W. Meline
Chief Financial Officer
(Principal Financial Officer)