UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 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, 2024

Or

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

Commission file number: 001-35676

PROTHENA CORPORATION PUBLIC LIMITED COMPANY

(Exact name of registrant as specified in its charter)

Ireland	**98-1111119**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification Number)**

77 Sir John Rogerson's Quay, Block C
Grand Canal Docklands
Dublin 2, D02 VK60, Ireland

(Address of principal executive offices including Zip Code)

Registrant's telephone number, including area code: 011- 353 - 1 - 236-2500

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

Title of Each Class	Trading Symbol	Name of Each Exchange on Which Registered
Ordinary Shares, par value $0.01 per share	**PRTA**	**The Nasdaq Global Select Market**

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

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

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

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

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

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

The number of ordinary shares outstanding was 53,771,845 as of May 1, 2024.

PROTHENA CORPORATION PLC
Form 10-Q – QUARTERLY REPORT
For the Quarter Ended March 31, 2024

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Note Regarding Forward-Looking Statements

In addition to historical information, this Quarterly Report on Form 10-Q contains forward-looking statements within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended. Forward-looking statements may include words such as “aim,” “anticipate,” “assume,” “believe,” “contemplate,” “continue,” “could,” “due,” “estimate,” “expect,” “goal,” “intend,” “may,” “objective” “plan,” “predict,” “potential,” “positioned,” “seek,” “should,” “target,” “will,” “would,” and other similar expressions that are predictions of or indicate future events and future trends, or the negative of these terms or other comparable terminology. In addition, any statements that refer to expectations, projections, or other characterizations of future events or circumstances are forward-looking statements.

These forward-looking statements, which reflect our beliefs, assumptions, expectations, estimates, forecasts, and projections about our business and the industry in which we operated as of the date hereof, are estimates based on our best judgment. These statements relate to, among other things, our goal to continue building a biology-directed discovery engine targeting protein dysregulation; the treatment potential, designs, proposed mechanisms of action, and potential administration of our drug candidates; potential indications and attributes of epitopes and antibodies we have identified in our programs; plans for ongoing and future clinical trials of our drug candidates; our potential to advance, initiate, and complete investigational new drug (“IND”) enabling studies for our discovery and preclinical programs; the expected timing of reporting data from clinical trials of our drug candidates, including any topline study results for our Phase 3 AFFIRM-AL clinical trial between 4Q 2024 and 2Q 2025; our collaborations with F. Hoffman-La Roche Ltd and Hoffmann-La Roche Inc. (together “Roche”), Bristol Myers Squibb Company (“BMS”), and Novo Nordisk, and amounts we may receive under such collaborations; the sufficiency of our cash position to fund advancement of a broad pipeline and completion of our ongoing clinical trials; and our anticipated need for additional capital.

These forward-looking statements are not guarantees of future performance or development and involve known and unknown risks, uncertainties, and other factors that are in some cases beyond our control. As a result, any or all of our forward-looking statements in this Quarterly Report on Form 10-Q may turn out to be inaccurate. Factors that could cause our actual results to differ materially include, but are not limited to, the risks and uncertainties set forth below, those discussed under Part II Item 1A “Risk Factors” of this Quarterly Report on Form 10-Q, and in our other filings with the U.S. Securities and Exchange Commission.

Except as required by law or by the rules and regulations of the U.S. Securities and Exchange Commission, we undertake no obligation to revise or update any forward-looking statements to reflect any event or circumstance that arises after the date of this Quarterly Report on Form 10-Q, including without limitation:

- our ability to obtain additional financing in future offerings and/or obtain funding from future collaborations;
- our operating losses;
- our ability to successfully complete research and development of our drug candidates;
- our ability to develop, manufacture and commercialize products;
- our collaborations and other agreements with third parties, including Roche, BMS, and Novo Nordisk;
- our ability to protect our patents and other intellectual property;
- our ability to hire and retain key employees;
- our ability to maintain financial flexibility and sufficient cash, cash equivalents and investments and other assets capable of being monetized to meet our liquidity requirements;
- the timing, receipt, and amount of any capital investments, cost-sharing contributions or reimbursements, milestone payments, or royalties that we might receive under current or potential future collaborations, including any milestone payments pursuant to our agreement with Novo Nordisk;
- potential disruptions in the U.S. and global capital and credit markets, including by geopolitical conflicts and pandemics;
- government regulation of our industry;
- the volatility of the market price of our ordinary shares; and
- business disruptions.

Summary of Risks Affecting Our Business

Our business is subject to numerous risks and uncertainties. The following summary highlights some of the risks you should consider with respect to our business and prospects. These risks are described more fully in Part II Item 1A “Risk Factors” of this Quarterly Report on Form 10-Q which includes a more complete discussion of the risks summarized below as well as a discussion of other risks related to our business, our prospects, and your investment.

- We anticipate that we will incur losses for the foreseeable future and we may never sustain profitability.
- We will require additional capital to fund our operations, and if we are unable to obtain such capital, we will be unable to successfully develop and commercialize drug candidates.
- Our success is largely dependent on the success of our research and development programs; our drug candidates are in various stages of development and we may not be able to successfully discover, develop, obtain regulatory approval for, or commercialize any drug candidates.
- We have entered into agreements to develop and bring to market drug candidates with Roche, BMS, and Novo Nordisk and may enter into additional agreements in the future, and we might not realize the anticipated benefits of such agreements including receiving anticipated milestone payments pursuant to these agreements.
- If clinical trials of our drug candidates are prolonged, delayed, suspended, or terminated, we may be unable to commercialize our drug candidates on a timely basis, which would require us to incur additional costs and delay our receipt of any revenue from potential product sales.
- Even if any of our drug candidates receives regulatory approval, if such approved product does not achieve broad market acceptance, the revenues that we generate from sales of the product will be limited.
- If we are unable to adequately protect or enforce the intellectual property relating to our drug candidates our ability to successfully commercialize our drug candidates will be harmed.
- Our future success depends on our ability to retain key personnel and to attract, retain, and motivate qualified personnel.

PART I. FINANCIAL INFORMATION

ITEM 1. FINANCIAL STATEMENTS

Prothena Corporation plc and Subsidiaries

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

	March 31, 2024	December 31, 2023
Assets		
Current assets:		
Cash and cash equivalents	$ 546,512	$ 618,830
Accounts receivable	—	5,159
Prepaid expenses and other current assets	18,004	13,941
Restricted cash, current	1,352	1,352
Total current assets	565,868	639,282
Non-current assets:		
Property and equipment, net	3,672	3,836
Operating lease right-of-use assets	12,510	12,162
Deferred tax assets	36,675	33,893
Restricted cash, non-current	860	860
Other non-current assets	3,609	6,349
Total non-current assets	57,326	57,100
Total assets	$ 623,194	$ 696,382
Liabilities and Shareholders' Equity		
Current liabilities:		
Accounts payable	$ 14,420	$ 25,391
Accrued research and development	17,340	14,724
Lease liability, current	2,372	1,114
Other current liabilities	9,134	15,662
Total current liabilities	43,266	56,891
Non-current liabilities:		
Deferred revenue, non-current	67,405	67,405
Lease liability, non-current	10,124	10,721
Total non-current liabilities	77,529	78,126
Total liabilities	120,795	135,017
Commitments and contingencies (Note 6)		
Shareholders' equity:		
Euro deferred shares, € 22 nominal value:	—	—
Authorized shares — 10,000 at March 31, 2024 and December 31, 2023		
Issued and outstanding shares — none at March 31, 2024 and December 31, 2023		
Ordinary shares, $ 0.01 par value:	537	537
Authorized shares — 100,000,000 at March 31, 2024 and December 31, 2023		
Issued and outstanding shares — 53,720,455 and 53,682,117 at March 31, 2024 and December 31, 2023, respectively		
Additional paid-in capital	1,554,132	1,540,859
Accumulated deficit	(1,052,270)	(980,031)
Total shareholders' equity	502,399	561,365
Total liabilities and shareholders' equity	$ 623,194	$ 696,382

See accompanying Notes to Condensed Consolidated Financial Statements.

Prothena Corporation plc and Subsidiaries
Condensed Consolidated Statements of Operations
(in thousands, except per share data)
(unaudited)

	Three Months Ended March 31,	
	2024	**2023**
Collaboration revenue	$ —	$ 2,119
Revenue from license and intellectual property	50	50
Total revenue	50	2,169
Operating expenses:		
Research and development	64,114	44,756
General and administrative	17,464	13,738
Total operating expenses	81,578	58,494
Loss from operations	(81,528)	(56,325)
Other income (expense):		
Interest income	7,165	6,690
Other expense, net	(77)	(141)
Total other income, net	7,088	6,549
Loss before income taxes	(74,440)	(49,776)
Benefit from income taxes	(2,201)	(2,912)
Net loss	$ (72,239)	$ (46,864)
Basic net income (loss) per ordinary share	$ (1.34)	$ (0.89)
Diluted net income (loss) per ordinary share	$ (1.34)	$ (0.89)
Shares used to compute basic net income (loss) per share	53,714	52,501
Shares used to compute diluted net income (loss) per share	53,714	52,501

See accompanying Notes to Condensed Consolidated Financial Statements.

Prothena Corporation plc and Subsidiaries
Condensed Consolidated Statements of Cash Flows
(in thousands)
(unaudited)

	Three Months Ended March 31,	
	2024	**2023**
Operating activities		
Net loss	$ (72,239)	$ (46,864)
Adjustments to reconcile net loss to cash used in operating activities:		
Depreciation	215	201
Share-based compensation	12,383	8,790
Deferred income taxes	(2,782)	(3,229)
Reduction in the carrying amount of right-of-use assets	672	1,558
Changes in operating assets and liabilities:		
Accounts receivable	5,159	—
Prepaid and other assets	(1,639)	(5,935)
Accounts payable, accruals and other liabilities	(14,455)	1,728
Deferred revenue	—	(2,119)
Operating lease liabilities	(365)	(1,588)
Net cash used in operating activities	(73,051)	(47,458)
Investing activities		
Purchases of property and equipment	(103)	(48)
Net cash used in investing activities	(103)	(48)
Financing activities		
Proceeds from issuance of ordinary shares in public offering, net	—	20,722
Proceeds from issuance of ordinary shares in at-the market offering, net	(54)	(40)
Proceeds from issuance of ordinary shares upon exercise of stock options	890	2,602
Net cash provided by financing activities	836	23,284
Net decrease in cash, cash equivalents and restricted cash	(72,318)	(24,222)
Cash, cash equivalents and restricted cash, beginning of the year	621,042	712,618
Cash, cash equivalents and restricted cash, end of the period	$ 548,724	$ 688,396
Supplemental disclosures of cash flow information		
Cash paid for income taxes	$ 20	$ —
Supplemental disclosures of non-cash investing and financing activities		
Acquisition of property and equipment included in accounts payable and accrued liabilities	$ 184	$ 345
At-the market offering costs included in accounts payable and accrued liabilities	$ —	$ 2
Public offering costs included in accounts payable and accrued liabilities	$ —	$ 35

See accompanying Notes to Condensed Consolidated Financial Statements.

The following table provides a reconciliation of cash, cash equivalents and restricted cash reported within the statement of financial position that sum to the total of the same such amounts shown in the Condensed Consolidated Statements of Cash Flows.

	Three Months Ended March 31,	
	2024	2023
Cash and cash equivalents	$ 546,512	$ 686,184
Restricted cash, current	1,352	—
Restricted cash, non-current	860	2,212
Total cash, cash equivalents and restricted cash, end of the period	$ 548,724	$ 688,396

Prothena Corporation plc and Subsidiaries
Condensed Consolidated Statements of Shareholders' Equity
(in thousands, except share data)
(unaudited)

	Ordinary Shares		Additional Paid-in Capital	Accumulated Deficit	Total Shareholders' Equity
	Shares	Amount			
Balances at December 31, 2023	**53,682,117**	**$ 537**	**$ 1,540,859**	**$ (980,031)**	**$ 561,365**
Share-based compensation			12,383		12,383
Issuance of ordinary shares upon exercise of stock options	38,338	—	890		890
Net loss				(72,239)	(72,239)
Balances at March 31, 2024	**53,720,455**	**$ 537**	**$ 1,554,132**	**$ (1,052,270)**	**$ 502,399**

	Ordinary Shares		Additional Paid-in Capital	Accumulated Deficit	Total Shareholders' Equity
	Shares	Amount			
Balances at December 31, 2022	**52,103,608**	**$ 521**	**$ 1,454,524**	**$ (833,003)**	**$ 622,042**
Share-based compensation			8,790		8,790
Issuance of ordinary shares upon exercise of stock options	179,474	2	2,538		2,540
Issuance of ordinary shares from the underwriters partial exercise of their 30-day option to purchase additional shares as part of the December 2022 public offering, net of issuance costs of $ 1.4 million	395,096	4	20,897		20,901
Net loss				(46,864)	(46,864)
Balances at March 31, 2023	**52,678,178**	**$ 527**	**$ 1,486,749**	**$ (879,867)**	**$ 607,409**

See accompanying Notes to Condensed Consolidated Financial Statements.

Notes to the Condensed Consolidated Financial Statements
(unaudited)

1. Organization

Description of Business

Prothena Corporation plc (“Prothena” or the “Company”) is a late-stage clinical biotechnology company with expertise in protein dysregulation and a pipeline of investigational therapeutics with the potential to change the course of devastating neurodegenerative and rare peripheral amyloid diseases.

Fueled by its deep scientific expertise built over decades of research, the Company is advancing a pipeline of therapeutic candidates for a number of indications and novel targets for which its ability to integrate scientific insights around neurological dysfunction and the biology of misfolded proteins can be leveraged. The Company’s wholly-owned programs include birtamimab for the potential treatment of AL amyloidosis, and a portfolio of programs for the potential treatment of Alzheimer’s disease including PRX012, which targets amyloid beta (Aβ), and PRX123, a novel dual Aβ-tau vaccine. The Company’s partnered programs include prasinezumab, in collaboration with Roche for the potential treatment of Parkinson’s disease and other related synucleinopathies, and programs that target tau (BMS-986446, formerly PRX005), TDP-43, and an undisclosed target (PRX019) in collaboration with Bristol Myers Squibb (BMS) for the potential treatment of Alzheimer’s disease, amyotrophic lateral sclerosis (ALS), and other neurodegenerative diseases, respectively. The Company is also entitled to certain potential milestone payments pursuant to the Company’s share purchase agreement with Novo Nordisk pertaining to the Company’s ATTR amyloidosis business (including NNC6019, formerly PRX004).

The Company was formed on September 26, 2012, under the laws of Ireland and re-registered as an Irish public limited company on October 25, 2012. The Company's ordinary shares began trading on The Nasdaq Global Market under the symbol “PRTA” on December 21, 2012, and currently trade on The Nasdaq Global Select Market.

Liquidity and Business Risks

As of March 31, 2024, the Company had an accumulated deficit of $ 1.1 billion and cash and cash equivalents of $ 546.5 million.

Based on the Company's business plans, management believes that the Company’s cash and cash equivalents at March 31, 2024, are sufficient to meet its obligations for at least the next twelve months. To operate beyond such period, or if the Company elects to increase its spending on research and development programs significantly above current long-term plans or enters into potential licenses and or other acquisitions of complementary technologies, products or companies, the Company may need additional capital. The Company expects to continue to finance future cash needs that exceed its cash from operating activities primarily through its current cash and cash equivalents, payments pursuant to its agreements with Roche, BMS, and Novo Nordisk, and, to the extent necessary, through proceeds from public or private equity or debt financings, loans and other collaborative agreements with corporate partners or other arrangements.

2. Summary of Significant Accounting Policies

Basis of Preparation and Presentation of Financial Information

These accompanying Condensed Consolidated Financial Statements have been prepared in accordance with the accounting principles generally accepted in the U.S. (“GAAP”) and with the instructions for Form 10-Q and Regulation S-X statements. Accordingly, they do not include all of the information and notes required for complete financial statements. These Condensed Consolidated Financial Statements should be read in conjunction with the Consolidated Financial Statements and Notes thereto contained in the Company’s Annual Report on Form 10-K filed with the U.S. Securities and Exchange Commission (the “SEC”) on February 22, 2024 (the “2023 Form 10-K”). These Unaudited Interim Condensed Consolidated Financial Statements are presented in U.S. dollars, which is the functional currency of the Company and its consolidated subsidiaries. These Condensed Consolidated Financial Statements include the accounts of the Company and its consolidated subsidiaries. All intercompany balances and transactions have been eliminated in consolidation.

Unaudited Interim Financial Information

The accompanying Condensed Consolidated Financial Statements and related disclosures are unaudited, have been prepared on the same basis as the annual consolidated financial statements and, in the opinion of management, reflect all adjustments, which include only normal recurring adjustments, necessary for a fair presentation of the results of operations for

the periods presented. The year-end condensed consolidated balance sheet data was derived from audited financial statements, however certain information and footnote disclosures normally included in financial statements prepared in accordance with GAAP have been condensed or omitted. The condensed consolidated results of operations for any interim period are not necessarily indicative of the results to be expected for the full year or for any other future year or interim period.

Use of Estimates

The preparation of the Condensed Consolidated Financial Statements in conformity with U.S. GAAP requires the Company to make judgments, estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosures. On an ongoing basis, management evaluates its estimates, including critical accounting policies or estimates related to revenue recognition and research and development expenses. The Company bases its estimates on historical experience and on various other market specific and other relevant assumptions that management believes 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. Because of the uncertainties inherent in such estimates, actual results may differ materially from these estimates.

Significant Accounting Policies

There were no significant changes to the accounting policies during the three months ended March 31, 2024, from the significant accounting policies described in Note 2 of the Notes to Consolidated Financial Statements in the 2023 Form 10-K.

Concentration of Risks and Other Risks and Uncertainties

Financial instruments that potentially subject the Company to concentration of credit risk consist of cash and cash equivalents and accounts receivable. The Company places its cash equivalents with high credit quality financial institutions and, by policy, limits the amount of credit exposure with any one financial institution. Deposits held with banks have exceeded, and will continue to exceed, federally insured limits. The Company is exposed to credit risk in the event of a default by the financial institutions holding its cash and cash equivalents. The Company has not experienced any losses on its deposits of cash and cash equivalents and its credit risk exposure is up to the extent recorded on the Company's Condensed Consolidated Balance Sheet.

The Company’s business is primarily conducted in U.S. dollars except for its agreements with contract manufacturers for drug supplies which are primarily denominated in Euros. The Company recorded a loss on foreign currency exchange rate differences of approximately $ 77,000 and $ 141,000 during the three months ended March 31, 2024 and 2023, respectively. If the Company increases its business activities that require the use of foreign currencies, it may be exposed to losses if the Euro and other such currencies continue to strengthen against the U.S. dollar.

As of March 31, 2024, and December 31, 2023 , approximately $ 3.7 million and $ 3.8 million, respectively, of the Company’s property and equipment, net were held in the U.S. and a nominal amount were in Ireland.

The Company is subject to a number of risks similar to other late-stage clinical biotechnology companies, including, but not limited to, the need to obtain adequate additional funding, possible failure of current or future preclinical testing or clinical trials, its reliance on third parties to conduct its clinical trials, the need to obtain regulatory and marketing approvals for its drug candidates, competitors developing new technological innovations, the need to successfully commercialize and gain market acceptance of the Company’s drug candidates, its right to develop and commercialize its drug candidates pursuant to the terms and conditions of the licenses granted to the Company, protection of proprietary technology, and the need to secure and maintain adequate clinical trial management, manufacturing, packaging, labeling, storage, testing, and distribution arrangements with third parties. The Company also relies on third-party consultants to assist in managing these third parties and assist with its clinical trial operations and manufacturing. If the Company does not successfully commercialize or partner any of its drug candidates, it will be unable to generate product revenue or achieve profitability. Further, the Company is also subject to broad market risks and uncertainties resulting from recent events, such as inflation, rising interest rates, and recession risks, as well as supply chain and labor shortages.

Segment

The Company operates in one segment. The Company’s chief operating decision maker (the “CODM”), its Chief Executive Officer, manages the Company’s operations and evaluates the Company’s financial performance on a consolidated basis for purposes of allocating resources.

Recent Accounting Pronouncements

On March 6, 2024, the SEC issued final rule, “The Enhancement and Standardization of Climate-Related Disclosures for Investors”, which requires registrants to disclose material climate-related risks, including descriptions of board oversight and

risk management activities, the material impacts of these risks on a registrants strategy, business model and outlook and any material climate-related targets or goals. The rule requires these climate-related information to be disclosed in registration statements and annual reports. Registrants will also need to quantify certain effects of severe weather events and other natural conditions in a note to their audited financial statements. In addition, accelerated and large accelerated filers will need to disclose Scope 1 and Scope 2 greenhouse gas (GHG) emissions, if material, which will be subject to third-party assurance. The Company will be required to comply with the rule in fiscal year beginning January 1, 2025 for all disclosures other than the compliance with quantitative and qualitative disclosure requirements of material expenditures and material impacts on financial estimates that directly result from (1) activities to mitigate or adapt to the climate-related risks, (2) targets or goals and (3) transition plans will be required beginning fiscal year 2026. The Company's other compliance dates are the following: 1) Scope 1 and Scope 2 GHG emissions - fiscal year beginning January 1, 2026; Limited assurance - fiscal year beginning January 1, 2029; Reasonable assurance - fiscal year beginning January 1, 2033; and Electronic tagging - fiscal year beginning January 1, 2026. The Company is currently evaluating the impact of the new standard on its consolidated financial statements and related disclosures. On April 4, 2024, the Securities and Exchange Commission (SEC) voluntarily stayed implementation of its recently adopted Climate Disclosure Rules.

On November 27, 2023, the FASB issued Accounting Standards Update 2023-07 ("ASU 2023-07"), Segment Reporting- Improvements to Reportable Segment Disclosures, which requires public entities to provide disclosures on significant segment expenses that are regularly provided to the CODM and included within each reported measure of segment profit or loss and other segment items on an annual and interim basis. The guidance also requires public entities to provide all disclosures about reportable segment's profit or loss and assets in interim periods that are currently required annually. Public entities with a single reportable segment have to provide all disclosures required by Accounting Standards Codification (ASC) 280, Segment Reporting including the significant segment expense disclosures. The guidance is applied retrospectively to all periods presented in financial statements and is effective for fiscal years beginning after December 15, 2023, and for interim periods beginning after December 15, 2024. Early adoption is permitted. The Company is currently evaluating the impact of adopting the update on the Company's disclosures.

In December 2023, the FASB issued ASU 2023-09, Improvements to Income Tax Disclosures, which requires public business entities to disclose a tabular reconciliation using both percentages and amounts, broken out into specific categories with certain reconciling items at or above 5% of the expected tax further broken out by nature and/or jurisdiction. The guidance also requires all entities to disclose income taxes paid, net of refunds, disaggregated by federal (national), state and foreign taxes for annual periods and to disaggregate the information by jurisdiction based on a quantitative threshold. All entities are required to apply the guidance prospectively, with the option to apply it retrospectively. The guidance is effective for the Company's fiscal year beginning January 1, 2025. Early adoption is permitted. The Company is currently evaluating the impact of the new standard on its income tax disclosures.

3. Fair Value Measurements

The Company measures certain financial assets and liabilities at fair value on a recurring basis, including cash equivalents. Fair value is an exit price, representing the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. As such, fair value is a market-based measurement that should be determined based on assumptions that market participants would use in pricing an asset or a liability. A three-tier fair value hierarchy is established as a basis for considering such assumptions and for inputs used in the valuation methodologies in measuring fair value:

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

Level 2 — inputs are other than quoted prices included in Level 1 that are observable for the asset or liability, either directly or indirectly.

Level 3 — inputs are unobservable inputs that are supported by little or no market activities, which would require the Company to develop its own assumptions.

The fair value hierarchy also requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. The carrying amounts of certain financial instruments, such as cash equivalents, prepaid expenses and other current assets, accounts receivable, accounts payable and accrued liabilities, approximate fair value due to their short-term nature.

Based on the fair value hierarchy, the Company classifies its cash equivalents within Level 1. This is because the Company values its cash equivalents using quoted market prices. The Company's Level 1 securities consisted of $ 522.8 million and $ 589.9 million in money market funds included in cash and cash equivalents at March 31, 2024, and December 31, 2023, respectively.

4. Composition of Certain Balance Sheet Items

Prepaid Expenses and Other Current Assets

	March 31, 2024	December 31, 2023
Prepaid R&D expenses	$ 14,034	$ 10,998
Prepaid G&A expenses	2,933	803
Other	1,037	2,140
Prepaid and other current assets	$ 18,004	$ 13,941

Property and Equipment, net

Property and equipment, net consisted of the following (in thousands):

	March 31, 2024	December 31, 2023
Machinery and equipment	$ 9,110	$ 9,019
Purchased computer software	2,192	2,232
	11,302	11,251
Less: accumulated depreciation and amortization	(7,630)	(7,415)
Property and equipment, net	$ 3,672	$ 3,836

Depreciation expense was $ 0.2 million for the three months ended March 31, 2024, compared to $ 0.2 million for the three months ended March 31, 2023, respectively.

Other Current Liabilities

Other current liabilities consisted of the following (in thousands):

	March 31, 2024	December 31, 2023
Payroll and related expenses	$ 6,847	$ 13,245
Professional services	323	288
Other	1,964	2,129
Other current liabilities	$ 9,134	$ 15,662

5. Net Income (Loss) Per Ordinary Share

Net income (loss) per ordinary share was determined as follows (in thousands, except per share amounts):

	Three Months Ended March 31,	
	2024	2023
Numerator:		
Net loss	$ (72,239)	$ (46,864)
Denominator:		
Weighted-average ordinary shares outstanding used in per share calculations - basic	53,714	52,501
Weighted-average ordinary shares outstanding used in per share calculations - diluted	53,714	52,501
Net income (loss) per share:		
Basic net income (loss) per ordinary share	$ (1.34)	$ (0.89)
Diluted net income (loss) per ordinary share	$ (1.34)	$ (0.89)

Potentially issuable ordinary shares were not used in computing diluted net loss per ordinary share as their effect would be anti-dilutive due to the loss recorded during the three months ended March 31, 2024 and 2023, and therefore diluted net loss per share is equal to basic net loss per share.

The equivalent ordinary shares not included in diluted net income (loss) per share because their effect would be anti-dilutive are as follows (in thousands):

	Three Months Ended March 31,	
	2024	2023
Stock options to purchase ordinary shares	11,751	10,471
Restricted Stock Units (RSU)	25	23
Total	11,776	10,494

6. Commitments and Contingencies

Lease Commitments

As of March 31, 2024, the Company currently has three leases relating to its facilities in Brisbane, California, and Dublin, Ireland.

South San Francisco Facility

The Company had a noncancelable operating sublease (the “SSF Lease”) covering 128,751 square feet of office and laboratory space in South San Francisco, California, U.S. (the “SSF Facility”), which expired on December 31, 2023.

Total operating lease cost was nil and $ 1.6 million for the three months ended March 31, 2024 and 2023, respectively. Total cash paid against the operating lease liability was nil and $ 1.6 million for the three months ended March 31, 2024 and 2023, respectively. The Company obtained a standby letter of credit which could be drawn down by the sublandlord in the event the Company fails to fully and faithfully perform all of its obligations under the SSF Lease and to compensate the sublandlord for all losses and damages the sublandlord may suffer as a result of the occurrence of any default on the part of Company not cured within the applicable cure period. This standby letter of credit is collateralized by a certificate of deposit of the same amount which is classified as restricted cash. As of March 31, 2024, none of the remaining standby letter of credit amount of $ 1.4 million included in restricted cash, current was used. The remaining balance was released to the Company in May 2024.

Sub-Sublease of South San Francisco Facility

The Company had a Sub-Sublease Agreement (the “Sub-Sublease”) with Assembly Biosciences, Inc. covering approximately 46,641 square feet of office and laboratory space of the SSF Facility. The Sub-Sublease expired on December 15, 2023, in connection with the expiration of the SSF Lease. The Sub-Sublease was considered an operating lease under ASC 842. For the three months ended March 31, 2024 and 2023 , the Company recorded nil and $ 0.7 million, respectively, of sub-lease rental income as an offset to its operating expenses.

Dublin

In June 2021, the Company entered into a lease agreement for office space in Dublin, Ireland, which commenced in August 2021 and had an initial term of one year . In April 2023, the Company renewed the lease for another one year term with a termination date of July 2024. In addition, the Company entered into a lease agreement for additional office space in Dublin, Ireland, which commenced in August 2023 and has an initial term of one year . Both of these leases have an automatic renewal clause, pursuant to which the agreement will be extended automatically for successive periods equal to the current term, unless the agreement is cancelled by the Company.

Brisbane Facility

On October 28, 2022, the Company entered into a noncancelable operating sublease (the "Brisbane Sublease") to sublease approximately 31,157 square feet of office and laboratory space located in Brisbane, California (the “Brisbane Facility”) with Arcus Biosciences, Inc., (the "Sublandlord"). The Brisbane Sublease became effective on October 28, 2022. The Brisbane Sublease provides that the Company's obligation to pay rent commenced on July 1, 2023, which is subject to abatement for the first six months following such date, with the exception of the seventh rent payment that was due upon execution of the Brisbane Sublease. The Company is obligated to make lease payments totaling approximately $ 14.9 million over the lease term,

which expires on September 30, 2028, unless terminated earlier. The Brisbane Sublease further provides that the Company is obligated to pay to the Sublandlord certain costs, including taxes and operating expenses. The Company has the option to extend the sublease by providing written notice at least nine months prior to the expiration of the sublease term. As of March 31, 2024, the Brisbane Sublease has a remaining lease term of 4.50 years.

The Brisbane Sublease is considered an operating lease and the accounting lease commencement date was on July 31, 2023 when the Company gained control over of the Brisbane Facility. The Company recorded a right-of-use asset of approximately $ 11.4 million and lease liability of approximately $ 3.6 million relating to the Brisbane Sublease on the lease commencement date. The discount rate used to determine the lease liability was 5.76 %. The initial measurement of the right-of-use asset for the Brisbane Sublease includes the tenant improvement added by the Company wherein the lessor was deemed the accounting owner.

The Company was entitled to an improvement allowance of up to $ 9.3 million, to be used for costs incurred by the Company to construct certain improvements to the Brisbane Facility and to prepare for the Company's occupancy of the Brisbane Facility. As of March 31, 2024, all of the $ 9.3 million improvement allowance has been received from the Sublandlord and the Company is obligated to fund construction costs incurred in excess of the improvement allowance.

Total operating lease cost for the Brisbane Sublease was $ 0.8 million and nil for the three months ended March 31, 2024 . Total cash paid against the operating lease liability was $ 0.5 million for the three months ended March 31, 2024 .

In conjunction with the Brisbane Sublease, the Company obtained a standby letter of credit in the initial amount of $ 0.9 million, which may be drawn down by the Sublandlord in the event the Company fails to fully and faithfully perform all of its obligations under the Brisbane Sublease and to compensate the Sublandlord for all losses and damages the Sublandlord may suffer as a result of the occurrence of any default on the part of the Company not cured within the applicable cure period. As of March 31, 2024, none of the standby letter of credit amount of $ 0.9 million has been used.

Future minimum payments under the above-described noncancelable operating leases, including a reconciliation to the lease liabilities recognized in the Condensed Consolidated Balance Sheets as of March 31, 2024, are as follows (in thousands):

Year Ended December 31,	Operating Leases
2024 (9 months)	2,295
2025	3,051
2026	3,158
2027	3,269
2028	2,523
Thereafter	—
Total	$ 14,296
Less: Present value adjustment	(1,800)
Lease liability	$ 12,496

Indemnity Obligations

The Company has entered into indemnification agreements with its current and former directors and officers and certain key employees. These agreements contain provisions that may require the Company, among other things, to indemnify such persons against certain liabilities that may arise because of their status or service and advance their expenses incurred as a result of any indemnifiable proceedings brought against them. The obligations of the Company pursuant to the indemnification agreements continue during such time as the indemnified person serves the Company and continues thereafter until such time as a claim can be brought. The maximum potential amount of future payments the Company could be required to make under these indemnification agreements is unlimited; however, the Company has a director and officer liability insurance policy that limits its exposure and enables the Company to recover a portion of any future amounts paid. As a result of its insurance policy coverage, the Company believes the estimated fair value of these indemnification agreements is minimal. Accordingly, the Company had no liabilities recorded for these agreements as of March 31, 2024, and 2023.

Other Commitments

In the normal course of business, the Company enters into various firm purchase commitments primarily related to research and development activities. As of March 31, 2024, the Company had non-cancelable purchase commitments to

suppliers for $ 11.4 million of which $ 6.7 million is included in current liabilities, and contractual obligations under license agreements of $ 0.3 million of which nil is included in current liabilities. The following is a summary of the Company's non-cancelable purchase commitments and contractual obligations as of March 31, 2024 (in thousands):

	Total	2024	2025	2026	2027	2028	Thereafter
Purchase Obligations [1]	$ 11,383	$ 11,194	$ 147	$ 42	$ —	$ —	$ —
Contractual obligations under license agreements	338	64	64	60	60	45	45
Total	$ 11,721	$ 11,258	$ 211	$ 102	$ 60	$ 45	$ 45

[1] *Purchase obligations consist of non-cancelable purchase commitments to suppliers and contract research organizations.*

7. Significant Agreements

Roche License Agreement

In December 2013, the Company through its wholly owned subsidiary Prothena Biosciences Limited and Prothena Biosciences Inc entered into a License, Development, and Commercialization Agreement (the "License Agreement") with F. Hoffmann-La Roche Ltd. and Hoffmann-La Roche Inc. (together, "Roche") to develop and commercialize certain antibodies that target α-synuclein, including prasinezumab, which are referred to collectively as "Licensed Products." Upon the effectiveness of the License Agreement in January 2014, the Company granted to Roche an exclusive, worldwide license to develop, make, have made, use, sell, offer to sell, import and export the Licensed Products. The Company retained certain rights to conduct development of the Licensed Products and an option to co-promote prasinezumab in the U.S. During the term of the License Agreement, the Company and Roche will work exclusively with each other to research and develop antibody products targeting alpha-synuclein (or α-synuclein) potentially including incorporation of Roche's proprietary Brain Shuttle™ technology to potentially increase delivery of therapeutic antibodies to the brain. The License Agreement provided for Roche making an upfront payment to the Company of $ 30.0 million, which was received in February 2014; making a clinical milestone payment of $ 15.0 million upon initiation of the Phase 1 clinical trial for prasinezumab, which was received in May 2014; making a clinical milestone payment of $ 30.0 million upon dosing of the first patient in the Phase 2 clinical trial for prasinezumab, which was achieved in June 2017; and making a clinical milestone payment of $ 60.0 million upon dosing of the first patient in the global Phase 2b PADOVA study for prasinezumab, which was achieved in May 2021.

For prasinezumab, Roche is obligated to pay:

- up to $ 290.0 million upon the achievement of development, regulatory, and various first commercial sales milestones;
- up to $ 155.0 million upon achievement of U.S. commercial sales milestones;
- up to $ 175.0 million upon achievement of ex-U.S. commercial sales milestones; and
- tiered, high single-digit to high double-digit royalties in the teens based on U.S. and ex-U.S. annual net sales, subject to certain adjustments, with respect to the applicable Licensed Product.

Roche bore 100 % of the cost of conducting the research collaboration under the License Agreement during the research term, which expired December 31, 2017. In May 2021, the Company exercised its rights under the terms of License Agreement to receive potential U.S. commercial sales milestone and royalties, in lieu of a U.S. profit and loss share for prasinezumab in Parkinson's disease. Thus, in the U.S., through May 28, 2021, the parties shared all development costs, all of which were allocated 70 % to Roche and 30 % to the Company, for prasinezumab in the Parkinson's disease indication. If the Company opts in to participate in co-development and co-funding for any other Licensed Products and/or indications, the parties will share all development and commercialization costs, as well as profits, all of which will be allocated 70 % to Roche and 30 % to the Company.

The Company initiated a Phase 1 clinical trial for prasinezumab in 2014. Following the Phase 1 clinical trial, Roche became primarily responsible for developing, obtaining and maintaining regulatory approval for and commercializing Licensed Products. Roche also became responsible for the clinical and commercial manufacture and supply of Licensed Products.

In addition, the Company has an option under the License Agreement to co-promote prasinezumab in the U.S. in the Parkinson's disease indication. If the Company exercises such option, it may also elect to co-promote additional Licensed

Products in the U.S. approved for Parkinson's disease. Outside the U.S., Roche will have responsibility for developing and commercializing the Licensed Products. Roche bears all costs that are specifically related to obtaining or maintaining regulatory approval outside the U.S. and will pay the Company a variable royalty based on annual net sales of the Licensed Products outside the U.S.

The License Agreement continues on a country-by-country basis until the expiration of all payment obligations under the License Agreement. The License Agreement may also be terminated (i) by Roche at will after the first anniversary of the effective date of the License Agreement, either in its entirety or on a Licensed Product-by-Licensed Product basis, upon 90 days' prior written notice to the Company prior to first commercial sale and 180 days' prior written notice to Prothena after first commercial sale, (ii) by either party, either in its entirety or on a Licensed Product-by-Licensed Product or region-by-region basis, upon written notice in connection with a material breach uncured 90 days after initial written notice, and (iii) by either party, in its entirety, upon insolvency of the other party. The License Agreement may be terminated by either party on a patent-by-patent and country-by-country basis if the other party challenges a given patent in a given country. The Company's rights to co-develop Licensed Products under the License Agreement will terminate if the Company commences certain studies for certain types of competitive products. The Company's rights to co-promote Licensed Products under the License Agreement will terminate if the Company commences a Phase 3 study for such competitive products.

The License Agreement cannot be assigned by either party without the prior written consent of the other party, except to an affiliate of such party or in the event of a merger or acquisition of such party, subject to certain conditions. The License Agreement also includes customary provisions regarding, among other things, confidentiality, intellectual property ownership, patent prosecution, enforcement and defense, representations and warranties, indemnification, insurance, and arbitration and dispute resolution.

Performance Obligations

As of March 31, 2024, and December 31, 2023, there were no remaining performance obligations under License Agreement since the obligations related to research and development activities were only for the Phase 1 clinical trial and the remaining obligations were delivered or performed.

Milestone Accounting

Under the License Agreement, the Company is eligible to receive certain milestone payments upon the achievement of development, regulatory and various first commercial sales milestones. Milestone payments are evaluated under ASC Topic 606. Factors considered in this determination included scientific and regulatory risk that must be overcome to achieve each milestone, the level of effort and investment required to achieve the milestone, and the monetary value attributed to the milestone. Accordingly, the Company estimates payments in the transaction price based on the most likely approach, which considers the single most likely amount in a range of possible amounts related to the achievement of these milestones. Additionally, milestone payments are included in the transaction price only when the Company can conclude it is probable that a significant revenue reversal will not occur in future periods when the milestone is achieved.

The Company excludes the milestone payments and royalties in the initial transaction price calculation because such payments are considered to be variable considerations with constraint. Such milestone payments and royalties will be recognized as revenue once the Company can conclude it is probable that a significant revenue reversal will not occur in future periods.

The clinical and regulatory milestones under the License Agreement after the point at which the Company could opt out are considered to be variable considerations with constraint due to the fact that active participation in the development activities that generate the milestones is not required under the License Agreement, and the Company can opt out of these activities. There are no refunds or claw-back provisions and the milestones are uncertain of occurrence even after the Company has opted out. Based on this determination, these milestones will be recognized when the Company can conclude it is probable that a significant revenue reversal will not occur in future periods.

Collaboration Agreement with Bristol Myers Squibb

Overview

On March 20, 2018, the Company, through its wholly owned subsidiary Prothena Biosciences Limited ("PBL"), entered into a Master Collaboration Agreement (the "Collaboration Agreement") with Celgene Switzerland LLC ("Celgene"), a subsidiary of Celgene Corporation (which was acquired by Bristol Myers Squibb ("BMS") in November 2019), pursuant to which Prothena granted to Celgene a right to elect in its sole discretion to exclusively license rights both in the U.S. (the "US

Rights") and on a global basis (the "Global Rights"), with respect to the Company's programs to develop and commercialize antibodies targeting tau, TDP-43 and an undisclosed target (the "Collaboration Targets"). For each such program, BMS may exercise its US Rights at the IND filing, and if it so exercises such US Rights would also have a right to expand the license to Global Rights. If BMS exercises its US Rights for a program, then following the first to occur of (a) completion by the Company, in its discretion and at its cost, of Phase 1 clinical trials for such program or (b) the date on which BMS elects to assume responsibility for completing such Phase 1 clinical trials (at its cost), BMS would have decision making authority over development activities and all regulatory, manufacturing and commercialization activities in the U.S.

As discussed below, BMS exercised its US Rights for the tau/BMS-986446 (formerly PRX005) Collaboration Target and on July 30, 2021, PBL entered into a U.S. License Agreement granting BMS the exclusive license to develop, manufacture and commercialize antibody products in the United States targeting tau (the "Tau US License Agreement"). Subsequently, BMS exercised its Global Rights for the tau/BMS-986446 Collaboration Target and on July 5, 2023, PBL entered into a Global License Agreement granting BMS the exclusive license to develop, manufacture and commercialize tau Collaboration Products globally for any and all uses or purposes with respect to any human or animal disease, disorder or condition (the "Tau Global License Agreement"). The Tau Global License Agreement supersedes and replaces the Tau US License Agreement in its entirety.

The Collaboration Agreement provided for Celgene making an upfront payment to the Company of $ 100.0 million which was received in April 2018, plus future potential license exercise payments and regulatory and commercial milestones for each program under the Collaboration Agreement, as well as royalties on net sales of any resulting marketed products. In connection with the Collaboration Agreement, the Company and Celgene entered into a Share Subscription Agreement on March 20, 2018, under which Celgene subscribed to 1,174,536 of the Company's ordinary shares for a price of $ 42.57 per share, for a total of approximately $ 50.0 million.

BMS US and Global Rights and Licenses

On a program-by-program basis, beginning on the effective date of the Collaboration Agreement and ending on the date that the IND Option term expires for such program (which generally occurs sixty days after the date on which the Company delivers to BMS the first complete data package for an IND that was filed for a lead candidate from the relevant program), BMS may elect in its sole discretion to exercise its US Rights to receive an exclusive license to develop, manufacture and commercialize antibodies targeting the applicable Collaboration Target in the U.S. (the "US License"). If BMS exercises its US Rights for a collaboration program, it is obligated to pay the Company an exercise fee of approximately $ 80.0 million per program. Thereafter, following the first to occur of (a) completion by the Company, in its discretion and at its cost, of Phase 1 clinical trials for such program or (b) BMS' election to assume responsibility to complete such Phase 1 clinical trials (at its cost), BMS would have the sole right to develop, manufacture and commercialize antibody products targeting the relevant Collaboration Target for such program (the "Collaboration Products") in the U.S.

On a program-by-program basis, following completion of a Phase 1 clinical trial for a collaboration program for which BMS has previously exercised its US Rights, BMS may elect in its sole discretion to exercise its Global Rights with respect to such collaboration program to receive a worldwide, exclusive license to develop, manufacture and commercialize antibodies targeting the applicable Collaboration Target (the "Global License"). If BMS exercises its Global Rights, BMS would be obligated to pay the Company an additional exercise fee of $ 55.0 million for such collaboration program. The Global Rights would then replace the US Rights for that collaboration program, and BMS would have decision making authority over developing, obtaining and maintaining regulatory approval for, manufacturing and commercializing the Collaboration Products worldwide.

After BMS' exercise of Global Rights for a collaboration program, the Company is eligible to receive up to $ 562.5 million in regulatory and commercial milestones per program. Following an exercise by BMS of either US Rights or Global Rights for such collaboration program, the Company will also be eligible to receive tiered royalties on net sales of Collaboration Products ranging from high single digit to high teen percentages, on a weighted average basis depending on the achievement of certain net sales thresholds. Such exercise fees, milestones and royalty payments are subject to certain reductions as specified in the Collaboration Agreement, the agreement for US Rights and the agreement for Global Rights.

BMS will continue to pay royalties on a Collaboration Product-by-Collaboration Product and country-by-country basis, until the latest of (i) expiration of certain patents covering the Collaboration Product, (ii) expiration of all regulatory exclusivity for the Collaboration Product, and (iii) an agreed period of time after the first commercial sale of the Collaboration Product in the applicable country (the "Royalty Term").

Term and Termination

The research term under the Collaboration Agreement continues to May 24, 2024, which BMS may extend for up to two additional 12-month periods by paying an extension fee of $ 10.0 million per extension period. The term of the Collaboration Agreement continues until the last to occur of the following: (i) expiration of the research term; (ii) expiration of all US Rights terms; and (iii) expiration of all Global Rights terms.

The term of any US License or Global License would continue on a Licensed Product-by-Licensed Product and country-by-country basis until the expiration of all Royalty Terms under such agreement.

The Collaboration Agreement may be terminated (i) by either party on a program-by-program basis if the other party remains in material breach of the Collaboration Agreement following a cure period to remedy the material breach, (ii) by BMS at will on a program-by-program basis or in its entirety, (iii) by either party, in its entirety, upon insolvency of the other party, or (iv) by the Company, in its entirety, if BMS challenges a patent licensed by the Company to BMS under the Collaboration Agreement.

Performance Obligations

The Company assessed the Collaboration Agreement and concluded that it represented a contract with a customer within the scope of ASC 606. Per ASC 606, a performance obligation is defined as a promise to transfer a good or service or a series of distinct goods or services. At inception of the Collaboration Agreement, the Company is not obligated to transfer any US License or Global License to BMS unless BMS exercises its US Rights or Global Rights, respectively, and the Company is not obligated to perform development activities under the development plan during preclinical and Phase 1 clinical trials including the regulatory filing of the IND.

The discovery, preclinical and clinical development activities performed by the Company are to be performed at the Company's discretion and are not promised goods or services and therefore are not considered performance obligations under ASC 606, unless and until the Company agrees to perform the Phase 1 clinical trials (after the IND option exercise) that are determined to be performance obligations at the time the option is exercised. Per the terms of the Collaboration Agreement, the Company may conduct discovery activities to characterize, identify and generate antibodies to become collaboration candidates that target such Collaboration Target, and thereafter may pre-clinically develop collaboration candidates to identify lead candidates that target such Collaboration Target and file an IND with the U.S. Food and Drug Administration (the "FDA") for a Phase 1 clinical trial for such lead candidates. In the event the Company agrees to be involved in a Phase 1 clinical trial, the Company will further evaluate whether any such promise represents a performance obligation at the time the option is exercised. If it is concluded that the Company has obligated itself to an additional performance obligation besides the license granted at IND option exercise, then the effects of the changes in the arrangement will be evaluated under the modification guidance of ASC 606.

The Company is not obligated to perform manufacturing activities. Per the terms of the Collaboration Agreement, to the extent that the Company, at its discretion, conducts a program, the Company shall be responsible for the manufacture of collaboration candidates and collaboration products for use in such program, as well as the associated costs. Delivery of manufactured compound (clinical product supply) is not deemed a performance obligation under ASC 606 as the Company is not obligated to transfer supply of collaboration product to BMS unless BMS exercises its right to participate in the Phase 1 development.

Compensation for the Company's provision of inventory supply, to the extent requested by BMS would be paid to the Company by BMS at a reasonable stand-alone selling price for such supply. Given that (i) there is substantial uncertainty about the development of the programs, (ii) the pricing for the inventory is at its standalone selling price and (iii) the manufacturing services require the entity to transfer additional goods or services that are incremental to the goods and services provided prior to the resolution of the contingency, the Company's supply of product is not a material right. Therefore, the inventory supply is not considered a performance obligation unless and until, requested by BMS.

In addition to the grant of the US License after BMS exercises its US Rights for a program, BMS is entitled to receive certain ancillary development services from the Company, such as technology transfer assistance, regulatory support, safety data reporting activities and transition supply, if requested by BMS.

In addition to the grant of the Global License after BMS exercises the Global Rights for a program, BMS is entitled to receive certain ancillary development services from the Company, such as ongoing clinical trial support upon request by BMS, transition supply, if requested by BMS, and regulatory support for coordination of pharmacovigilance matters.

The Company evaluated the potential obligations to transfer the US Licenses and Global Licenses and performance of the ancillary development services subsequent to exercise of the US Rights and Global Rights, if the options are exercised by BMS, under ASC 606-10-55-42 and 55-43 to determine whether the US Rights or the Global Rights provided BMS a “material right” and concluded that BMS’ options to exercise its US Rights and Global Rights represented “material rights” to BMS that it would not have received without entering into the Agreement.

At inception of the Collaboration Agreement, there were a total of six options, including US Rights and Global Rights to acquire a US License and a Global License, respectively, and rights to request certain development services (following exercise of the US Rights and Global Rights, respectively) for each of the three programs, with four such options remaining as of March 31, 2024. The deferred revenue balance as of March 31, 2024 of $ 67.4 million is related to the outstanding US Rights and Global Rights. Per ASC 606, the US Rights and Global Rights are material rights and therefore are performance obligations. The goods and services underlying the options are not accounted for as separate performance obligations, but rather become performance obligations, if and when, an option is exercised.

US License Agreement for the Tau/BMS-986446 Collaboration Target

On July 30, 2021, the Company entered into the Tau US License Agreement. The Tau US License Agreement included an upfront payment of $ 80.0 million.

The Tau US License Agreement included the following distinct performance obligations: (1) the delivery of the US License for tau/BMS-986446 Collaboration Target (“Tau US License Obligation”); and (2) the Company’s obligation to provide development activities under the development plan during any Phase 1 clinical trials (the “Tau US Development Services Obligation”). Revenue allocated to the Tau US License Obligation is recognized when the Company has satisfied its obligation at a point in time, while the revenue allocated to the Tau US Development Services Obligation are recognized over time using an input-based model.

Global License Agreement for the Tau/BMS-986446 Collaboration Target

On July 5, 2023, the Company entered into the Tau Global License Agreement, which as discussed above supersedes and replaces the Tau US License Agreement in its entirety. The Company received the associated option exercise fee of $ 55.0 million in August 2023 and it will be eligible to receive regulatory and sales milestones up to $ 562.5 million upon achievement of certain developmental events, including regulatory approval of a tau Collaboration Product, and on BMS achieving certain annual net sales thresholds in the United States and worldwide. The Company also will be eligible to receive tiered royalties on net sales of tau Collaboration Products, ranging from high single digit to high teen percentages, on a weighted average basis depending on the achievement of certain net sales thresholds.

The Company’s distinct performance obligation under the Tau Global License Agreement was limited to the delivery of the Global License for tau/ BMS-986446 Collaboration Target (“Tau Global License Obligation”). Revenue allocated to the Tau Global License Obligation is recognized when the Company has satisfied its obligation at a point in time.

Transaction Price

At inception of the Collaboration Agreement, the Company did not transfer any goods or services to BMS that are material. Accordingly, the Company has concluded that the initial transaction price will be recognized as a contract liability and will be deferred until the Company transfers control of goods or services to BMS (which would be when BMS exercises the US Right or Global Right and receives control of the US License or Global License for at least one of the programs), or when the IND Option term expires if BMS does not exercise the US Right (which is generally sixty days after the date on which the Company delivers to BMS the first complete data package for an IND that was filed for a lead candidate from the relevant program), or when the Phase 1 Option term expires if BMS does not exercise the Global Right (which is generally ninety days after the date on which the Company delivers to BMS the first complete data package for a Phase 1 clinical trial for a lead candidate from the relevant program) or at the termination of the Collaboration Agreement, whichever occurs first. At such point that the Company transfers control of goods or services to BMS, or when the option expires, the Company will recognize revenue as a continuation of the original contract. Under this approach, the Company will treat the consideration allocated to the material right as an addition to the consideration for the goods or services underlying the contract option.

At inception of the Collaboration Agreement, the Company estimated the standalone selling price for each performance obligation (i.e., the US Rights and Global Rights by program). The estimate of standalone selling price for the US Rights and Global Rights by program was based on the adjusted market assessment approach using a discounted cash flow model. The key assumptions used in the discounted cash flow model included the market opportunity for commercialization of each program in

the U.S. or globally depending on the license, the probability of successfully developing and commercializing a given program target, the estimated remaining development costs for the respective program, the estimated time to commercialization of the drug for that program and a discount rate.

The initial transaction price under the Collaboration Agreement, pursuant to ASC 606, was $ 110.2 million, including the $ 100.0 million upfront payment and $ 10.2 million premium on the ordinary shares purchased under the SSA. The Company allocated the initial transaction price across the US Rights and Global Rights for each program in a range of approximately $ 15 -$ 25 million and $ 10 -$ 18 million, respectively.

The Company did not include the option fees in the initial transaction price because such fees are contingent on the options to the US Rights and the Global Rights being exercised. Upon the exercise of the US Rights and the Global Rights for a program, the Company will have the obligation to deliver the US License and Global License and provide certain ancillary development services if requested by BMS, subsequent to its exercise of the US Rights and Global Rights, respectively, for such program. The Company will include the option fees in the transaction price at the point in time a material right is exercised and the Company transfers control of the goods and services to BMS. In addition, the Company did not include in the initial transaction price certain clinical and regulatory milestone payments since they relate to licenses for which BMS has not yet exercised its option to obtain and these variable considerations are constrained due to the likelihood of a significant revenue reversal.

Upon entering into the Tau US License Agreement, the Company granted BMS a US License for the tau/BMS-986446 Collaboration Target, which transferred control of such underlying US License to BMS. Following execution of the Tau US License Agreement, BMS paid the Company a $ 80.0 million option exercise fee. Under the continuation of the original contract method, the Company computed the relative sales price after the Company transferred control of the US License for tau/BMS-986446. The Company used the original allocated consideration for the US Right for tau/BMS-986446 of $ 24.9 million (computed at the inception of the contract) plus the $ 80.0 million option exercise fee to arrive at the total transaction price of approximately $ 104.9 million. This total transaction price was further allocated using the relative sales price method between the Tau US License Obligation and the Tau US Development Services Obligation.

The best estimate of selling price for the US License for tau/BMS-986446 was based on a discounted cash flow model. The key assumptions used in the discounted cash flow model used to determine the best estimate of selling price for the license included the market opportunity for commercialization of tau/BMS-986446, the probability of successfully developing/commercializing BMS-986446, the remaining development costs for tau/BMS-986446, and the estimated time to commercialization of tau/BMS-986446. Based on the relative selling price method, the amount that the Company allocated to the performance obligations is as follows: $ 77.5 million to the license to be recognized concurrent with the delivery of the license; and $ 27.5 million as development services to be recognized based on percentage of completion over the service period.

Upon entering into the Tau Global License Agreement, the Company granted BMS a Global License for the tau/BMS-986446 Collaboration Target, which transferred control of such underlying Global License to BMS. Following execution of the Tau Global License Agreement, BMS paid the Company a $ 55.0 million option exercise fee. Under the continuation of the original contract method, the Company computed the relative sales price after the Company transferred control of the Global License for tau/BMS-986446. The Company used the original allocated consideration for the Global Right for tau/BMS-986446 of $ 17.9 million (computed at the inception of the contract) plus the $ 55.0 million option exercise fee to arrive at the total transaction price of approximately $ 72.9 million. Given that the Company's distinct performance obligation under the Tau Global License Agreement was limited to the Tau Global License Obligation no further allocation was required.

Significant Payment Terms

The upfront payment of $ 100.0 million was received in April 2018, while all option fees and milestone payments are due within 30 days after the achievement of the relevant milestone by BMS or receipt by BMS of an invoice for such an amount from the Company.

The Collaboration Agreement does not have a significant financing component since a substantial amount of consideration promised by BMS to the Company is variable and the amount of such variable consideration varies based upon the occurrence or non-occurrence of future events that are not within the control of either BMS or the Company. Variable considerations related to clinical and regulatory milestone payments and option fees are constrained due to the likelihood of a significant revenue reversal.

Revenue and Expense Recognition

For the three months ended March 31, 2024 and 2023 , collaboration revenue from BMS was nil and $ 2.1 million. As of March 31, 2024, the aggregate amount of the transaction price allocated to the performance obligations that are unsatisfied was nil . The Company had nil and $ 5.2 million accounts receivable from BMS at March 31, 2024, and December 31, 2023, respectively.

Deferred Revenue

The deferred revenue balance at the beginning of the quarter ended March 31, 2024 was $ 67.4 million. As of March 31, 2024, the deferred revenue balance related to outstanding US Rights and Global Rights remained at $ 67.4 million, which was long term deferred revenue. The Company concluded that the deferred revenue should be classified as long term because BMS holds an option to extend the term of the Collaboration Agreement, and therefore the Company's performance obligations were solely at the option of BMS. Until such time that the Company has determined that BMS will not exercise its option to extend the term, the Company will continue to classify the balance as long term deferred revenue.

Milestone and Royalties Accounting

The Company is eligible to receive milestone payments of up to $ 90.0 million per program upon the achievement of certain specified regulatory milestones and milestone payments of up to $ 375.0 million per program upon the achievement of certain specified commercial sales milestones under the US License for such program. The Company is also eligible to receive milestone payments of up to $ 187.5 million per program upon the achievement of certain specified regulatory milestones and milestone payments of up $ 375.0 million per program upon the achievement of certain specified commercial sale milestones under the Global License for such program. Milestone payments are evaluated under ASC Topic 606. Factors considered in this determination included scientific and regulatory risk that must be overcome to achieve each milestone, the level of effort and investment required to achieve the milestone, and the monetary value attributed to the milestone. Accordingly, the Company estimates payments in the transaction price based on the most likely approach, which considers the single most likely amount in a range of possible amounts related to the achievement of these milestones. Additionally, milestone payments are included in the transaction price only when the Company can conclude it is probable that a significant revenue reversal will not occur in future periods.

The Company excluded the milestone payments and royalties in the initial transaction price because such payments are considered to be variable considerations with constraint. Such milestone payments and royalties will be recognized as revenue at a point in time when the Company can conclude it is probable that a significant revenue reversal will not occur in future periods.

The Company did not achieve any clinical and regulatory milestones under the Collaboration Agreement during the three months ended March 31, 2024 and 2023.

Novo Nordisk Share Purchase Agreement

On July 8, 2021, the Company together with its wholly owned subsidiary, PBL, entered into a definitive share purchase agreement with Novo Nordisk A/S and Novo Nordisk Region Europe A/S (each an unrelated party). Under the terms of such agreement, Novo Nordisk acquired PBL's wholly-owned subsidiary, Neotope Neuroscience Limited ("NNL") and gained full worldwide rights to the intellectual property and related rights to the Company's ATTR amyloidosis business and pipeline. Upon consummation of the transaction, NNL ceased to be a related party of PBL. The aggregate purchase price consisted of an upfront payment of $ 60.0 million in cash, subject to customary purchase price adjustments.

Should Novo Nordisk achieve certain stages of development or commercialization for products or product candidates containing NNC6019 (formerly PRX004) or a derivative thereof in ATTR amyloidosis, PBL is entitled to receive certain milestone payments based on specified development and commercial milestones. The development and commercialization milestone payments will be discounted if the milestone events are achieved with respect to other indications. Should Novo Nordisk achieve specified thresholds of worldwide, annual net sales of the milestone products, regardless of indication, PBL will also be entitled to receive specified one-time net sales milestone payments. All milestone payments attributable to an achieved milestone will be paid to PBL, subject to Novo Nordisk's offset right for indemnity claims or unpaid amounts in respect of any purchase price adjustment.

The upfront payment of $ 60.0 million was accounted for as revenue in 2021. In addition to the upfront payment, Novo Nordisk agreed to pay for certain out of pocket expenses under the Transition Services Agreement, which netted to $ 0.7 million after closing adjustments related to the sale of the ATTR amyloidosis business and pipeline.

Contingent Consideration/Milestone Accounting

In December 2022, the Company received a $ 40.0 million development milestone payment related to the continued advancement of NNC6019 in a Phase 2 clinical trial for the treatment of ATTR cardiomyopathy. This amount was accounted for as revenue from license and intellectual property in 2022.

The Company is eligible to receive additional development and sales milestone payments from Novo Nordisk totaling up to $ 1.13 billion upon achievement of certain specified development and commercial sales milestones under the share purchase agreement.

The Company excluded the milestone payments in the initial transaction price because such payments are considered to be variable considerations with constraint. Such milestone payments will be recognized as revenue at a point in time when the Company can conclude it is probable that a significant revenue reversal will not occur in future periods.

Revenue Recognition

Total revenue recognized related to the transaction during th e three months ended March 31, 2024 and 2023, w as nil and nil , respectively. The Company had no accounts receivable from Novo Nordisk as of March 31, 2024 and December 31, 2023, respectively.

8. Shareholders' Equity

Ordinary Shares

As of March 31, 2024, the Company had 100,000,000 ordinary shares authorized for issuance with a par value of $ 0.01 per ordinary share and 53,720,455 ordinary shares issued and outstanding. Each ordinary share is entitled to one vote and, on a pro rata basis, to dividends when declared and the remaining assets of the Company in the event of a winding up.

Euro Deferred Shares

As of March 31, 2024, the Company had 10,000 Euro Deferred Shares authorized for issuance with a nominal value of € 22 per share. N o Euro Deferred Shares are outstanding at March 31, 2024. The rights and restrictions attaching to the Euro Deferred Shares rank *pari passu* with the ordinary shares and are treated as a single class in all respects.

December 2022 Offering

In December 2022, the Company completed an underwritten public offering of an aggregate of 3,250,000 of its ordinary shares at a public offering price of $ 56.50 per ordinary share. The Company received aggregate net proceeds of approximately $ 172.4 million, after deducting the underwriting discount and offering costs.

In January 2023, the Company issued an additional 395,096 ordinary shares resulting from the underwriters' partial exercise of their 30-day option to purchase up to an additional 487,500 ordinary shares of as part of the December 2022 underwritten public offering. The Company received approximately $ 20.9 million proceeds from the exercise, net of underwriting discount but before deducting any offering costs.

At-the-Market Offerings

In December 2021, the Company entered into an Equity Distribution Agreement (the "December 2021 Distribution Agreement"), pursuant to which the Company could issue and sell, from time to time, the Company's ordinary shares. In connection with entering into the December 2021 Distribution Agreement, on December 23, 2021, the Company filed with the SEC a prospectus supplement relating to the offer, issuance and sale of up to $ 250.0 million of the Company's ordinary shares (the "December 2021 Prospectus") pursuant to the December 2021 Distribution Agreement. T he December 2021 Prospectus was no longer effective as of March 23, 2024. As of March 23, 2024, the Company had sold and issued 953,589 ordinary shares pursuant to the December 2021 Distribution Agreement under the December 2021 Prospectus for total gross proceeds of approximately $ 56.3 million before deducting underwriting discounts, commissions, and other offering expenses payable by the Company of $ 1.8 million.

In February 2024, the Company amended the Equity Distribution Agreement that it entered into in December 2021 (the "Amended Distribution Agreement"), pursuant to which the Company may issue and sell, from time to time, the Company's ordinary shares. In connection with amending the Amended Distribution Agreement, on February 22, 2024, the Company filed with the SEC a prospectus relating to the offer, issuance, and sale of up to $ 250.0 million of the Company's ordinary shares (the "February 2024 Prospectus") pursuant to the Amended Distribution Agreement. For the three months ended March 31, 2024,

the Company sold and issued no ordinary shares, pursuant to the Amended Distribution Agreement under the February 2024 Prospectus.

The issuance and sale of the Company's ordinary shares pursuant to the December 2021 Distribution Agreement and Amended the December 2021 Distribution Agreement is deemed an "at-the-market" offering and is registered under the Securities Act of 1933, as amended.

9. Share-Based Compensation

Equity Incentive Plans

The Company's equity incentive plans, the 2018 Long Term Incentive Plan, as amended (the "2018 LTIP"), 2020 Employment Inducement Incentive Plan, as amended (the "2020 EIIP"), and previously, the Amended and Restated 2012 Long Term Incentive Plan (the "2012 LTIP"), reserve ordinary shares for the issuance of stock options, stock appreciation rights, restricted shares, RSUs, performance bonus awards, performance share units awards, dividend equivalents and other share or cash-based awards to eligible individuals. Options granted under each of the 2018 LTIP, 2020 EIIP, and 2012 LTIP expire no later than ten years from the date of grant.

In May 2023, the Company's shareholders approved an amendment to the 2018 LTIP to increase the number of ordinary shares available for issuance under the 2018 LTIP by 2,000,000 ordinary shares. As of March 31, 2024, the number of ordinary shares authorized under the 2018 LTIP was 14,620,433 . Upon adoption of the 2018 LTIP, no new awards are permitted under the 2012 LTIP.

As of March 31, 2024, the number of ordinary shares authorized under the 2020 EIIP was 1,485,000 and 66,250 ordinary shares remained available for future awards under the 2020 EIIP. The Company's Board of Directors has adopted a series of amendments to increase the ordinary shares available for issuance under the 2020 EIIP and it reserves the right to both amend the 2020 EIIP to increase the number of ordinary shares available and make additional awards to key new hires.

The Company's option awards generally vest over four years , while RSUs vest over two years . As of March 31, 2024, 1,662,669 ordinary shares remained available for grant under its equity plans.

Share-based Compensation Expense

Share-based compensation expense recorded in these Condensed Consolidated Financial Statements was based on awards granted under the 2012 LTIP, the 2018 LTIP, and the 2020 EIIP. The estimated forfeiture rate as of March 31, 2024 was 7 %. Changes in our estimates and assumptions relating to forfeitures may cause us to realize material changes in stock-based compensation expense in the future.

The amount of unearned share-based compensation related to unvested stock options at March 31, 2024, is $ 115.2 million. The weighted-average period over which this unearned share-based compensation is expected to be recognized is 2.94 years.

The following table summarizes share-based compensation expense for the periods presented (in thousands):

	Three Months Ended March 31,	
	2024	2023
Research and development	$ 5,455	$ 4,362
General and administrative	6,928	4,428
Total share-based compensation expense	$ 12,383	$ 8,790

The Company recognized tax benefits from share-based awards of $ 2.1 million and $ 1.6 million for the three months ended March 31, 2024 and 2023, respectively.

The fair value of the options granted to employees and non-employee directors during the three months ended March 31, 2024 and 2023 was estimated as of the grant date using the Black-Scholes option-pricing model using the key assumptions listed in the following table:

	Three Months Ended March 31,	
	2024	2023
Expected term (in years)	4.60 - 5.51	4.53 - 5.40
Expected volatility	74.8 % - 78.6 %	76.4 % - 89.7 %
Risk-free interest rate	3.8 % - 4.4 %	3.5 % - 4.4 %
Expected dividend yield	— %	— %
Weighted average grant date fair value	$ 19.57	$ 35.37

The fair value of employee stock options is amortized on a straight-line basis over the requisite service period for each award. Each of the inputs discussed above is subjective and generally requires significant management judgment to determine.

The following table summarizes the Company's stock option activity during the three months ended March 31, 2024:

	Options	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (years)	Aggregate Intrinsic Value (in thousands)
Outstanding at December 31, 2023	9,866,337	$ 29.06	6.60	$ 118,447
Granted	1,998,950	30.02		
Exercised	(38,338)	23.24		
Forfeited	(65,792)	36.36		
Expired	(10,375)	28.50		
Outstanding at March 31, 2024	11,750,782	$ 29.20	6.92	$ 42,936
Vested and expected to vest at March 31, 2024	11,258,566	$ 28.84	6.82	$ 42,907
Vested at March 31, 2024	6,909,977	$ 22.39	5.48	$ 41,926

The total intrinsic value of options exercised was $ 0.4 million, and $ 6.8 million during the three months ended March 31, 2024 and 2023, determined as of the date of exercise.

The following table summarizes the activity and related information for RSUs during the three months ended March 31, 2024:

	Number of Units	Weighted Average Grant-Date Fair Value	Weighted Average Remaining Contractual Term (years)	Aggregate Intrinsic Value (in thousands)
Unvested at December 31, 2023	25,250	$ 58.01	1.09	$ 918
Units Granted	—	—		
Units Vested	—	—		
Units Forfeited	—	—		
Unvested at March 31, 2024	25,250	$ 58.01	0.84	$ 625
Unvested and expected to vest at March 31, 2024	23,760	$ 58.16	0.83	$ 589

The fair value of RSUs was determined on the date of grant based on the market price of the Company's ordinary shares as of that date. The fair value of the RSUs is recognized as an expense on a straight-line basis over the vesting period of each RSU. Upon the vesting of the RSUs, a portion of the shares vested are sold by the employee to satisfy employee withholding tax requirements (sell-to-cover). As of March 31, 2024, total compensation cost not yet recognized related to unvested RSUs was $ 0.8 million, which is expected to be recognized over a weighted-average period of 0.92 years. RSUs settle into ordinary shares upon vesting.

10. Income Taxes

The major taxing jurisdictions for the Company are Ireland and the U.S. The Company recorded an income tax benefit of $ 2.2 million and $ 2.9 million for the three months ended March 31, 2024 and 2023, respectively. The provision for income

taxes differs from the statutory tax rate of 12.5 % applicable to Ireland primarily due to Irish net operating losses for which a tax provision benefit is not recognized, U.S. income taxed at different rates, adjustments to deferred tax assets for the deductibility of stock compensation and capitalization of research and development costs.

The Company has generally computed its interim period provision for (benefit from) income taxes by applying its forecasted effective tax rate to year-to-date earnings. However, due to a significant amount of U.S. permanent differences relative to the amount of U.S. forecasted income used in computing the effective tax rate, the effective tax rate is highly sensitive to minor fluctuations in U.S. forecasted income. As such, the Company has computed the U.S. component of the consolidated provision for (benefit from) income taxes for the three months ended March 31, 2024 using an actual year-to-date tax calculation.

The non-U.S. tax expense continues to be zero due to cumulative historic and year-to-date losses and a full valuation allowance on our deferred tax assets in our non-U.S. jurisdictions.

Deferred income taxes reflect the net tax effect of temporary differences between the carrying amount of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. The Company's deferred tax assets (“DTA”) are composed primarily of its Irish subsidiaries' net operating loss carryforwards, California net operating loss carryforwards available to reduce future taxable income of the Company's U.S. subsidiaries, federal and California tax credit carryforwards, share-based compensation, capitalized R&D, and other temporary differences. The Company maintains a valuation allowance against certain U.S. federal and state and Irish deferred tax assets. Each reporting period, the Company evaluates the need for a valuation allowance on its deferred tax assets by jurisdiction.

No provision for income tax in Ireland has been recognized on undistributed earnings of the Company’s U.S. subsidiaries as the Company considers the U.S. earnings to be indefinitely reinvested.

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

In addition to historical information, this Quarterly Report on Form 10-Q contains forward-looking statements which may cause our actual results to differ materially from expectations, plans and anticipated results discussed in forward-looking statements. Factors that could cause our actual results to differ materially include, but are not limited to, the risks and uncertainties set forth in the “Summary of Risks Affecting Our Business” at the beginning of this Quarterly Report on Form 10-Q, Part II Item 1A “Risk Factors” of this Quarterly Report on Form 10-Q, and in our other filings with the U.S. Securities and Exchange Commission.

This discussion should be read in conjunction with the Condensed Consolidated Financial Statements and Notes presented in this Quarterly Report on Form 10-Q and the Consolidated Financial Statements and Notes contained in our Annual Report on Form 10-K filed with the SEC on February 22, 2024 (the “2023 Form 10-K”).

Overview

Prothena is a late-stage clinical biotechnology company with expertise in protein dysregulation and a pipeline of investigational therapeutics with the potential to change the course of devastating neurodegenerative and rare peripheral amyloid diseases.

Fueled by our deep scientific expertise built over decades of research, we are advancing a pipeline of therapeutic candidates for a number of indications and novel targets for which our ability to integrate scientific insights around neurological dysfunction and the biology of misfolded proteins can be leveraged. Our wholly-owned programs include birtamimab for the potential treatment of AL amyloidosis, and a portfolio of programs for the potential treatment of Alzheimer’s disease including PRX012, which targets amyloid beta (Aβ), and PRX123, a novel dual Aβ-tau vaccine. Our partnered programs include prasinezumab, in collaboration with Roche for the potential treatment of Parkinson’s disease and other related synucleinopathies, and programs that target tau (BMS-986446, formerly PRX005), TDP-43, and an undisclosed target (PRX019) in collaboration with Bristol Myers Squibb (BMS) for the potential treatment of Alzheimer’s disease, amyotrophic lateral sclerosis (ALS), and other neurodegenerative diseases, respectively. We are also entitled to certain potential milestone payments pursuant to our share purchase agreement with Novo Nordisk pertaining to our ATTR amyloidosis business (NNC6019, formerly PRX004).

We were formed on September 26, 2012, under the laws of Ireland and re-registered as an Irish public limited company on October 25, 2012. Our ordinary shares began trading on The Nasdaq Global Market under the symbol “PRTA” on December 21, 2012, and currently trade on The Nasdaq Global Select Market.

Birtamimab for the Potential Treatment of AL Amyloidosis

Birtamimab is an investigational humanized antibody that targets toxic misfolded light chain that causes organ dysfunction and failure in patients with AL amyloidosis. AL amyloidosis is a rare, progressive, and typically fatal disease where immunoglobulin light chain proteins produced by clonal plasma cells misfold, aggregate, and deposit as amyloid in vital organs. These toxic aggregates and amyloid deposits cause progressive damage and failure of vital organs, including the heart.

Birtamimab binds to both soluble and insoluble amyloid aggregates in multiple organs and promotes the clearance of amyloid deposits via phagocytosis. This anti-amyloid mechanism of action broadly targets misfolded kappa and lambda light chain to clear deposited amyloid that causes organ dysfunction and failure in patients with AL amyloidosis. Birtamimab is the only investigational therapeutic that has demonstrated a significant survival benefit in a randomized clinical trial in patients with Mayo Stage IV AL amyloidosis. Birtamimab has been granted Fast Track Designation by the U.S. Food and Drug Administration (FDA) for the treatment of Mayo Stage IV patients with AL amyloidosis to reduce the risk of mortality and has been granted Orphan Drug Designation by both the FDA and European Medicines Agency (EMA).

It is estimated that 200,000 to 400,000 patients globally suffer from this rare disease, with approximately 60,000 to 120,000 (or 30%) of those patients being categorized as Mayo Stage IV. Patients categorized at diagnosis as Mayo Stage IV have poor outcomes with current standard-of-care that aims to reduce the production of new protein but does not directly target and clear the toxic amyloid that deposits in organs. There are currently no approved treatments for AL amyloidosis that have demonstrated a survival benefit in a randomized clinical trial, and there is an urgent unmet medical need for therapies that improve survival in patients at risk for early mortality due to amyloid deposition.

Confirmatory Phase 3 AFFIRM-AL Clinical Trial Design under SPA Agreement with FDA

Based on further analyses of data from the VITAL clinical trial and multiple in-depth discussions with the FDA, Prothena announced plans in February 2021, to advance birtamimab into the confirmatory Phase 3 AFFIRM-AL clinical trial in patients with Mayo Stage IV AL amyloidosis. AFFIRM-AL is a registration-enabling Phase 3 clinical trial that is being conducted with a primary endpoint of all-cause mortality at $p \leq 0.10$ under a Special Protocol Assessment (SPA) agreement with the FDA. Patient enrollment is on track in the AFFIRM-AL trial and full topline trial results are expected between the fourth quarter of 2024 and the second quarter of 2025.

AFFIRM-AL is an ongoing global, multi-center, double-blind, placebo-controlled, 2:1 randomized, time-to-event trial expected to enroll approximately 150 newly diagnosed, treatment naïve patients with AL amyloidosis categorized as Mayo Stage IV. It has been designed to evaluate the primary endpoint of time to all-cause mortality with a significance level of $p \leq 0.10$. Secondary endpoints will assess change from baseline to month 9 in functional capacity as measured by 6MWT distance and quality of life as measured by SF-36v2 PCS.

An interim analysis will be conducted when approximately 50% of the events have occurred, allowing the independent data monitoring committee to recommend either continuing the trial or stopping early for overwhelming efficacy. Patients will receive 24 mg/kg of birtamimab or placebo by intravenous infusion every 28 days, with all patients receiving concurrent standard of care therapy consisting of a first line bortezomib-containing regimen.

Phase 3 VITAL Clinical Trial Results

In June 2023, we announced that results from the Phase 3 VITAL clinical trial were published in *Blood*, a journal of the American Society of Hematology (ASH). The published data demonstrate that in a post hoc analysis of patients with Mayo Stage IV AL amyloidosis, a statistically significant survival benefit of 74 percent was observed for those treated with birtamimab plus standard of care (SOC) versus 49 percent in patients on placebo plus SOC at 9 months (HR 0.413, p=0.021).

The article, entitled “Birtamimab plus standard of care in light chain amyloidosis: the phase 3 randomized placebo-controlled VITAL clinical trial”, also demonstrated that patients with Mayo Stage IV AL amyloidosis treated with birtamimab had statistically significant improvements over placebo in a post hoc assessment of two key secondary endpoints, quality of life (assessed with the Short Form-36 version 2 physical component score, SF-36v2 PCS) and cardiac function (assessed with the 6-minute walk test). Patients treated with birtamimab showed a slower decline in quality of life with a mean decrease of 0.75 in the SF-36v2 PCS at 9 months compared to a mean decrease of 5.40 in the SF-36v2 PCS for patients on placebo at 9 months (a

mean difference of 4.65 favoring birtamimab; p=0.046). Patients treated with birtamimab after 9 months demonstrated an increase in mean distance of 15.22 meters in the 6-minute walk test, compared to a decrease in mean distance of 21.15 meters for patients on placebo (a mean difference of 36.37 meters favoring birtamimab; p=0.022).

Prasinezumab for the Potential Treatment of Parkinson's Disease and Other Synucleinopathies

Prasinezumab is an investigational humanized monoclonal antibody that targets alpha-synuclein, a protein found in neurons that can aggregate and spread from cell to cell, resulting in the neuronal dysfunction and loss that causes Parkinson's disease and other synucleinopathies. Prasinezumab is the focus of our worldwide collaboration with Roche.

Parkinson's disease is a progressive degenerative disorder of the central nervous system (CNS) that affects approximately one in 100 people over the age of 60, with incidence increasing based on an aging population. With an estimated 10 million people living with Parkinson's disease worldwide today, it is the most common neurodegenerative movement disorder and fastest growing neurological disorder. The disease is characterized by the neuronal accumulation of aggregated α-synuclein in the CNS and peripheral nervous system that results in a wide spectrum of worsening progressive motor and non-motor symptoms. While diagnosis currently relies on motor symptoms classically associated with Parkinson's disease, non-motor symptoms may present many years earlier. Current treatments for Parkinson's disease are symptomatic and only address a subset of symptoms such as motor impairment, dementia or psychosis. Symptomatic therapies do not target the underlying cause of the disease and as the disease progresses and dopaminergic neurons continue to be lost, these drugs lose effectiveness, often leading to debilitating side effects as the disease progresses. There are currently no treatments available that target the underlying cause of the disease. Prasinezumab is designed to block the cell-to-cell transmission of the aggregated, pathogenic forms of alpha-synuclein in Parkinson's disease, thereby slowing clinical decline. The goal of our approach is to slow the progressive neurodegenerative consequences of disease, a current unmet need.

Phase 2b PADOVA Clinical Trial

A Phase 2b clinical trial (PADOVA) to further assess the efficacy of prasinezumab in an expanded patient population is being conducted by Roche. PADOVA is a Phase 2b, randomized, double-blind, placebo-controlled, multicenter clinical trial to evaluate the efficacy and safety of prasinezumab in patients with early Parkinson's disease who are on stable symptomatic (levodopa) medication. The trial has enrolled 586 patients randomized to receive either prasinezumab or placebo via intravenous infusion every 4 weeks. The primary endpoint is time to meaningful progression on motor signs of the disease, as assessed by ≥5 point increase in Movement Disorder Society – Unified Parkinson's Disease Rating Scale (MDS-UPDRS) Part III score from baseline. In the first quarter of 2023, Roche completed enrollment for the Phase 2b PADOVA trial.

Prasinezumab is the first anti-alpha synuclein antibody to advance into late-stage development. In March 2022, results from the analysis of part 2 of the Phase 2 PASADENA trial of prasinezumab were presented in an oral presentation by Roche at the International Conference on Alzheimer's and Parkinson's Diseases ("AD/PD 2022"). Results showed that participants with Parkinson's disease who were treated with prasinezumab for two years (early-start group) showed slower decline of MDS-UPDRS Part III scores relative to participants treated with placebo in the first year and prasinezumab in the second year (delayed-start group), further supporting a potential effect on delaying motor progression in patients. In March 2024, Roche presented data at the AD/PD™ 2024 Alzheimer's & Parkinson's Diseases Conference from the long-term open-label extension of the PASADENA trial, which compared the prasinezumab population with a propensity score-balanced cohort of real-world data (RWD) Parkinson's Progression Markers Initiative (PPMI). The data suggests that prasinezumab continued to show reduced motor and functional progression in prazinezumab-treated individuals with early-stage Parkinson's disease compared to a real-world data arm on MDS-UPDRS Part III score (clinician-rated motor examination) OFF and ON symptomatic medication state and MDS-UPDRS Part II score (patient-reported motor experiences of daily living).

NNC6019 (formerly PRX004) for the Potential Treatment of ATTR Amyloidosis

NNC6019 (formerly PRX004) is an investigational antibody designed to deplete amyloid associated with disease pathology in hereditary and wild type ATTR amyloidosis, without affecting the native, normal tetrameric form of the protein.

NNC6019's proposed mechanism of action is to deplete both circulating non-native TTR to prevent further deposition and deposited amyloid to improve organ function. NNC6019 has been shown in preclinical studies to inhibit amyloid fibril formation, neutralize soluble aggregate forms of non-native TTR, and promote clearance of insoluble amyloid fibrils through antibody-mediated phagocytosis. This differentiated depleter mechanism of action could be developed as a monotherapy approach to ATTR amyloidosis and might also complement existing therapeutic approaches which either stabilize or reduce production of the native TTR tetramer.

We completed a Phase 1 clinical trial with NNC6019 in patients with hereditary forms of ATTR amyloidosis, in which NNC6019 was demonstrated to be safe and well tolerated.

ATTR Amyloidosis Business Acquired by Novo Nordisk

In July 2021, we announced that we and Novo Nordisk entered into a definitive purchase agreement under which Novo Nordisk acquired our clinical stage antibody NNC6019 (formerly PRX004) and broader ATTR amyloidosis business.

Under the terms of the definitive purchase agreement, Novo Nordisk acquired our wholly-owned subsidiary and gained full worldwide rights to the intellectual property and related rights of our ATTR amyloidosis business and pipeline. The aggregate purchase price consists of an upfront payment and development and sales milestone payments totaling up to $1.23 billion. We have earned approximately $100 million to date, including a $40 million clinical milestone payment that we announced in November 2022.

A Phase 2 clinical trial of NNC6019 in patients with ATTR cardiomyopathy is being conducted by Novo Nordisk (NCT05442047).

BMS-986446 (formerly PRX005) for the Potential Treatment of Alzheimer's Disease

BMS-986446 *is* designed to be a best-in-class anti-tau antibody that specifically binds with high affinity the R1, R2, and R3 repeats within the microtubule binding region ("MTBR") of tau and targets both 3R and 4R tau isoforms. MTBR-tau has been shown in preclinical studies to be involved in the pathological spread of tau. Neurofibrillary tangles composed of misfolded tau proteins, along with amyloid beta plaques, are pathological hallmarks of Alzheimer's disease. Cell-to-cell transmission of pathogenic extracellular tau and the accumulation of pathogenic tau also correlate with the progression of symptomatology and clinical decline in patients with Alzheimer's disease. Recent publications suggest that during the course of Alzheimer's disease progression, tau appears to spread throughout the brain via synaptically-connected pathways; this propagation of pathology is thought to be mediated by tau "seeds" containing the MTBR of tau. Additionally, it has been recently reported that the presence of MTBR fragments in cerebrospinal fluid correlate with dementia stages and tau tangles in Alzheimer's disease to a higher degree than fragments of other tau regions. In preclinical research, antibodies targeting this region of tau were superior in blocking tau uptake and neurotoxicity, which has been associated with efficacy in relevant animal models. In these preclinical models, BMS-986446 demonstrated significant reduction of intraneuronal tau pathology and progression protection against behavioral deficit in a tau transgenic mouse model and complete blockade of neuronal tau internalization in vitro.

In June 2021, we announced that BMS exercised its option under the global neuroscience research and development collaboration to enter into an exclusive U.S. license for BMS-986446. BMS paid Prothena $80 million for this option following the execution of a US License Agreement for BMS-986446 and transfer of the underlying license. In July 2023, we entered into the Tau Global License Agreement, which as discussed above supersedes and replaces the Tau US License Agreement in its entirety. We received the associated option exercise fee of $55 million in August 2023.

Phase 1 Clinical Trial

In this first-in-human, randomized, placebo controlled, single ascending dose (SAD) clinical trial, healthy volunteers (n=19) were enrolled into three BMS-986446 dose level cohorts (low, medium or high dose) and randomized in a 3:1 drug to placebo ratio. Trial participants received a single dose of BMS-986446 or placebo intravenously (IV) and were followed for up to two months. The results of the trial found all three dose level cohorts of BMS-986446 to be generally safe and well tolerated, meeting the Phase 1 SAD trial primary objective. None of the treatment emergent adverse events (TEAE) were serious. No clinically relevant changes were observed in other safety parameters. BMS-986446 also met key pharmacokinetic (PK) and immunogenicity secondary endpoints. Plasma drug concentrations of BMS-986446 increased in a dose-proportional manner. Furthermore, BMS-986446 exposure in cerebrospinal fluid (CSF) was measured in the high dose cohort and based on the robust exposure of BMS-986446 in the CSF (day 29 CSF:Plasma ratio=0.2%), substantial target engagement is expected in the CNS. BMS-986446 had a desirable immunogenicity profile with no persistent BMS-986446-induced antidrug antibodies (ADAs) observed.

A multiple ascending dose (MAD) portion of the Phase 1 clinical trial was ongoing at the time BMS acquired the global rights to the program and control of the Phase 1 trial. In September 2023, BMS reported that Phase 1 data supports moving BMS-986446 into a Phase 2 clinical trial. All program updates going forward, including results from ongoing and any future BMS-986446 clinical trials, will be reported by BMS.

Phase 2 Clinical Trial

In the first quarter of 2024, BMS advanced the anti-tau program BMS-986446 with the initiation of a Phase 2 clinical trial (NCT06268886). This is a randomized, double-blind, placebo-controlled, global, Phase 2 clinical trial designed to evaluate the efficacy, safety, and tolerability of BMS-986446, an anti-MTBR tau monoclonal antibody, in approximately 475 participants with early Alzheimer's disease. Participants will be randomized into one of three treatment arms including placebo, BMS-986446 Dose A, and BMS-986446 Dose B. The primary outcome measure is mean change from baseline to week 76 in Clinical Dementia Rating Scale Sum of Boxes (CDR-SB).

Global Neuroscience Research and Development Collaboration with Bristol Myers Squibb

This global neuroscience research and development collaboration is focused on three proteins implicated in the pathogenesis of several neurodegenerative diseases, including tau, TDP-43, and an undisclosed target. BMS-986446 is designed to be a best-in-class anti-tau, MTBR-specific antibody for the potential treatment of AD and, with the initiation of the Phase 1 clinical trial, is the first program to advance to the clinic from this collaboration. After receiving the $55 million payment described above, we have received a total of $285 million pursuant to the collaboration and we are eligible to receive up to an additional $160 million for U.S. rights, up to an additional $110 million for global rights, and up to $1.7 billion for regulatory and commercial milestone payments for a total of up to $2.2 billion plus potential tiered commercial sales royalties across multiple programs.

PRX012 for the Potential Treatment of Alzheimer's Disease

PRX012 is an investigational antibody that targets Aβ, or amyloid beta, a protein implicated in Alzheimer's disease. Our scientists have advanced the understanding of the biology of Alzheimer's disease and made particularly impactful and fundamental discoveries that elucidated the role amyloid plays in the disease.

Monoclonal antibodies targeting key epitopes within the N-terminus of Aβ have demonstrated that reducing amyloid plaque burden is associated with the slowing of clinical decline in Alzheimer's disease. To address the growing prevalence of Alzheimer's disease with a therapeutic that can be made widely accessible to patients, we have developed highly potent anti-Aβ antibodies that retain or improve key attributes that are thought to underlie the observed efficacy of N-terminally directed therapeutics such as aducanumab, with the aim of offering similar or improved efficacy with convenient subcutaneous dosing regimens. In preclinical studies, our antibodies demonstrated a higher binding strength to amyloid than aducanumab; specifically, our lead candidate with an approximately 10-fold greater affinity/avidity for fibrillar Aβ than aducanumab that also neutralized soluble, toxic (i.e., oligomeric) Aβ species. Preclinical studies also showed that our antibodies recognize Aβ pathology to a greater extent than aducanumab, demonstrating more extensive plaque area binding at lower antibody concentrations, which are estimated to be clinically relevant exposures in the central nervous system following systemic dosing.

We are advancing our lead candidate, PRX012, as a next-generation approach for subcutaneous administration to improve access for patients with Alzheimer's disease. In March 2022, we announced the FDA clearance of the IND for PRX012 and the initiation of a Phase 1 single ascending dose trial to investigate the safety, tolerability, immunogenicity, and pharmacokinetics of PRX012 in both healthy volunteers and patients with Alzheimer's disease. In April 2022, we announced that the FDA granted Fast Track designation for PRX012 for the treatment of Alzheimer's disease. The FDA's Fast Track designation program is designed to expedite the development and review of drugs intended to treat a serious condition, such as Alzheimer's disease, with evidence demonstrating the potential to address an unmet medical need. In January 2024, we announced that topline Phase 1 data from the single-ascending dose (SAD) trial and the initial multiple-ascending dose (MAD) cohort (70 mg) supports once-monthly subcutaneous treatment and dose escalation. The ongoing Phase 1 trial continues as planned.

PRX123, a Dual Aβ-Tau Vaccine for the Potential Treatment and Prevention of Alzheimer's Disease

We are developing a dual vaccine, PRX123, which concomitantly targets key epitopes within both the Aβ and tau proteins. Preclinical models suggest that Aβ and tau act synergistically in the development of Alzheimer's disease; however, the majority of vaccines and passive immunotherapies under development today target only one of these two pathological features.

PRX123 is being developed for the potential prevention and treatment of Alzheimer's disease. In preclinical studies, PRX123 has generated polyclonal responses against key epitopes within the N-terminal of Aβ and a key region of tau to promote amyloid clearance and blockade of tau transmission. Immunohistochemistry using sera from immunized animals

demonstrated an appropriate and balanced immune response with antibodies that react to both Aβ plaques and tau tangles at concentrations expected to be reached in CNS following immunization and resultant titer generation.

In March 2022, we delivered an oral presentation at AD/PD 2022 on preclinical data demonstrating that PRX123 generated anti-Aβ and anti-tau antibodies to enable phagocytosis of Aβ and to neutralize tau. These findings provided proof of concept in multiple preclinical species.

In January 2024, we announced that the FDA has cleared the IND application for PRX123 and granted PRX123 Fast Track designation.

PRX019, a potential treatment for neurodegenerative diseases

In December 2023, the FDA cleared the IND application for PRX019, a potential treatment of neurodegenerative diseases with an undisclosed target. PRX019 is one of the three programs that are the focus of our collaboration with BMS.

Our Discovery and Preclinical Programs

We are also advancing several discovery and preclinical-stage programs for neurological diseases with significant unmet medical needs such as TDP-43, an undisclosed target for amyotrophic lateral sclerosis (ALS) and one of the three programs that are the focus of our collaboration with BMS.

If promising, we expect to advance our discovery programs into preclinical development. New target discovery will focus on areas where we can bring potential new therapies to patients expeditiously through our internal expertise and resources. Existing late discovery-stage or preclinical-stage programs may be partnered or out-licensed.

Critical Accounting Policies and Estimates

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 the accounting principles generally accepted in the U.S. ("GAAP"). The preparation of these Condensed Consolidated Financial Statements requires us to make estimates and assumptions for the reported amounts of assets, liabilities, revenues, expenses and related disclosures.

There were no significant changes to our critical accounting policies and estimates during the three months ended March 31, 2024, from the critical accounting policies and estimates disclosed in Management's Discussion and Analysis of Financial Condition and Results of Operations in our 2023 Form 10-K.

Recent Accounting Pronouncements

Except as described in Note 2 to the Condensed Consolidated Financial Statements under the heading "Recent Accounting Pronouncements", there have been no new accounting pronouncements or changes to accounting pronouncements during the three months ended March 31, 2024, as compared to the recent accounting pronouncements described in our 2023 Form 10-K, that are of significance or potential significance to us.

Results of Operations

Comparison of Three Months Ended March 31, 2024 and 2023

Revenue

	Three Months Ended March 31,		Change	
	2024	2023	$	%
	(Dollars in thousands)			
Collaboration revenue	$ —	$ 2,119	$ (2,119)	(100)%
Revenue from license and intellectual property	$ 50	$ 50	—	— %
Total revenue	$ 50	$ 2,169	$ (2,119)	(98)%

Total revenue was $0.1 million and $2.2 million for the three months ended March 31, 2024 and 2023, respectively.

Collaboration revenue from BMS was nil, compared to $2.1 million for the three months ended March 31, 2024 and 2023, respectively. Collaboration revenue for the three months ended March 31, 2023 included revenue from BMS for US Development Services related to the Tau/PRX005 program. As of March 31, 2024, the Company does not have any remaining Tau US Development Services Obligations and has recognized all revenue from this performance obligation as of December 31, 2023. See Note 7, “Significant Agreements” to the Condensed Consolidated Financial Statements regarding the Collaboration Agreement with BMS for more information.

License and intellectual property revenue for the three months ended March 31, 2024 and 2023 included $50,000 in each period, respectively, in license fees recognized under the License Agreement entered into on March 1, 2020, between the Company's wholly owned subsidiary, Prothena Biosciences Limited, and F. Hoffmann-La Roche Ltd.

Assuming no significant change in our business, we expect our 2024 revenue to decline over the prior year as our 2023 revenue was primarily comprised of nonrecurring revenue.

Operating Expenses

	Three Months Ended March 31,		Change	
	2024	2023	$	%
	(Dollars in thousands)			
Research and development	$ 64,114	$ 44,756	$ 19,358	43 %
General and administrative	17,464	13,738	3,726	27 %
Total operating expenses	$ 81,578	$ 58,494	$ 23,084	39 %

Total operating expenses consist of R&D expenses, general and administrative (“G&A”) expenses. Our operating expenses were $81.6 million and $58.5 million for the three months ended March 31, 2024 and 2023, respectively.

Our research activities are aimed at developing new drug products. Our development activities involve the translation of our research into potential new drugs. Our R&D expenses primarily consist of personnel costs and related expenses, including share-based compensation and external costs associated with clinical activities and drug development related to our drug programs, including birtamimab, BMS-986446 (PRX005), PRX012, PRX123 and preclinical activities related to our discovery programs.

Our G&A expenses primarily consist of personnel costs and related expenses, including share-based compensation and consulting expenses.

Research and Development Expenses

Our R&D expenses increased by $19.4 million or 43%, for the three months ended March 31, 2024, compared to the same period in the prior year. The increase for the three months ended March 31, 2024, compared to the same period in the prior year was primarily due to higher clinical trial expenses primarily related to the PRX012 and birtamimab programs, higher personnel expenses, and higher manufacturing expenses related primarily to the birtamimab and PRX012 programs.

The following table sets forth the R&D expenses for our major programs (specifically, any active program with successful first dosing in a Phase 1 clinical trial, which were birtamimab, prasinezumab, NNC6019 (PRX004), BMS-986446 (PRX005), PRX012 and other R&D expenses for the three months ended March 31, 2024, and 2023, and the cumulative amounts to date (in thousands):

	Three Months Ended March 31,		Cumulative to Date[1]
	2024	2023	
Birtamimab (NEOD001)	$ 21,184	$ 13,828	$ 493,501
PRX002/RG7935[2]	$ 2	$ (1)	$ 106,817
NNC6019 (PRX004)[3]	$ 4	$ 23	$ 79,895
BMS-986446 (PRX005)	$ 6	$ 2,983	$ 57,369
PRX012	$ 37,813	$ 17,738	$ 203,583
Other R&D[4]	$ 5,105	$ 10,185	
	$ 64,114	$ 44,756	

[1] *Cumulative R&D costs to date include the costs incurred from the date when the applicable program was separately tracked in preclinical development. Expenditures in the early discovery stage are not tracked by program and accordingly have been excluded from the applicable cumulative amount.*

[2] *Through May 28, 2021, Prasinezumab costs include payments to Roche for our share of the development expenses incurred by Roche related to prasinezumab programs.*

[3] *On July 8, 2021, we sold shares of one of our wholly-owned subsidiaries to Novo Nordisk. In connection with the transaction, Novo Nordisk acquired our ATTR amyloidosis business, including the clinical stage antibody NNC6019 (PRX004). Expenses incurred in 2024 and 2023 relate to certain close out activities and transition services provided to Novo Nordisk.*

[4] *Other R&D is comprised primarily of preclinical development and discovery programs that have not progressed to first patient dosing in a Phase 1 clinical trial and close out costs for programs that we are no longer advancing.*

We expect our R&D expenses to be relatively flat in 2024 over the prior year.

General and Administrative Expenses

Our G&A expenses increased by $3.7 million, or 27%, for the three months ended March 31, 2024, compared to the same period in the prior year. The increase for the three months ended March 31, 2024, compared to the prior year, was primarily due to higher personnel expenses and higher consulting expenses.

We expect our G&A expenses to increase in 2024 compared to the prior ye ar, primarily related to anticipated higher personnel costs including share-based compensation.

Other Income (Expense)

	Three Months Ended March 31,		Change	
	2024	2023	$	%
	(Dollars in thousands)			
Interest income	7,165	6,690	$ 475	7 %
Other income (expense), net	(77)	(141)	64	(45)%
Total other income (expense), net	7,088	6,549	$ 539	8 %

Interest income increased by $0.5 million, or 7%, for the three months ended March 31, 2024, compared to the same period in the prior year, primarily due to higher interest income from our cash and money market accounts resulting from higher interest rates.

Other expense, net for the three months ended March 31, 2024 and 2023, w as primarily foreign exchange losses from transactions with vendors denominated in Euros.

Provision for (benefit from) Income Taxes

	Three Months Ended March 31,		Change	
	2024	2023	$	%
	(Dollars in thousands)			
Benefit from income taxes	$ (2,201)	$ (2,912)	$ 711	(24)%

The benefit from income taxes decreased by $0.7 million, or (24)%, for the three months ended March 31, 2024, compared to the same period in the prior year. The decrease in benefit from income taxes for the three months ended March 31, 2024, compared to the same period in the prior year, was primarily due to a decrease in the net amount capitalized as deferred tax assets related to Section 174 R&D Capitalization.

The tax provisions for all periods presented primarily reflect U.S. federal taxes associated with recurring profits attributable to intercompany services that our U.S. subsidiary performs for the Company. No tax benefit has been recorded related to tax losses recognized in Ireland and any deferred tax assets for those losses are offset by a valuation allowance.

Liquidity and Capital Resources

Overview

	March 31, 2024	December 31, 2023
Working capital	$ 522,602	$ 582,391
Cash and cash equivalents	546,512	618,830
Total assets	623,194	696,382
Total liabilities	120,795	135,017
Total shareholders' equity	502,399	561,365

Working capital was $522.6 million as of March 31, 2024, a decrease of $59.8 million from working capital of $582.4 million as of December 31, 2023. This decrease in working capital during the three months ended March 31, 2024, was primarily attributable to cash use of $81.6 million for operating expenses (adjusted to exclude non-cash charges) offset in part by net proceeds received from stock option exercises of approximately $0.9 million and interest income on investments of $7.2 million.

As of March 31, 2024, we had $546.5 million in cash a nd cash equivalents. Although we believe, based on our current business plans, that our existing cash and cash equivalents will be sufficient to meet our obligations for at least the next twelve months, we anticipate that we will require additional capital in the future in order to continue the research and development of our drug candidates. Additionally, in order to develop and obtain regulatory approval for our potential products we will need to raise substantial additional funds. We expect to raise any such additional funds through public or private equity or debt financings, collaborative agreements with corporate partners, or other arrangements, including pursuant to the Amended Distribution Agreement (See Note 8, "Shareholders' Equity" to the Condensed Consolidated Financial Statements for more information). We cannot assume that such additional financings will be available on acceptable terms, if at all, and such financings may only be available on terms dilutive to our shareholders.

In managing our liquidity needs in Ireland, we do not rely on unrepatriated earnings as a source of funds. As of March 31, 2024, $226.2 million of our outstanding cash and cash equivalents related to U.S. operations are considered permanently reinvested. We do not intend to repatriate these funds. However, if these funds were repatriated back to Ireland, we would incur a withholding tax from the dividend distribution.

The adequacy of our cash resources depends on many assumptions, including assumptions with respect to our expenses. These assumptions may prove to be wrong, and we could use our available capital resources sooner than we currently expect. Because of the numerous risks and uncertainties associated with the development and commercialization of our product candidates, we are unable to estimate the amounts of increased capital outlays and operating expenses associated with completing the development of our product candidates. Our future capital requirements will depend on numerous factors, including, without limitation, the timing of initiation, progress, results and costs of our clinical trials; the results of our research and nonclinical studies; the costs of clinical manufacturing and of establishing commercial manufacturing arrangements; the costs of preparing, filing and prosecuting patent applications and maintaining, enforcing and defending intellectual property-related claims; the costs and timing of capital asset purchases; our ability to establish research collaborations, strategic

collaborations, licensing or other arrangements; the costs to satisfy our obligations under current and potential future collaborations; the costs of any in-licensing transactions; and the timing, receipt, and amount of revenues or royalties, if any, from any approved drug candidates.

Our cash and cash equivalents may also be potentially supplemented in the future by proceeds from our collaboration partners and milestone payments from Novo Nordisk. Pursuant to the Collaboration Agreement with Roche, we are eligible to receive payments for commercial and regulatory milestones and royalties on net sales of Collaboration Products. See Note 7, “Significant Agreements” to our Condensed Consolidated Financial Statements regarding the Roche License Agreement for more information. Pursuant to the Collaboration Agreement with BMS (formerly Celgene), we are eligible to receive payments for commercial and regulatory milestones and royalties on net sales of Collaboration Products. See Note 7, “Significant Agreements” to our Condensed Consolidated Financial Statements regarding the Collaboration Agreement with BMS for more information. Pursuant to the share purchase agreement with Novo Nordisk, we are eligible to receive development and sales milestone payments. See Note 7, “Significant Agreements” to our Condensed Consolidated Financial Statements regarding the Novo Nordisk Share Purchase Agreement for more information.

Cash Flows

The following table summarizes the primary sources and uses of cash for each of the periods presented, in our Condensed Consolidated Statements of Cash Flows (in thousands):

	Three Months Ended March 31,	
	2024	2023
Net cash used in operating activities	$ (73,051)	$ (47,458)
Net cash used in investing activities	(103)	(48)
Net cash provided by financing activities	836	23,284
Net decrease in cash, cash equivalents and restricted cash	$ (72,318)	$ (24,222)

Cash Used in Operating Activities

Net cash used in operating activities was $73.1 million for the three months ended March 31, 2024, which was primarily due to ongoing research and development activities and general and administrative expenses to support those activities for a total of $81.6 million in operating expenses (adjusted to exclude non-cash charges of approximately $10.5 million), cash paid for accounts payable, accruals and other liabilities and prepaid expenses, partially offset by proceeds received from interest income on investments of $7.2 million, cash from collection of accounts receivable and proceeds from stock option exercises of approximately $0.9 million.

Cash Used in Investing Activities

Net cash used in investing activities was $103,000 for the three months ended March 31, 2024 , which primarily consisted of expenditures to purchase property and equipment.

Cash Provided by Financing Activities

Net cash provided by financing activities was $0.8 million for the three months ended March 31, 2024 , primarily from proceeds from issuances of ordinary shares upon exercises of stock options of $0.9 million.

Three months ended March 31, 2023

Refer to “Item 2. Management’s Discussion and Analysis of Financial Condition and Results of Operations — Liquidity and Capital Resources” in our first quarter 2023 Quarterly Report on Form 10-Q for a discussion of the cash flows for the three months ended March 31, 2023.

Off-Balance Sheet Arrangements

At March 31, 2024, we were not a party to any off-balance sheet arrangements that have, or are reasonably likely to have, a current or future effect on our financial condition, changes in financial condition, revenue or expenses, results of operations, liquidity, capital expenditures or capital resources.

Contractual Obligations

Our contractual obligations as of March 31, 2024, consisted of minimum cash payments under operating leases of $14.3 million, purchase obligations of $11.4 million (of which $6.7 million is included in current liabilities), and contractual obligations under license agreements of $0.3 million (of which nil is included in current liabilities). Purchase obligations consist of non-cancelable purchase commitments to suppliers. Operating leases represent our future minimum rental commitments under our non-cancelable operating leases. For additional information regarding the timing for our contractual obligations see Note 6, “Commitments and Contingencies” to Condensed Consolidated Financial Statements.

In June 2021, we entered into a lease agreement for office space in Dublin, Ireland, which commenced in August 2021 and had an initial term of one year. In April 2023, the Company renewed the lease for another one year term with a termination date of July 2024. In addition, the Company entered into a lease agreement for additional office space in Dublin, Ireland, which commenced in August 2023 and has an initial term of one year. In April 2024, the Company renewed both these leases for another one year term with a termination date of July 2025. Both of these leases have an automatic renewal clause, pursuant to which the agreement will be extended automatically for successive periods equal to the current term, unless the agreement is cancelled by us.

In October 2022, we entered into a noncancelable operating sublease to lease approximately 31,157 square feet of office and laboratory space in Brisbane, California. We are obligated to make lease payments totaling approximately $14.9 million over the lease term, which expires on September 30, 2028, unless terminated earlier. Of this obligation, approximately $14.2 million remains outstanding as of March 31, 2024.

The following is a summary of our contractual obligations as of March 31, 2024 (in thousands):

	Total	2024	2025	2026	2027	2028	Thereafter
Operating leases [1]	$ 14,296	$ 2,295	$ 3,051	$ 3,158	$ 3,269	$ 2,523	$ —
Purchase obligations	11,383	11,194	147	42	—	—	—
Contractual obligations under license agreements	338	64	64	60	60	45	45
Total	$ 26,017	$ 13,553	$ 3,262	$ 3,260	$ 3,329	$ 2,568	$ 45

[1] *See Note 6,* “*Commitments and Contingencies*” *to our Condensed Consolidated Financial Statements.*

[2] *Contractual obligations as of the filing date includes an additional $1.2 million, primarily for purchase commitments to our contract manufacturers.*

In addition to the contractual obligations above, we also expect to have future material cash requirements related to our clinical trials, discovery and pre-clinical programs, human capital and intellectual property. Assuming no significant change in our business, we expect the full year 2024 net cash used in operating and investing activities to be approximately $208 million to $225 million .

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are exposed to market risks in the ordinary course of our business including the effects of changes in foreign currency exchange rates and interest rates. Market risk represents the risk of loss that may impact our financial position due to adverse changes in financial market prices and rates.

Foreign Currency Risk

Our business is primarily conducted in U.S. dollars except for our agreements with contract manufacturers for drug supplies wh ich are primarily denominated in Euros. We recorded a loss on foreign currency exchange rate differences of approximately $77,000, and $141,000, during the three months ended March 31, 2024. If we increase our business activities that require the use of foreign currencies, we may be exposed to losses if the Euro and other such currencies continue to strengthen against the U.S. dollar.

Interest Rate Risk

Our exposure to interest rate risk is limited to our cash equivalents, which consist of accounts maintained in money market funds. We have assessed that there is no material exposure to interest rate risk given the nature of money market funds. In general, money market funds are not subject to interest rate risk because the interest paid on such funds fluctuates with the prevailing interest rate. Accordingly, our interest income fluctuates with short-term market conditions.

In the future, we anticipate that our exposure to interest rate risk will primarily be related to our investment portfolio. We may invest any surplus funds in accordance with a policy approved by our board of directors which will specify the categories, allocations, and ratings of securities we may consider for investment. The primary objectives of our investment policy are to preserve principal and maintain proper liquidity to meet our operating requirements. Our investment policy also specifies credit quality standards for our investments and limits the amount of credit exposure to any single issue, issuer or type of investment.

Credit Risk

Financial instruments that potentially subject us to concentration of credit risk consist of cash and cash equivalents and accounts receivable. We place our cash and cash equivalents with high credit quality financial institutions and pursuant to our investment policy, we limit the amount of credit exposure with any one financial institution. Deposits held with banks have exceeded, and will continue to exceed, federally insured limits on such deposits. We are exposed to credit risk in the event of a default by the financial institutions holding our cash and cash equivalents. We have not experienced any losses on our deposits of cash and cash equivalents. Our credit risk exposure is up to the extent recorded on the Company's Condensed Consolidated Balance Sheets.

ITEM 4. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our chief executive officer (“CEO”) and chief financial officer (“CFO”) evaluated the effectiveness of our disclosure controls and procedures pursuant to Rule 13a-15 under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), as of the end of the period covered by this Form 10-Q. Based on this evaluation, our CEO and CFO concluded that, as of March 31, 2024, our disclosure controls and procedures are designed and are effective to provide reasonable assurance that information we are required to disclose in reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in the SEC’s rules and forms, and that such information is accumulated and communicated to our management, including our CEO and CFO, as appropriate, to allow timely decisions regarding required disclosure.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting identified in management’s evaluation pursuant to Rules 13a-15(d) or 15d-15(d) of the Exchange Act during our first fiscal quarter ended March 31, 2024, that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Limitations on Effectiveness of Controls and Procedures

Internal control over financial reporting has inherent limitations. Internal control over financial reporting is a process that involves human diligence and compliance and is subject to lapses in judgment and breakdowns resulting from human failures. Internal control over financial reporting also can be circumvented by collusion or improper management override. Because of such limitations, there is a risk that material misstatements will not be prevented or detected on a timely basis by internal control over financial reporting. However, these inherent limitations are known features of the financial reporting process. Therefore, it is possible to design into the process safeguards to reduce, though not eliminate, this risk.

Our management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives. In addition, the design of disclosure controls and procedures must reflect the fact that there are resource constraints and that management necessarily applies its judgment in evaluating the benefits of possible controls and procedures relative to their costs.

PART II. OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS

We are not currently a party to any material legal proceedings. We may at times be party to ordinary routine litigation incidental to our business. When appropriate in management's estimation, we may record reserves in our financial statements for pending legal proceedings.

ITEM 1A. RISK FACTORS

Investing in our ordinary shares involves a high degree of risk. Our Annual Report on Form 10-K for 2023 (filed with the SEC on February 22, 2024) includes a detailed discussion of our business and the risks to our business. You should carefully read that Form 10-K. You should carefully consider the risks described below, together with all of the other information included in this Quarterly Report on Form 10-Q, in considering our business and prospects. If any of the following risks, other unknown risks, or risks that we think are immaterial occur, our business, financial condition, results of operations, cash flows, or growth prospects could be adversely impacted, in which case, the market price of our ordinary shares could decline, and you may lose all or part of your investment in our ordinary shares. Additional risks and uncertainties not presently known to us or that we currently deem immaterial also may impair our business operations.

Risks Relating to Our Financial Position, Our Need for Additional Capital, and Our Business

We anticipate that we will incur losses for the foreseeable future and we may never sustain profitability.

We may not generate the cash that is necessary to finance our operations in the foreseeable future. We incurred net income (lo sses) of ($72.2) million for the three months ended March 31, 2024, and $(147.0) million and $(116.9) million , and $67.0 million for the years ended December 31, 2023, 2022 and 2021, respectively. As of March 31, 2024, we had an accumulated deficit of $1,052.3 million. We expect to continue to incur substantial losses for the foreseeable future as we:

- support the Phase 3 AFFIRM-AL clinical trial for birtamimab, the Phase 1 clinical trials for PRX012, and potential additional clinical trials for these and other programs, including PRX123;
- develop and possibly commercialize our drug candidates, including birtamimab, PRX012, and PRX123;
- undertake nonclinical development of other drug candidates and initiate clinical trials, if supported by nonclinical data;
- pursue our early stage research and seek to identify additional drug candidates; and
- potentially acquire rights from third parties to drug candidates or technologies through licenses, acquisitions, or other means.

We must generate significant revenue to achieve and maintain profitability. Even if we succeed in discovering, developing, and commercializing one or more drug candidates, we may not be able to generate sufficient revenue and we may never be able to achieve or sustain profitability.

We will require additional capital to fund our operations, and if we are unable to obtain such capital, we will be unable to successfully develop and commercialize drug candidates.

As of March 31, 2024, we had cash and cash equivalents o f $546.5 million. The majority of such cash is held in accounts at U.S. banking institutions that we believe are of high quality. Cash held in depository accounts may exceed the $250,000 Federal Deposit Insurance Corporation insurance limits. If such banking institutions were to fail, we could lose all or a portion of those amounts held in excess of such insurance limitations. Although we believe, based on our current business plans, that our existing cash and cash equivalents will be sufficient to meet our obligations for at least the next twelve months, we anticipate that we will require additional capital in order to continue the research and development, and eventual commercialization, of our drug candidates. Our future capital requirements will depend on many factors that are currently unknown to us, including, without limitation:

- the timing of progress, results, and costs of our clinical trials, including the Phase 3 clinical trial for birtamimab, the Phase 2 clinical trial for prasinezumab being conducted by Roche, the Phase 2b clinical trial for prasinezumab being conducted by Roche, the Phase 2 clinical trial for NNC6019 (formerly PRX004) being conducted by Novo Nordisk, the Phase 1 clinical trial for BMS-986446 (formerly PRX005) being conducted by BMS, the Phase 2 clinical trial for BMS-986446 being conducted by BMS, and the Phase 1 clinical trials for PRX012;

- the timing, initiation, progress, results, and costs of these and our other research, development, and possible commercialization activities;
- the results of our research, nonclinical studies, and clinical trials;
- the costs of manufacturing our drug candidates for clinical development as well as for future commercialization needs;
- if and when appropriate, the costs of preparing for commercialization of our drug candidates;
- the costs of preparing, filing, and prosecuting patent applications, and maintaining, enforcing, and defending intellectual property-related claims;
- our ability to establish strategic collaborations, licensing, or other arrangements;
- the timing, receipt, and amount of any capital investments, cost-sharing contributions or reimbursements, milestone payments, or royalties that we might receive under current or potential future collaborations;
- the costs to satisfy our obligations under current and potential future collaborations; and
- the timing, receipt, and amount of revenues or royalties, if any, from any approved drug candidates.

We have based our expectations relating to liquidity and capital resources on assumptions that may prove to be wrong, and we could use our available capital resources sooner than we currently expect. Because of the numerous risks and uncertainties associated with the development and commercialization of our drug candidates, we are unable to estimate the amounts of increased capital outlays and operating expenses associated with completing the development and commercialization of our current drug candidates.

In the pharmaceutical industry, the research and development process is lengthy and involves a high degree of risk and uncertainty. This process is conducted in various stages and, during each stage, there is substantial risk that drug candidates in our research and development pipeline will experience difficulties, delays or failures. This makes it difficult to estimate the total costs to complete our clinical trials and to estimate anticipated completion dates with any degree of accuracy, which raises concerns that attempts to quantify costs and provide estimates of timing may be misleading by implying a greater degree of certainty than actually exists.

In order to develop and obtain regulatory approval for our drug candidates we will need to raise substantial additional funds. We expect to raise any such additional funds through public or private equity or debt financings, collaborative agreements with corporate partners, or other arrangements. Our ability to raise additional capital, including our ability to secure new collaborations, may also be adversely impacted by global economic conditions, including any disruptions to, and volatility in, the credit and financial markets in the United States and worldwide, geopolitical turmoil, and the ongoing conflict in Israel and any potential escalation or geographic expansion of such conflict, which could heighten other risks identified in this report. We cannot assure that additional funds will be available when we need them on terms that are acceptable to us or at all. If we raise additional funds by issuing equity securities, including pursuant to our Amended Distribution Agreement (as may be further amended from time to time), substantial dilution to existing shareholders would result. If we raise additional funds by incurring debt financing, the terms of the debt may involve significant cash payment obligations as well as covenants and specific financial ratios that may restrict our ability to operate our business. We may be required to relinquish rights to our technologies or drug candidates or grant licenses on terms that are not favorable to us in order to raise additional funds through strategic alliances, joint ventures, or licensing arrangements.

If adequate funds are not available on a timely basis, we may be required to:

- terminate or delay clinical trials or other development activities for one or more of our drug candidates;
- delay arrangements for activities that may be necessary to commercialize our drug candidates;
- curtail or eliminate our drug research and development programs that are designed to identify new drug candidates; or
- cease operations.

In addition, if we do not meet our payment obligations to third parties as they come due, we may be subject to litigation claims. Even if we are successful in defending against these claims, litigation could result in substantial costs and distract management and may have unfavorable results that could further adversely impact our financial condition.

Our future success depends on our ability to retain key personnel and to attract, retain, and motivate qualified personnel.

We are highly dependent on key personnel, including Dr. Gene G. Kinney, our President and Chief Executive Officer. There can be no assurance that we will be able to retain Dr. Kinney or any of our key personnel. The loss of the services of Dr. Kinney or any other person on whom we are highly dependent might impede the achievement of our research, development, and commercial objectives. We do not carry "key person" insurance covering any members of our senior management.

Attracting and retaining qualified scientific and other personnel are critical to our growth and future success. Competition for qualified personnel in our industry is intense. We may not be able to attract and retain these personnel on acceptable terms given that competition. Additionally, we may not be able to integrate and motivate qualified personnel to enable them to succeed in their positions. Failure to attract, integrate, retain, and motivate qualified personnel could have a material adverse effect on our business, financial condition, results of operations, and/or growth prospects.

Our collaborators, prospective collaborators, and suppliers may need assurances that our financial resources and stability on a stand-alone basis are sufficient to satisfy their requirements for doing or continuing to do business with us.

Some of our collaborators, prospective collaborators, and suppliers may need assurances that our financial resources and stability on a stand-alone basis are sufficient to satisfy their requirements for doing or continuing to do business with us. If our collaborators, prospective collaborators or suppliers are not satisfied with our financial resources and stability, it could have a material adverse effect on our ability to develop our drug candidates, enter into licenses or other agreements and on our business, financial condition or results of operations.

The agreements we entered into with Elan involve conflicts of interest and therefore may have materially disadvantageous terms to us.

We entered into certain agreements with Elan in connection with our separation from Elan, which set forth the main terms of the separation and provided a framework for our initial relationship with Elan. These agreements may have terms that are materially disadvantageous to us or are otherwise not as favorable as those that might be negotiated between unaffiliated third parties. In December 2013, Elan was acquired by Perrigo Company plc ("Perrigo"), and in February 2014 Perrigo caused Elan to sell all of its shares of Prothena in an underwritten offering. As a result of the acquisition of Elan by Perrigo and the subsequent sale of all of its shares of Prothena, Perrigo may be less willing to collaborate with us in connection with the agreements to which we and Elan are a party and other matters.

We have been, and may in the future be, adversely affected by business disruptions beyond our control, including outbreaks of epidemic, pandemic, or contagious disease, geopolitical turmoil, earthquakes or other natural disasters, and adverse weather events, including as a result of climate change.

The operational and financial impact of a business disruption beyond our control, such as a public health crisis, geopolitical turmoil, or an adverse weather event has, and could, adversely affect our business in the following ways:

- As we have seen with the outbreak of the COVID-19 pandemic, outbreaks of epidemic, pandemic, or contagious disease or other public health emergencies have historically and may in the future disrupt our operations, including clinical trials, research and nonclinical studies, the manufacture or shipment of both drug substance and finished drug product for drug candidates for preclinical testing and clinical trials, and access to stable credit and financial markets in the United States and worldwide. For example, the Phase 3 clinical trial for birtamimab and the Phase 2 clinical trial for prasinezumab conducted by Roche were disrupted by the COVID-19 pandemic as a result of (i) the inability or unwillingness of study participants, site investigators or other study personnel to travel to clinical trial sites or otherwise follow study protocols and (ii) the diversion of healthcare resources away from the conduct of clinical trials.

- Geographic regions where we operate may be affected by war, terrorism, or political instability, and our operations may be vulnerable to disruption, including disturbances to the credit and financial markets (in such region or worldwide), or to services generally, including healthcare services. For example, the Phase 3 clinical trial for birtamimab has clinical trial sites located globally, including in Israel and Eastern Europe, and operations at such clinical trial sites may be disrupted by ongoing conflicts and/or new conflicts, which could result in (i) the inability or unwillingness of study participants, site investigators or other study personnel to travel to such clinical trial sites or otherwise follow study protocols, (ii) the diversion of healthcare resources away from the conduct of clinical trials, or (iii) the complete or partial cessation of operations at such clinical trial sites.

- Our key research facility and a significant portion of our operations are in the San Francisco Bay Area of Northern California, which in the past has experienced severe earthquakes. If an earthquake, other natural disaster, or similar event were to occur and prevent us from using all or a significant portion of those operations or local critical

infrastructure, or that otherwise disrupts our operations, it could be difficult or impossible for us to continue our business for a substantial period of time. We have disaster recovery and business continuity plans, but they may prove to be inadequate in the event of a natural disaster or similar event. We may incur substantial expenses if our disaster recovery and business continuity plans prove to be inadequate. We do not carry earthquake insurance. Furthermore, third parties upon which we are materially dependent upon, including our clinical trial sites, may be vulnerable to natural disasters or similar events.

- Climate change could have an impact on longer-term natural weather trends. Extreme weather events that are linked to rising temperatures, changing global weather patterns, sea, land and air temperatures, as well as sea levels, rain and snow could result in increased occurrence and severity of adverse weather events.

Any one or more of these force majeure events could have a material adverse effect on our liquidity, results of operations, financial condition or business, including the progress of, and timelines for, our nonclinical and clinical development programs, and may create safety challenges for our employees and safe occupancy of our job sites, financial market volatility and significant macroeconomic uncertainty in global markets. Furthermore, any governmental or business actions, or any actions taken by individuals in response to any such events (including mandatory quarantines, travel restrictions, delay in operations of the U.S. FDA and comparable foreign regulatory agency, and interruptions to healthcare services), may divert healthcare resources away from the conduct of clinical trials and development programs.

We may experience breaches or similar disruptions of our information technology systems or data.

Our business is increasingly dependent on critical, complex, and interdependent information technology systems to support business processes as well as internal and external communications. Despite the implementation of security measures, our internal computer systems, and those of our current and any future CROs and other contractors, consultants, and collaborators, have been subject to and remain vulnerable to damage from cyberattacks, “phishing” attacks, ransomware, computer viruses, unauthorized access, natural disasters, terrorism, war, and telecommunication or electrical failures. Attacks upon information technology systems are increasing in their frequency, levels of persistence, sophistication, and intensity, and are being conducted by sophisticated and organized groups and individuals with a wide range of motives and expertise. As a result of the COVID-19 pandemic, we may also face increased cybersecurity risks due to our reliance on internet technology and the number of our employees who are working remotely, which may create additional opportunities for cybercriminals to exploit vulnerabilities. Furthermore, because the techniques used to obtain unauthorized access to or to sabotage systems change frequently and often are not recognized until launched against a target, we may be unable to anticipate these techniques or implement adequate preventative measures. We may also experience security breaches that may remain undetected for an extended period. Any breakdown, malicious intrusion, or computer virus could result in the impairment of key business processes or breach of data security, which could result in a material disruption of our development programs and cause interruptions in our business operations, whether due to a loss of our trade secrets or other intellectual property or lead to unauthorized disclosure of personal data of our employees, third parties with which we do business, clinical trial participants, or others. For example, the loss of clinical trial data from completed or future clinical trials could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. In addition, such a breach may require notification to governmental agencies, the media, or individuals pursuant to applicable data privacy and security law and regulations. Such an event could have an adverse effect on our business, financial condition, or results of operations.

Changes in and failures to comply with U.S. and foreign privacy and data protection laws, regulations, and standards may adversely affect our business, operations, and financial performance.

We and our partners are subject to certain federal, state, and foreign data privacy and security laws and regulations. The legislative and regulatory landscape for privacy and data protection continues to evolve, and there has been an increasing focus on privacy and data protection issues, which may affect our business and may increase our compliance costs and exposure to liability. In the United States, numerous federal and state laws and regulations, including state security breach notification laws, federal and state health information privacy laws (including U.S. Health Insurance Portability and Accountability Act of 1996 (“HIPAA”), as amended by the Health Information Technology for Economic and Clinical Health Act, and regulations promulgated thereunder), and federal and state consumer protection laws (including Section 5 of the Federal Trade Commission Act), govern the collection, use, disclosure, and protection of personal information. Each of these laws is subject to varying interpretations by courts and government agencies, creating complex compliance issues. State privacy laws in particular are evolving, with more than a dozen new state privacy laws passed in recent years, along with additional health privacy specific laws. These laws may further increase our compliance obligations, and potential legal privacy risks. For example, Washington recently passed the My Health My Data Act, which has a broader scope than HIPAA and includes a private right of action. In addition, we may obtain health information from third parties, including research institutions from which we obtain clinical trial data, that are subject to privacy and security requirements under HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act, and the regulations promulgated thereunder. Depending on the facts and circumstances, we

could be subject to significant penalties if we obtain, use or disclose individually identifiable health information in a manner that is not authorized or permitted by HIPAA.

Compliance with these and any other applicable privacy and data security laws and regulations is a rigorous and time-intensive process, and we may be required to substantially amend existing procedures and policies or put in place additional procedures and policies to ensure compliance with privacy and data protection rules and requirements. These changes could adversely impact our business by increasing operational and compliance costs or impact business practices. Further, there is a risk that the amended policies and procedures will not be implemented correctly or that individuals within the business will not be fully compliant with the new procedures. If we fail to comply with any such laws or regulations, we may face significant litigation, government investigations, fines and penalties as well as reputational damage which could adversely affect our business, operations, financial condition and prospects. Furthermore, the laws are not consistent, and compliance in the event of a widespread data breach is costly. In addition, states are constantly adopting new laws or amending existing laws, requiring attention to frequently changing regulatory requirements. For example, the California Consumer Privacy Act (the "CCPA") went into effect January 1, 2020. The CCPA, among other things, imposes new data privacy obligations on covered companies and provides expanded privacy rights to California residents, including the right to access, delete, and opt out of certain disclosures of their information. The CCPA provides for civil penalties for violations, as well as a private right of action with statutory damages for certain data breaches, which may increase the frequency and likelihood of data breach litigation. Although the law includes limited exceptions for health-related information, including clinical trial data, such exceptions may not apply to all of our operations and processing activities. Further, the California Privacy Rights Act (the "CPRA") imposes additional data protection obligations on covered businesses, including additional consumer rights processes, limitations on data uses, audit requirements for higher risk data, and opt outs for certain uses of sensitive data. It also creates a California data protection agency authorized to issue substantive regulations and could result in increased privacy and information security enforcement. The majority of the provisions went into effect on January 1, 2023, and additional compliance investment and potential business process changes may be required. Although the CCPA currently exempts certain health-related information, including clinical trial data, the CCPA and the amendments under the CPRA may increase our compliance costs and potential liability.

Multiple states have followed California to legislate comprehensive privacy laws with data privacy rights. For example, Virginia passed the Virginia Consumer Data Protection Act, which went into effect on January 1, 2023, and affords consumers similar rights to the CCPA, along with additional rights, such as the right to opt-out of processing for profiling and targeted advertising purposes. Additionally, the Colorado Privacy Act and Connecticut Personal Data Privacy and Online Monitoring Act went into effect on July 1, 2023. While these new laws generally include exemptions for HIPAA-covered and clinical trial data, they impact the overall privacy landscape. Several other states have followed suit and passed similar legislation which will go into effect in the coming years. Further, additional privacy laws that are similar in nature have been proposed in other states and at the federal level and, if passed, such laws may have potentially conflicting requirements that would make compliance challenging.

We are also or may become subject to rapidly evolving data protection laws, rules, and regulations in foreign jurisdictions. For example, in the European Union ("EU"), the EU General Data Protection Regulation (the "EU GDPR") governs the collection of, and other processing activities involving, personal data (i.e., data which identifies an individual or from which an individual is identifiable), including clinical trial data, and grants individuals various data protection rights (e.g., the right to the erasure of personal data). The EU GDPR imposes a number of obligations on companies, including inter alia: (i) accountability and transparency requirements, and enhanced requirements for obtaining valid consent; (ii) obligation to consider data protection when any new products or services are developed, and to limit the amount of personal data processed; and (iii) obligations to implement appropriate technical and organizational measures to safeguard personal data and to report certain personal data breaches to: (x) the data protection supervisory authority without undue delay (and no later than 72 hours, where feasible) after becoming aware of the personal data breach, unless the personal data breach is unlikely to result in a risk to the data subjects' rights and freedoms; and (y) affected data subjects where the personal data breach is likely to result in a high risk to their rights and freedoms. In addition, the EU GDPR prohibits the transfer of personal data from the European Economic Area ("EEA") to jurisdictions that the European Commission does not recognize as having "adequate" data protection laws unless a data transfer mechanism has been put in place or a derogation under the EU GDPR can be relied on. In July 2020, the Court of Justice of the EU limited how organizations could lawfully transfer personal data from the EEA to the United States by invalidating the EU-US Privacy Shield Framework for purposes of international transfers and imposing further restrictions on the use of standard contractual clauses ("EU SCCs") including, a requirement for companies to carry out a transfer privacy impact assessment ("TIA"), which, among other things, assesses the laws governing access to personal data in the recipient country and considers whether supplementary measures that provide privacy protections additional to those provided under the EU SCCs will need to be implemented to ensure an "essentially equivalent" level of data protection to that afforded in the EEA. On July 31, 2023, the European Commission adopted its Final Implementing Decision granting the United States adequacy ("Adequacy Decision"), for EU-U.S. transfers of personal data for entities self-certified to the EU-U.S. Data Privacy Framework ("DPF"). Entities relying on EU SCCs for transfers to the United States are also able to rely on the analysis in the

Adequacy Decision as support for their TIA regarding the equivalence of U.S. national security safeguards and redress. The EU GDPR imposes substantial fines for breaches and violations (up to the greater of €20 million or 4% of the noncompliant company's total annual global turnover). The EU GDPR also confers a private right of action on data subjects and consumer associations to lodge complaints with data protection supervisory authorities, seek judicial remedies, and obtain compensation for damages resulting from violations of the EU GDPR.

The EU GDPR has been implemented (as implemented, the "UK GDPR") in the United Kingdom ("UK"). The UK GDPR sits alongside the UK Data Protection Act 2018 which implements certain derogations in the EU GDPR into UK law. Under the UK GDPR, companies not established in the UK but which process personal data in relation to the offering of goods or services to individuals in the UK, or the monitoring of their behavior will be subject to the UK GDPR – the requirements of which are (at this time) largely aligned with those under the EU GDPR and as such, may lead to similar compliance and operational costs with potential fines up to the greater of £17.5 million or 4% of the noncompliant company's total annual global turnover. The UK GDPR also imposes similar restrictions on international transfers of personal data from the UK to jurisdictions that the UK Government does not consider "adequate". The UK's Information Commissioner's Office published: (i) its own form of EU SCCs, known as the International Data Transfer Agreement for transfers to outside the UK; (ii) a "UK addendum" to the new EU SCCs which amends the relevant provisions of such clauses to work in a UK context; and (iii) its own version of the TIA (although entities may choose to adopt either the EU or UK-style TIA). Further, on September 21, 2023, the UK Secretary of State for Science, Innovation and Technology established a UK-U.S. data bridge (i.e., a UK equivalent of the Adequacy Decision) and adopted UK regulations to implement the UK-U.S. data bridge ("UK Adequacy Regulations"). Personal data may now be transferred from the UK under the UK-U.S. data bridge through the UK extension to the DPF to organizations self-certified under the UK extension to the DPF. The above-described changes may lead to additional costs and increase our overall risk exposure.

Compliance with U.S. and foreign data privacy and security laws, rules, and regulations have required us, and may require us in the future, to take on more onerous obligations in our contracts, require us to engage in costly compliance exercises, restrict our ability to collect, use and disclose data, or in some cases, impact our or our partners' or suppliers' ability to operate in certain jurisdictions. Each of these constantly evolving laws can be subject to varying interpretations. If we fail to comply with any such laws, rules, or regulations, we may face government investigations and/or enforcement actions, fines, civil or criminal penalties, private litigation, or adverse publicity that could adversely affect our business, financial condition, and results of operations.

Risks Related to the Discovery, Development, and Regulatory Approval of Drug Candidates

Our success is largely dependent on the success of our research and development programs. Our drug candidates are in various stages of development and we may not be able to successfully discover, develop, obtain regulatory approval for, or commercialize any drug candidates.

The success of our business depends substantially upon our ability to discover, develop, obtain regulatory approval for and commercialize our drug candidates successfully. Our research and development programs are prone to the significant and likely risks of failure inherent in drug development, which can result from the failure of the drug candidate to be sufficiently effective, the safety profile of the drug candidate, a clinical trial that is not sufficiently enrolled or powered or adequately designed to detect a drug effect, or other reasons. We intend to continue to invest most of our time and financial resources in our research and development programs.

There is no assurance that the results of the Phase 3 clinical trial for birtamimab, the Phase 2 clinical trial for prasinezumab, the Phase 2b clinical trial for prasinezumab, the Phase 2 clinical trial for NNC6019, the Phase 1 clinical trial for BMS-986446, the Phase 2 clinical trial for BMS-986446, and the Phase 1 clinical trials for PRX012 will support further development of these drug candidates. In addition, we currently do not, and may never, have any other drug candidates in clinical trials, and we have not identified drug candidates for many of our research programs.

Before obtaining regulatory approvals for the commercial sale of any drug candidate for a target indication, we must demonstrate with substantial evidence gathered in adequate and well-controlled clinical trials that the drug candidate is safe and effective for use for that target indication. In the U.S., this must be done to the satisfaction of the FDA; in the EU, this must be done to the satisfaction of the European Medicines Agency (the "EMA"); and in other countries this must be done to the satisfaction of comparable regulatory authorities.

Satisfaction of these and other regulatory requirements is costly, time consuming, uncertain, and subject to unanticipated delays. Despite our efforts, our drug candidates may not:

- offer improvement over existing treatment options;

- be proven safe and effective in clinical trials; or
- meet applicable regulatory standards.

Positive results in nonclinical studies of a drug candidate may not be predictive of similar results in humans during clinical trials, and promising results from early clinical trials of a drug candidate may not be replicated in later clinical trials. Interim results of a clinical trial do not necessarily predict final results. A number of companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in late-stage clinical trials even after achieving promising results in early-stage development. Accordingly, the results from completed nonclinical studies and early clinical trials for our drug candidates may not be predictive of the results we may obtain in later stage studies or trials. Our nonclinical studies or clinical trials may produce negative or inconclusive results, and we may decide, or regulators may require us, to conduct additional nonclinical studies or clinical trials, or to discontinue clinical trials altogether.

Furthermore, we have not marketed, distributed, or sold any products. Our success will, in addition to the factors discussed above, depend on the successful commercialization of any drug candidates that obtain regulatory approval. Successful commercialization may require:

- obtaining and maintaining commercial manufacturing arrangements with third-party manufacturers;
- developing the marketing and sales capabilities, internal and/or in collaboration with pharmaceutical companies or contract sales organizations, to market and sell any approved drug; and
- acceptance of any approved drug in the medical community and by patients and third-party payers.

Many of these factors are beyond our control. We do not expect any of our drug candidates to be commercially available for several years and some or all may never become commercially available. Accordingly, we may never generate revenues through the sale of products.

We have entered into collaborations with Roche and BMS and may enter into additional collaborations in the future, and we might not realize the anticipated benefits of such collaborations.

Research, development, commercialization and/or strategic collaborations, including those that we have with Roche and BMS, are subject to numerous risks, which include the following:

- collaborators may have significant control or discretion in determining the efforts and resources that they will apply to a collaboration, and might not commit sufficient efforts and resources or might misapply those efforts and resources;
- we may have limited influence or control over the approaches to research, development, and/or commercialization of products candidates in the territories in which our collaboration partners lead research, development, and/or commercialization;
- collaborators might not pursue research, development, and/or commercialization of collaboration drug candidates or might elect not to continue or renew research, development, and/or commercialization programs based on nonclinical and/or clinical trial results, changes in their strategic focus due to the acquisition of competing products, availability of funding, or other factors, such as a business combination that diverts resources or creates competing priorities;
- collaborators might delay, provide insufficient resources to, or modify or stop research or clinical development for collaboration drug candidates or require a new formulation of a drug candidate for clinical testing;
- collaborators could develop or acquire products outside of the collaboration that compete directly or indirectly with our drug candidates or require a new formulation of a drug candidate for nonclinical and/or clinical testing;
- collaborators with sales, marketing, and distribution rights to one or more drug candidates might not commit sufficient resources to sales, marketing, and distribution or might otherwise fail to successfully commercialize those drug candidates;
- collaborators might not properly maintain or defend our intellectual property rights or might use our intellectual property improperly or in a way that jeopardizes our intellectual property or exposes us to potential liability;
- collaboration activities might result in the collaborator having intellectual property covering our activities or drug candidates, which could limit our rights or ability to research, develop, and/or commercialize our drug candidates;
- collaborators might not be in compliance with laws applicable to their activities under the collaboration, which could impact the collaboration or us;

- disputes might arise between us and a collaborator that could cause a delay or termination of the collaboration or result in costly litigation that diverts management attention and resources; and
- collaborations might be terminated, which could result in a need for additional capital to pursue further research, development, and/or commercialization of our drug candidates.

In addition, funding provided by a collaborator might not be sufficient to advance drug candidates under the collaboration.

If a collaborator terminates a collaboration or a program under a collaboration, including by failing to exercise a license or other option under the collaboration, whether because we fail to meet a milestone or otherwise, any potential revenue from the collaboration would be significantly reduced or eliminated. In addition, we will likely need to either secure other funding to advance research, development, and/or commercialization of the relevant drug candidate or abandon that program, the development of the relevant drug candidate could be significantly delayed, and our cash expenditures could increase significantly if we are to continue research, development, and/or commercialization of the relevant drug candidates.

Any one or more of these risks, if realized, could reduce or eliminate future revenue from drug candidates under our collaborations, and could have a material adverse effect on our business, financial condition, results of operations, and/or growth prospects.

If clinical trials of our drug candidates are prolonged, delayed, suspended, or terminated, we may be unable to commercialize our drug candidates on a timely basis, if at all, which would require us to incur additional costs and delay or prevent our receipt of any revenue from potential product sales.

We cannot predict whether we will encounter problems with the Phase 3 clinical trial for birtamimab, the Phase 2 clinical trial for prasinezumab, the Phase 2b clinical trial for prasinezumab, the Phase 2 clinical trial for NNC6019, the Phase 1 clinical trial for BMS-986446, the Phase 2 clinical trial for BMS-986446, the Phase 1 clinical trials for PRX012, or any other future clinical trials that will cause us or any regulatory authority to delay, suspend or terminate those clinical trials or delay the analysis of data derived from them. A number of events, including any of the following, could delay the completion of our ongoing or planned clinical trials and negatively impact our ability to obtain regulatory approval for, and to market and sell, a particular drug candidate:

- conditions imposed on us by the FDA, the EMA, or other comparable regulatory authorities regarding the scope or design of our clinical trials;
- delays in obtaining, or our inability to obtain, required approvals from institutional review boards (“IRBs”) or other reviewing entities at clinical sites selected for participation in our clinical trials;
- insufficient supply or deficient quality of our drug candidates or other materials necessary to conduct our clinical trials;
- delays in obtaining regulatory authority authorization for the conduct of our clinical trials;
- lower than anticipated enrollment and/or retention rate of subjects in our clinical trials, which can be impacted by a number of factors, including size of patient population, design of trial protocol, trial length, eligibility criteria, perceived risks and benefits of the drug candidate, patient proximity to trial sites, patient referral practices of physicians, availability of other treatments for the relevant disease, and competition from other clinical trials;
- slower than expected rates of events in trials with a primary endpoint that is event-based;
- serious and unexpected drug-related side effects experienced by subjects in clinical trials; or
- failure of our third-party contractors and collaborators to meet their contractual obligations to us or otherwise meet their development or other objectives in a timely manner.

Further, conducting clinical trials in foreign countries, as we do and may continue do for our drug candidates, presents potential additional risks for our clinical trials. These risks include the failure in foreign countries to adhere to clinical protocol as a result of differences in regional or local healthcare services or customs, obtaining clinical data and/or clinical samples from sites in such foreign countries, managing additional administrative burdens associated with foreign regulatory requirements, as well as political and economic risks relevant to such foreign countries.

We are dependent upon Roche with respect to further development of prasinezumab. Under the terms of our collaboration with Roche, Roche is responsible for that further development, including the conduct of the ongoing Phase 2 and Phase 2b clinical trials and any future clinical trial of that drug candidate.

We are dependent upon Novo Nordisk with respect to further development of NNC6019, including the Phase 2 clinical trial and any future clinical trial of that drug candidate.

We are dependent upon BMS with respect to further development of BMS-986446, including the Phase 1 clinical trial, the Phase 2 clinical trial, and any future clinical trial of that drug candidate.

Clinical trials may also be delayed or terminated as a result of ambiguous or negative data or results. In addition, a clinical trial may be delayed, suspended or terminated by us, the FDA, the EMA or other comparable regulatory authorities, the IRBs for the sites where the IRBs are overseeing a trial, or the safety oversight committee overseeing the clinical trial at issue due to a number of factors, including:

- failure to conduct the clinical trial in accordance with regulatory requirements or our clinical protocols;
- inspection of the clinical trial operations or trial sites by the FDA, the EMA, or other regulatory authorities resulting in the imposition of a clinical hold on or imposition of additional conditions for the conduct of the trial;
- interpretation of data by the FDA, the EMA, or other regulatory authorities;
- requirement by the FDA, the EMA, or other regulatory authorities to perform additional studies;
- failure to achieve primary or secondary endpoints or other failure to demonstrate efficacy or adequate safety;
- unforeseen safety issues; or
- lack of adequate funding to continue the clinical trial.

Additionally, changes in regulatory requirements and guidance may occur and we may need to amend clinical trial protocols to reflect these changes. Amendments may require us to resubmit our clinical trial protocols to regulatory authorities and IRBs for reexamination, which may impact the cost, timing, or successful completion of a clinical trial. For example, the FDA may modify or enhance clinical trial requirements which could affect enrollment and retention of patients. Such effects on recruitment and retention of patients may hinder or delay a clinical trial, which could increase costs and delay clinical programs.

We do not know whether our clinical trials will be conducted as planned, will need to be restructured, or will be completed on schedule, if at all. Delays in our clinical trials will result in increased development costs for our drug candidates. In addition, if we experience delays in the completion of, or if we terminate, any of our clinical trials, the commercial prospects for our drug candidates may be delayed or harmed and our ability to generate product revenues will be delayed or jeopardized. Furthermore, many of the factors that cause, or lead to, a delay in the commencement or completion of clinical trials may also ultimately lead to the denial of regulatory approval of a drug candidate.

The regulatory approval processes of the FDA, the EMA, and other comparable regulatory authorities are lengthy, time consuming, and inherently unpredictable, and if we are ultimately unable to obtain regulatory approval for our drug candidates, our business will be substantially harmed.

The time required to obtain approval by the FDA, the EMA, and other comparable regulatory authorities is inherently unpredictable but typically takes many years following the commencement of clinical trials and depends upon numerous factors, including the substantial discretion of the regulatory authorities. In addition, approval policies, regulations, or the type and amount of clinical data necessary to gain approval may change during the course of a drug candidate's clinical development and may vary among jurisdictions. We have not obtained regulatory approval for any drug candidate, and it is possible that none of our existing drug candidates or any drug candidates we may seek to develop in the future will ever obtain regulatory approval.

Our drug candidates could fail to receive regulatory approval for many reasons, including the following:

- the FDA, the EMA, or comparable regulatory authorities may disagree with the design, implementation, or conduct of our clinical trials;
- we may be unable to demonstrate to the satisfaction of the FDA, the EMA, or comparable regulatory authorities that a drug candidate is safe and effective for its proposed indication;
- the results of clinical trials may not meet the level of statistical significance required by the FDA, the EMA, or comparable regulatory authorities for approval;
- we may be unable to demonstrate that a drug candidate's clinical and other benefits outweigh its safety risks;
- the FDA, the EMA, or comparable regulatory authorities may disagree with our interpretation of data from nonclinical studies or clinical trials;

- the data collected from clinical trials of our drug candidates may not be sufficient to support the submission of an NDA or a BLA to the FDA, a Marketing Authorization Application ("MAA") to the EMA, or similar applications to comparable regulatory authorities;
- the FDA, the EMA, or comparable regulatory authorities may fail to approve the manufacturing processes or facilities of third-party manufacturers with which we contract for clinical and commercial supplies; or
- the approval policies or regulations of the FDA, the EMA, or comparable regulatory authorities may significantly change in a manner rendering our clinical data insufficient for approval.

This lengthy approval process as well as the unpredictability of future clinical trial results may result in our failing to obtain regulatory approval to market our drug candidates, which would significantly harm our business, results of operations, and/or growth prospects.

In addition, even if we were to obtain approval, regulatory authorities may approve any of our drug candidates for fewer or more limited indications than we request, may grant approval contingent on the performance of costly post-marketing clinical trials, or may approve a drug candidate with a label that does not include the labeling claims necessary or desirable for the successful commercialization of that drug candidate. Any of the foregoing scenarios could materially harm the commercial prospects for our drug candidates.

The FDA or other comparable foreign regulatory authorities may not accept data from trials conducted in locations outside of their jurisdiction.

We are and may choose to conduct international clinical trials in the future. The acceptance of study data by the FDA or other comparable foreign regulatory authority from clinical trials conducted outside of their respective jurisdictions may be subject to certain conditions. In cases where data from foreign clinical trials are intended to serve as the basis for marketing approval in the United States, the FDA will generally not approve the application on the basis of foreign data alone unless (1) the data are applicable to the United States population and United States medical practice; (2) the trials are performed by clinical investigators of recognized competence; and (3) the data may be considered valid without the need for an on-site inspection by the FDA, or if the FDA considers such an inspection to be necessary, the FDA is able to validate the data through an on-site inspection or other appropriate means. In addition, such foreign trials would be subject to the applicable local laws of the foreign jurisdictions where the trials are conducted. There can be no assurance that the FDA or any other comparable foreign regulatory authority will accept data from trials conducted outside of its applicable jurisdiction. If the FDA or any other comparable foreign regulatory authority does not accept such data, it would result in the need for additional trials, which would be costly and time-consuming and delay aspects of our business plan, and which may result in our product candidates not receiving approval for commercialization in the applicable jurisdiction.

Even if our drug candidates receive regulatory approval in one country or jurisdiction, we may never receive approval or commercialize our products in other countries or jurisdictions.

In order to market drug candidates in a particular country or jurisdiction, we must establish and comply with numerous and varying regulatory requirements of that country or jurisdiction, including with respect to safety and efficacy. Approval procedures vary among countries and can involve additional product testing and additional administrative review periods. The time required to obtain approval in other countries might differ from that required to obtain, for example, FDA approval in the U.S. or EMA approval in the EU. The regulatory approval process in other countries may include all of the risks detailed above regarding FDA approval in the U.S. and EMA approval in the EU as well as other risks. Regulatory approval in one country or jurisdiction does not ensure regulatory approval in another country or jurisdiction, but a failure or delay in obtaining regulatory approval in one country may have a negative effect on the regulatory process in others. Failure to obtain regulatory approval in one country or jurisdiction or any delay or setback in obtaining such approval would impair our ability to develop other markets for that drug candidate.

Although we have obtained agreement with the FDA on a special protocol assessment ("SPA") with regard to our Phase 3 AFFIRM-AL clinical trial of birtamimab, a SPA does not guarantee approval of birtamimab or any other particular outcome from regulatory review.

On January 27, 2021, the FDA agreed to a SPA for our Phase 3 AFFIRM-AL clinical trial of birtamimab. The FDA's SPA process is designed to facilitate the FDA's review and approval of drugs by allowing the FDA to evaluate proposed critical design features of certain clinical trials that are intended to form the primary basis for determining a drug candidate's efficacy and safety. Upon specific request by a clinical trial sponsor, the FDA will evaluate the study protocol and statistical analysis plan and respond to a sponsor's questions regarding protocol design and scientific and regulatory requirements. FDA aims to complete SPA reviews within 45 days of receipt of the request. The FDA ultimately assesses whether specific elements of the protocol design for the trial, such as entry criteria, endpoints, size, duration, and planned analyses, are acceptable to support an

application for regulatory approval of the drug candidate with respect to the effectiveness of and safety for the indication studied. All agreements and disagreements between the FDA and the sponsor regarding a SPA must be clearly documented in a SPA letter or the minutes of a meeting between the sponsor and the FDA.

Although the FDA has agreed to the SPA for our Phase 3 AFFIRM-AL clinical trial with respect to the primary endpoint and certain other aspects of the clinical trial, a SPA agreement does not guarantee approval of a drug candidate. The FDA may limit the scope of its agreement to a SPA agreement to certain, specific aspects of the clinical trial design. Even if the FDA agrees to the design, execution, and analysis proposed in a protocol reviewed under the SPA process, the FDA may revoke or alter its agreement in certain circumstances. In particular, a SPA agreement is not binding on the FDA if public health concerns emerge that were unrecognized at the time of the SPA agreement, other new scientific concerns regarding product safety or efficacy arise, the sponsor fails to comply with the agreed upon study protocol, or the relevant data, assumptions, or information provided by the sponsor in a request for the SPA change or are found to be false or to omit relevant facts. In addition, even after a SPA agreement is finalized, the SPA agreement may be modified, and such modification will be deemed binding on the FDA review division, except under the circumstances described above, if the FDA and the sponsor agree in writing to the modification of the study protocol and/or statistical analysis plan. Generally, such modification is intended to improve the study. The FDA retains significant latitude and discretion in interpreting the terms of the SPA agreement and the data and results from any study that is the subject of the SPA agreement.

Moreover, if the FDA revokes or alters its agreement under the SPA, or interprets the data collected from the clinical trial differently than the sponsor, the FDA may not deem the data sufficient to support an application for regulatory approval.

Both before and after marketing approval, our drug candidates are subject to ongoing regulatory requirements and continued regulatory review, and if we fail to comply with these continuing requirements, we could be subject to a variety of sanctions and the sale of any approved products could be suspended.

Both before and after regulatory approval to market a particular drug candidate, adverse event reporting, manufacturing, labeling, packaging, storage, distribution, advertising, promotion, record keeping, and reporting related to the product are subject to extensive, ongoing regulatory requirements. These requirements include submissions of safety and other post-marketing information and reports, as well as continued compliance with current good manufacturing practice (“cGMP”) requirements and current good clinical practice (“cGCP”) requirements for any clinical trials that we conduct. Any regulatory approvals that we receive for our drug candidates may also be subject to limitations on the approved indicated uses for which the product may be marketed or to the conditions of approval, or contain requirements for potentially costly post-marketing testing, including Phase 4 clinical trials, and surveillance to monitor the safety and efficacy of the drug candidate. Later discovery of previously unknown problems with a product, including adverse events of unanticipated severity or frequency, or not previously observed in clinical trials, or problems with our third-party manufacturers or manufacturing processes, or failure to comply with the regulatory requirements of the FDA, the EMA, or other comparable regulatory authorities could subject us to administrative or judicially imposed sanctions, including:

- restrictions on the marketing of our products or their manufacturing processes;
- warning letters;
- civil or criminal penalties;
- fines;
- injunctions;
- product seizures or detentions;
- import or export bans;
- voluntary or mandatory product recalls and related publicity requirements;
- suspension or withdrawal of regulatory approvals;
- total or partial suspension of production; and
- refusal to approve pending applications for marketing approval of new products or supplements to approved applications.

The policies of the FDA, the EMA, or other comparable regulatory authority may change and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our drug candidates. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained, which would adversely affect our business, prospects and ability to achieve or sustain profitability.

If side effects are identified during the time our drug candidates are in development, or, if they are approved by applicable regulatory authorities, after they are on the market, we may choose to or be required to perform lengthy additional clinical trials, discontinue development of the affected drug candidate, change the labeling of any such products, or withdraw any such products from the market, any of which would hinder or preclude our ability to generate revenues.

Undesirable side effects caused by our drug candidates could cause us or regulatory authorities to interrupt, delay or halt clinical trials and could result in a more restrictive label or the delay or denial of regulatory approval by the FDA, the EMA, or other comparable regulatory authorities. Drug-related side effects could affect patient recruitment or the ability of enrolled patients to complete a trial or result in potential product liability claims. Any of these occurrences may harm our business, financial condition and prospects significantly. Even if any of our drug candidates receives marketing approval, as greater numbers of patients use a drug following its approval, an increase in the incidence or severity of side effects or the incidence of other post-approval problems that were not seen or anticipated during pre-approval clinical trials could result in a number of potentially significant negative consequences, including:

- regulatory authorities may withdraw their approval of the product;
- regulatory authorities may require the addition of labeling statements, such as contraindications, warnings, or precautions; or impose additional safety monitoring or reporting requirements;
- we may be required to change the way the product is administered, or to conduct additional clinical trials;
- we could be sued and held liable for harm caused to patients; and
- our reputation may suffer.

Any of these events could substantially increase the costs and expenses of developing, commercializing and marketing any such drug candidates or could harm or prevent sales of any approved products.

We deal with hazardous materials and must comply with environmental laws and regulations which can be expensive and restrict how we do business.

Some of our research and development activities involve the controlled storage, use, and disposal of hazardous materials. We are subject to U.S. federal, state, local, and other countries' and jurisdictions' laws and regulations governing the use, manufacture, storage, handling, and disposal of these hazardous materials. Although we believe that our safety procedures for the handling and disposing of these materials comply with the standards prescribed by these laws and regulations, we cannot eliminate the risk of accidental contamination or injury from these materials. In the event of an accident, state or federal authorities may curtail our use of these materials, and we could be liable for any civil damages that result, which may exceed our financial resources and may seriously harm our business. Because we believe that our laboratory and materials handling policies and practices sufficiently mitigate the likelihood of materials liability or third-party claims, we currently carry no insurance covering such claims. An accident could damage, or force us to shut down, our operations.

Risks Related to the Commercialization of Our Drug Candidates

Even if any of our drug candidates receives regulatory approval, if such approved product does not achieve broad market acceptance, the revenues that we generate from sales of the product will be limited.

Even if any drug candidates we may develop or acquire in the future obtain regulatory approval, they may not gain broad market acceptance among physicians, healthcare payers, patients and the medical community. The degree of market acceptance for any approved drug candidate will depend on a number of factors, including:

- the indication and label for the product and the timing of introduction of competitive products;
- demonstration of clinical safety and efficacy compared to other products;
- prevalence, frequency, and severity of adverse side effects;
- availability of coverage and adequate reimbursement from managed care plans and other third-party payers;
- convenience and ease of administration;
- cost-effectiveness;
- other potential advantages of alternative treatment methods; and

- the effectiveness of marketing and distribution support of the product.

Consequently, even if we discover, develop, and commercialize a product, the product may fail to achieve broad market acceptance and we may not be able to generate significant revenue from the product.

The success of prasinezumab in the United States, if approved, will be dependent upon the strength and performance of our collaboration with Roche. If we fail to maintain our existing collaboration with Roche, such termination would likely have a material adverse effect on our ability to develop and commercialize prasinezumab and our business. Furthermore, in May 2021, we opted out of profit and loss sharing with Roche for prasinezumab in Parkinson's disease; however if we opt out of profit and loss sharing for any other Licensed Products and/or indications, our revenues from such other Licensed Products and/or indications will be reduced.

The success of sales of prasinezumab in the U.S. will be dependent on the ability of Roche to successfully develop in collaboration with us, and launch and commercialize prasinezumab, if approved by the FDA, pursuant to the License Agreement we entered into in December 2013. Our collaboration with Roche is complex, particularly with respect to future U.S. commercialization of prasinezumab, with respect to financial provisions, allocations of responsibilities, cost estimates, and the respective rights of the parties in decision making. Accordingly, significant aspects of the development and commercialization of prasinezumab require Roche to execute its responsibilities under the arrangement, or require Roche's agreement or approval, prior to implementation, which could cause significant delays that may materially impact the potential success of prasinezumab in the U.S. In addition, Roche may under some circumstances independently develop products that compete with prasinezumab, or Roche may decide to not commit sufficient resources to the development, commercialization, marketing and distribution of prasinezumab. If we are not able to collaborate effectively with Roche on plans and efforts to develop and commercialize prasinezumab, our business could be materially adversely affected.

Furthermore, the terms of the License Agreement provide that Roche has the ability to terminate such arrangement for any reason after the first anniversary of the License Agreement at any time upon 90 days' notice (if prior to first commercial sale) or 180 days' notice (if after first commercial sale). For example, even if prasinezumab was approved by the FDA, Roche may determine that the outcomes of clinical trials made prasinezumab a less attractive commercial product and terminate our collaboration. If the License Agreement is terminated, our business and our ability to generate revenue from sales of prasinezumab could be substantially harmed as we will be required to develop, commercialize, and build our own sales and marketing organization, or enter into another strategic collaboration in order to develop and commercialize prasinezumab in the U.S. Such efforts may not be successful and, even if successful, would require substantial time and resources to carry out.

The manner in which Roche launches prasinezumab, if approved by the FDA, including the timing of launch and potential pricing, will have a significant impact on the ultimate success of prasinezumab in the U.S., and the success of the overall commercial arrangement with Roche. If launch of commercial sales of prasinezumab in the U.S. by Roche is delayed or prevented, our revenue will suffer and our stock price may decline. Further, if launch and resulting sales by Roche are not deemed successful, our business would be harmed and our stock price may decline. Any lesser effort by Roche in its prasinezumab sales and marketing efforts may result in lower revenue and thus lower profits with respect to the U.S. The outcome of Roche's commercialization efforts in the U.S. could also have a negative effect on investors' perception of potential sales of prasinezumab outside of the U.S., which could also cause a decline in our stock price.

In May 2021, we opted out of profit and loss sharing with Roche for prasinezumab in Parkinson's disease. However, pursuant to the License Agreement, we are responsible for 30% of all development and commercialization costs for any future Licensed Products and/or indications (other than Parkinson's disease with prasinezumab) that we opt to co-develop, in each case unless we elect to opt out of profit and loss sharing. If we elect to opt out of profit and loss sharing, we will instead receive sales milestones and royalties, and our revenue, if any, from such other Licensed Products and/or indications will be reduced.

Our right to co-develop Licensed Products and/or indications under the License Agreement (other than Parkinson's disease with prasinezumab for which we have opted out of co-development) will terminate if we commence certain studies for a competitive product that treats Parkinson's disease or other indications that we opted to co-develop. In addition, our right to co-promote prasinezumab and other Licensed Products will terminate if we commence a Phase 3 study for a competitive product that treats Parkinson's disease.

Moreover, under the terms of the License Agreement, we rely on Roche to provide us estimates of their costs, revenue, and revenue adjustments and royalties, which estimates we use in preparing our quarterly and annual financial reports. If the underlying assumptions on which Roche's estimates were based prove to be incorrect, actual results or revised estimates supplied by Roche that are materially different from the original estimates could require us to adjust the estimates included in our reported financial results. If material, these adjustments could require us to restate previously reported financial results, which could have a negative effect on our stock price.

Our ability to receive any significant revenue from prasinezumab will be dependent on Roche's efforts and may result in lower levels of income than if we marketed or developed our drug candidates entirely on our own. Roche may not fulfill its

obligations or carry out marketing activities for prasinezumab as diligently as we would like. We could also become involved in disputes with Roche, which could lead to delays in or termination of development or commercialization activities and time-consuming and expensive litigation or arbitration. If Roche terminates or breaches the License Agreement, or otherwise decides not to complete its obligations in a timely manner, the chances of successfully developing, commercializing, or marketing prasinezumab would be materially and adversely affected.

Outside of the United States, we are solely dependent on the efforts and commitments of Roche, either directly or through third parties, to further develop and, if prasinezumab is approved by applicable regulatory authorities, commercialize prasinezumab. If Roche's efforts are unsuccessful, our ability to generate future product sales from prasinezumab outside the United States would be significantly reduced.

Under our License Agreement, outside of the U.S., Roche has responsibility for developing and commercializing prasinezumab and any future Licensed Products targeting α-synuclein. As a consequence, any progress and commercial success outside of the U.S. is dependent solely on Roche's efforts and commitment to the program. For example, Roche may delay, reduce, or terminate development efforts relating to prasinezumab outside of the U.S., or under some circumstances independently develop products that compete with prasinezumab, or decide not to commit sufficient resources to the commercialization, marketing, and distribution of prasinezumab.

In the event that Roche does not diligently develop and commercialize prasinezumab, the License Agreement provides us the right to terminate the License Agreement in connection with a material breach uncured for 90 days after notice thereof. However, our ability to enforce the provisions of the License Agreement so as to obtain meaningful recourse within a reasonable timeframe is uncertain. Further, any decision to pursue available remedies including termination would impact the potential success of prasinezumab, including inside the U.S., and we may choose not to terminate as we may not be able to find another partner and any new collaboration likely will not provide comparable financial terms to those in our arrangement with Roche. In the event of our termination, this may require us to develop and commercialize prasinezumab on our own, which is likely to result in significant additional expense and delay. Significant changes in Roche's business strategy, resource commitment and the willingness or ability of Roche to complete its obligations under our arrangement could materially affect the potential success of the drug candidate. Furthermore, if Roche does not successfully develop and commercialize prasinezumab outside of the U.S., our potential to generate future revenue outside of the U.S. would be significantly reduced.

If we are unable to establish sales and marketing capabilities or enter into agreements with third parties to market and sell approved products, we may be unable to generate product revenue.

We do not currently have a fully-scaled organization for the sales, marketing, and distribution of pharmaceutical products. In order to market any products that may be approved by the FDA, the EMA, or other comparable regulatory authorities, we must build our sales, marketing, managerial, and other non-technical capabilities or make arrangements with third parties to perform these services.

We have entered into the License Agreement with Roche for the development of prasinezumab and may develop our own sales force and marketing infrastructure to co-promote prasinezumab in the U.S. for the treatment of Parkinson's disease and any future Licensed Products approved for Parkinson's disease in the U.S. If we exercise our co-promotion option and are unable to develop our own sales force and marketing infrastructure to effectively commercialize prasinezumab or other Licensed Products, our ability to generate additional revenue from potential sales of prasinezumab or such products in the U.S. may be harmed. In addition, our right to co-promote prasinezumab and other Licensed Products will terminate if we commence a Phase 3 study for a competitive product that treats Parkinson's disease.

For any other products that may be approved, if we are unable to establish adequate sales, marketing, and distribution capabilities, whether independently or with third parties, we may not be able to generate product revenue and may not become profitable.

If government and third-party payers fail to provide coverage and adequate reimbursement rates for any of our drug candidates that receive regulatory approval, our revenue and prospects for profitability will be harmed.

In both U.S. and non-U.S. markets, our sales of any future products will depend in part upon the availability of reimbursement from third-party payers. Such third-party payers include government health programs such as Medicare and Medicaid, managed care providers, private health insurers, and other organizations. There is significant uncertainty related to the third-party coverage and reimbursement of newly approved drugs. Coverage and reimbursement may not be available for any drug that we or our collaborators commercialize and, even if these are available, the level of reimbursement may not be satisfactory. Third-party payers often rely upon Medicare coverage policy and payment limitations in setting their own reimbursement policies. Third-party payers are also increasingly attempting to contain healthcare costs by demanding price discounts or rebates limiting both coverage and the amounts that they will pay for new drugs, and, as a result, they may not

cover or provide adequate payment for our drug candidates. We might need to conduct post-marketing studies in order to demonstrate the cost-effectiveness of any future products to such payers' satisfaction. Such studies might require us to commit a significant amount of management time and financial and other resources. Our future products might not ultimately be considered cost-effective. Adequate third-party reimbursement might not be available to enable us to maintain price levels sufficient to realize an appropriate return on investment in product development. If coverage and adequate reimbursement are not available or reimbursement is available only to limited levels, we or our collaborators may not be able to successfully commercialize any drug candidates for which marketing approval is obtained.

Additionally, pursuant to the Medicaid Drug Rebate Statute, we will be required to participate in the Medicaid Drug Rebate Program in order for federal payment to be available for our products under Medicaid and Medicare Part B. Under the Medicaid Drug Rebate Program, we will be required to, among other things, pay a rebate to each state Medicaid program for quantities of our products utilized on an outpatient basis (with some exceptions) that are dispensed to Medicaid beneficiaries and paid for by a state Medicaid program. Medicaid Drug Rebate Program rebates are calculated using a statutory formula, state-reported utilization data, and pricing data that are calculated and reported by us on a monthly and quarterly basis to the Centers for Medicare and Medicaid Services ("CMS"). These data include the average manufacturer price and, in the case of single source and innovator multiple source products, the best price for each drug.

The regulations that govern marketing approvals, pricing, coverage, and reimbursement for new drugs vary widely from country to country. Current and future legislation may significantly change the approval requirements in ways that could involve additional costs and cause delays in obtaining approvals. Some countries require approval of the sale price of a drug before it can be marketed. In many countries, the pricing review period begins after marketing or licensing approval is granted. In some countries, prescription pharmaceutical pricing remains subject to continuing governmental control even after initial approval is granted. As a result, we or our collaborators might obtain marketing approval for a drug in a particular country, but then be subject to price regulations that delay commercial launch of the drug, possibly for lengthy time periods, and negatively impact our ability to generate revenue from the sale of the drug in that country. Adverse pricing limitations may hinder our ability to recoup our investment in one or more drug candidates, even if our drug candidates obtain marketing approval.

U.S. and other governments continue to propose and pass legislation designed to reduce the cost of healthcare. In the U.S., we expect that there will continue to be federal and state proposals to implement similar governmental controls. In addition, recent changes in the Medicare program and increasing emphasis on managed care in the U.S. will continue to put pressure on pharmaceutical product pricing. For example, in 2010, the U.S. Patient Protection and Affordable Care Act, as amended by the U.S. Health Care and Education Reconciliation Act (collectively, the "ACA"), was enacted. The ACA substantially changed the way healthcare is financed by both governmental and private insurers and significantly affects the pharmaceutical industry. Among the provisions of the ACA of importance to the pharmaceutical industry are the following:

- an annual, nondeductible fee on any entity that manufactures or imports certain branded prescription drugs and biologic agents, apportioned among these entities according to their market share in certain government healthcare programs;
- an increase in the minimum rebates a manufacturer must pay under the U.S. Medicaid Drug Rebate Program to 23.1% and 13.0% of the average manufacturer price for branded and generic drugs, respectively;
- expansion of healthcare fraud and abuse laws, including the U.S. False Claims Act ("FCA") and the U.S. Anti-Kickback Statute, new government investigative powers and enhanced penalties for non-compliance;
- extension of manufacturers' Medicaid rebate liability to covered drugs dispensed to individuals who are enrolled in Medicaid managed care organizations;
- expansion of eligibility criteria for Medicaid programs by, among other things, allowing states to offer Medicaid coverage to additional individuals and by adding new mandatory eligibility categories for certain individuals with income at or below 133% of the federal poverty level, thereby potentially increasing a manufacturer's Medicaid rebate liability;
- a licensure framework for follow-on biologic products;
- expansion of the entities eligible for discounts under the Public Health Service pharmaceutical pricing program;
- implementation of the federal Physician Payments Sunshine Act, which requires pharmaceutical manufacturers, among others, to annually track and report all payments and other transfers of value they make to certain healthcare providers, as well as physician ownership held in the company;
- a requirement for manufacturers and distributors to annually report drug samples that they provide to physicians; and

- establishment of the Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research.

In addition, other legislative changes have been proposed and adopted since the ACA was enacted. These changes include aggregate reductions to Medicare payments to providers of 2% per fiscal year, which went into effect in 2013 and will stay in effect through the first six months of the FY 2032 sequestration order, unless additional congressional action is taken, with the exception of a temporary suspension from May 1, 2020, through March 31, 2022, and a subsequent 1% cut in Medicare payments in effect from March 31, 2022 to July 1, 2022, due to the COVID-19 pandemic. In 2013, the U.S. American Taxpayer Relief Act of 2012, among other things, further reduced Medicare payments to several types of providers and increased the statute of limitations period for the government to recover overpayments to providers from three to five years. These new laws may result in additional reductions in Medicare and other healthcare funding, which could have a material adverse effect on customers for our drugs, if approved, and, accordingly, our financial operations.

Since its enactment, there have been judicial, executive, and Congressional challenges to certain aspects of the ACA. While Congress has not passed comprehensive repeal legislation, two bills affecting the implementation of certain taxes under the ACA have been signed into law, including the repeal, effective January 1, 2019, of the tax-based shared responsibility payment imposed by the ACA on certain individuals who fail to maintain qualifying health coverage for all or part of a year that is commonly referred to as the “individual mandate.” On June 17, 2021, the U.S. Supreme Court dismissed the most recent judicial challenge to the ACA brought by several states who argued that, without the individual mandate, the entire ACA was unconstitutional. The Supreme Court’s dismissal of the lawsuit did not specifically rule on the constitutionality of the ACA.

Moreover, President Biden signed into law the Inflation Reduction Act (IRA) on August 16, 2022, which allows Medicare to: beginning in 2026, establish a “maximum fair price” for a fixed number of pharmaceutical and biological products covered under Medicare Parts B and D following a price negotiation process with CMS; and, beginning in 2023, penalize drug companies that raise prices for products covered under Medicare Parts B and D faster than inflation, among other reforms. CMS has recently taken steps to implement the IRA, including: on June 30, 2023, issuing guidance detailing the requirements and parameters of the first round of price negotiations, to take place during 2023 and 2024, for products subject to the “maximum fair price” provision that would become effective in 2026; on August 29, 2023, releasing the initial list of ten drugs subject to price negotiations; on November 17, 2023, releasing guidance outlining the methodology for identifying certain manufacturers eligible to participate in a phase-in period where discounts on applicable products will be lower than those required by the Medicare Part D Manufacturer Discount Program; and on December 14, 2023, releasing a list of 48 Medicare Part B products that had an adjusted coinsurance rate based on the inflationary rebate provisions of the IRA for the time period of January 1, 2024 to March 31, 2024. It is unclear how future regulatory actions to implement the IRA, as well as the outcome of pending litigation against the IRA brought against the Department of Health and Human Services (HHS), the Secretary of HHS, CMS, and the CMS Administrator challenging the constitutionality and administrative implementation of the IRA’s drug price negotiation provisions, may affect our products and future profitability.

Additionally, on October 14, 2022, President Biden issued an Executive Order on Lowering Prescription Drug Costs for Americans, which instructed the Secretary of HHS to consider whether to select for testing by the CMS Innovation Center new health care payment and delivery models that would lower drug costs and promote access to innovative drug therapies for beneficiaries enrolled in the Medicare and Medicaid programs. On February 14, 2023, HHS issued a report in response to the October 14, 2022 Executive Order, which, among other things, selects three potential drug affordability and accessibility models to be tested by the CMS Innovation Center. Specifically, the report addresses: (1) a model that would allow Part D Sponsors to establish a “high-value drug list” setting the maximum co-payment amount for certain common generic drugs at $2.00; (2) a Medicaid-focused model that would establish a partnership between CMS, manufacturers, and state Medicaid agencies that would result in multi-state outcomes-based agreements or certain cell and gene therapy drugs; and (3) a model that would adjust Medicare Part B payment amounts for Accelerated Approval Program drugs to advance the developments of novel treatments.

We expect that other healthcare reform measures that may be adopted in the future may result in more rigorous coverage criteria and in additional downward pressure on the price that we receive for any approved drug. Legislation and regulations affecting the pricing of pharmaceuticals might change before our drug candidates are approved for marketing. Any reduction in reimbursement from Medicare or other government healthcare programs may result in a similar reduction in payments from private payers. The implementation of cost containment measures or other healthcare reforms may prevent us from being able to generate revenue, attain profitability or commercialize our drugs.

There can be no assurance that our drug candidates, if they are approved for sale in the U.S. or in other countries, will be considered medically reasonable and necessary for a specific indication, that they will be considered cost-effective by third-party payers, that coverage or an adequate level of reimbursement will be available, or that third-party payers’ reimbursement policies will not adversely affect our ability to sell our drug candidates profitably if they are approved for sale.

The markets for our drug candidates are subject to intense competition. If we are unable to compete effectively, our drug candidates may be rendered noncompetitive or obsolete.

The research, development, and commercialization of new drugs is highly competitive. We will face competition with respect to all drug candidates we may develop or commercialize in the future from pharmaceutical and biotechnology companies worldwide. The key factors affecting the success of any approved product will be its indication, label, efficacy, safety profile, drug interactions, method of administration, pricing, coverage, reimbursement, and level of promotional activity relative to those of competing drugs.

Furthermore, many large pharmaceutical and biotechnology companies, academic institutions, governmental agencies, and other public and private research organizations are pursuing the development of novel drugs that target the same indications we are targeting with our research and development program. We face, and expect to continue to face, intense and increasing competition as new products enter the market and advanced technologies become available. Many of our competitors have:

- significantly greater financial, technical and human resources than we have and may be better equipped to discover, develop, manufacture, and commercialize drug candidates;
- more extensive experience in nonclinical testing and clinical trials, obtaining regulatory approvals, and manufacturing and marketing pharmaceutical products;
- drug candidates that have been approved or are in late-stage clinical development; and/or
- collaborative arrangements in our target markets with leading companies and research institutions.

Competitive products may render our research and development program obsolete or noncompetitive before we can recover the expenses of developing and commercializing our drug candidates. Furthermore, the development of new treatment methods and/or the widespread adoption or increased utilization of any vaccine or development of other products or treatments for the diseases we are targeting could render any of our drug candidates noncompetitive, obsolete or uneconomical. If we successfully develop and obtain approval for a drug candidate, we will face competition based on the safety and effectiveness of the approved product, the timing of its entry into the market in relation to competitive products in development, the availability and cost of supply, marketing and sales capabilities, coverage, reimbursement, price, patent position and other factors. Even if we successfully develop drug candidates but those drug candidates do not achieve and maintain market acceptance, our business will not be successful.

Our drug candidates for which we intend to seek approval as biologic products may face competition sooner than anticipated.

Our current drug candidates are regulated by the FDA as biologic products and we intend to seek approval for these products pursuant to the BLA pathway. The U.S. Biologics Price Competition and Innovation Act of 2009 (the “BPCIA”) created an abbreviated pathway for the approval of biosimilar and interchangeable biologic products. The abbreviated regulatory pathway establishes legal authority for the FDA to review and approve biosimilar biologics, including the possible designation of a biosimilar as “interchangeable” based on its similarity to an existing brand product.

Under the BPCIA, an application for a biosimilar product cannot be submitted to the FDA until four years following the date that the reference product was first licensed by the FDA, and cannot be approved by the FDA until 12 years after the original branded product was approved under a BLA. The BPCIA also created certain exclusivity periods for biosimilars approved as interchangeable products. However, during the 12-year period of reference product exclusivity, another company may obtain FDA licensure and market a competing version of the reference product if the FDA approves a full de novo BLA, not an abbreviated BLA for a biosimilar product, for the competing product containing that applicant’s own preclinical data and data from adequate and well-controlled clinical trials to demonstrate the safety, purity and potency of its product.

The law is complex and is still being interpreted and implemented by the FDA. Any processes adopted by the FDA to implement the BPCIA could have a material adverse effect on the future commercial prospects for our biologic products. In addition, there has been discussion of whether Congress should reduce the 12-year reference product exclusivity period. Other aspects of the BPCIA, some of which may impact the BPCIA exclusivity provisions, have also been the subject of recent litigation. As a result, the ultimate implementation of the BPCIA is subject to significant uncertainty.

We believe that any of our drug candidates approved as a biologic product under a BLA should qualify for the 12-year period of exclusivity. However, there is a risk that this exclusivity could be shortened due to congressional action or otherwise, or that the FDA will not consider our drug candidates to be reference products for competing products, potentially creating the opportunity for generic competition sooner than anticipated. Moreover, the extent to which a biosimilar, once approved, will be

substituted for any one of our reference products in a way that is similar to traditional generic substitution for non-biologic products is not yet clear, and will depend on a number of marketplace and regulatory factors that are still developing.

We may be unable to maintain the benefits associated with Orphan Drug Designation, including the potential for supplemental market exclusivity.

Birtamimab has been granted Orphan Drug Designation by both the FDA and EMA for the treatment of AL amyloidosis. In addition, we may seek Orphan Drug Designation for one or more of our current or future drug candidates. Regulatory authorities in some jurisdictions, including the United States and Europe, may designate drug products for relatively small patient populations as orphan drugs. Under the Orphan Drug Act, the FDA may grant orphan designation to a drug product intended to treat a rare disease or condition, defined as a disease or condition with a patient population of fewer than 200,000 in the United States. In the United States, Orphan Drug Designation entitles a party to financial incentives such as opportunities for grant funding towards clinical trial costs, tax advantages and user-fee waivers. Orphan Drug Designation does not convey any advantage in, or shorten the duration of, the regulatory review and licensure process.

If a drug product that has Orphan Drug Designation subsequently receives the first FDA approval or licensure for a particular active ingredient for the disease for which it has such designation, the drug product is entitled to orphan product exclusivity, which means that the FDA may not approve any other applications, including an NDA or BLA, to market the same drug product for the same indication for seven years, except in limited circumstances such as a showing of clinical superiority to the product with orphan drug exclusivity or if the FDA finds that the holder of the orphan drug exclusivity has not shown that it can assure the availability of sufficient quantities of the orphan drug to meet the needs of patients with the disease or condition for which the biological product was designated. As a result, even if one of our drug candidates receives orphan exclusivity, the FDA can still approve or license other drug products that have a different active ingredient for use in treating the same indication or disease. Further, the FDA can waive orphan exclusivity if we are unable to manufacture sufficient supply of our drug product.

A Fast Track designation by the FDA, even if granted for current or future drug candidates, may not lead to a faster development or regulatory review, licensure process and does not increase the likelihood that our drug candidates will receive marketing licensure.

Birtamimab, for the treatment of AL amyloidosis, and PRX012 and PRX123, each for the treatment of Alzheimer's disease, have each been granted Fast Track Designation by the FDA. In addition, we may seek Fast Track designation for one or more of our future drug candidates. If a drug candidate is intended for the treatment of a serious condition and demonstrates the potential to address an unmet medical need for this condition, the sponsor may apply for FDA Fast Track designation for a particular indication. We may seek Fast Track designation for our drug candidates, but there is no assurance that the FDA will grant this status to any of our drug candidates. The FDA has broad discretion whether or not to grant Fast Track designation, and even if we consider a particular drug candidate to be eligible for this designation, there is no assurance that it will be granted by the FDA. Even if we do receive Fast Track designation, we may not experience a faster review or approval compared to other, non-expedited FDA procedures, and receiving a Fast Track designation does not provide assurance of ultimate FDA approval. In addition, the FDA may withdraw Fast Track designation if it believes that the designation is no longer supported by data from our applicable clinical development program. Marketing applications filed by sponsors of products granted Fast Track designation may qualify for priority review under FDA policies and procedures, but Fast Track designation does not assure any such review or ultimate marketing approval by the FDA.

We are subject to healthcare and other laws and regulations, including anti-bribery, anti-kickback, fraud and abuse, false claims, and physician payment transparency laws and regulations, which could expose us to criminal, civil and/or administrative sanctions and penalties; exclusion from governmental healthcare programs or reimbursements; contractual damages; and reputational harm.

Our operations and activities are directly, or indirectly through our service providers and collaborators, subject to numerous healthcare and other laws and regulations, including, without limitation, those relating to anti-bribery, anti-kickback, fraud and abuse, false claims, physician payment transparency, and health information privacy and security, in the U.S., the EU, and other countries and jurisdictions in which we conduct our business. These laws include:

- the U.S. federal Anti-Kickback Statute, an intent-based federal criminal statute which prohibits, among other things, persons and entities from knowingly and willfully soliciting, receiving, offering, providing, or paying remuneration, directly or indirectly, in cash or in kind, to induce or reward, or in return for, either the referral of an individual for, or the purchase, lease, order or arrangement for, or recommendation of an item or service for which payment may be made, in whole or in part, by a federal healthcare program, such as the Medicare and Medicaid programs. A person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation. The term remuneration has been interpreted broadly to include anything of value. Further, courts have found that if any "one purpose" of an arrangement involving remuneration is to induce referrals of federal healthcare program business, the federal Anti-Kickback Statute has been violated. The federal Anti-Kickback Statute applies to

arrangements between pharmaceutical manufacturers on the one hand and individuals, such as prescribers, patients, purchasers, and formulary managers on the other hand, including, for example, consulting/speaking arrangements, discount and rebate offers, grants, charitable contributions, and patient support offerings, among others. Although there are several statutory exceptions and regulatory safe harbors to the federal Anti-Kickback Statute that protect certain common industry activities from prosecution, these exceptions and safe harbors are narrowly drawn. Arrangements that do not fully satisfy all elements of an available exception or safe harbor are evaluated based on the specific facts and circumstances and are typically subject to increased scrutiny;

- U.S. federal false claims laws, including the civil FCA, which impose criminal and civil penalties, including civil whistleblower or qui tam actions, against individuals or entities for knowingly presenting, or causing to be presented, claims for payment or approval from Medicare, Medicaid, or other third-party payers that are false or fraudulent or making a false statement to avoid, decrease or conceal an obligation to pay money to the federal government. In addition, the ACA specified that any claims submitted as a result of a violation of the federal Anti-Kickback Statute constitute false claims and are subject to enforcement under the federal False Claims Act. Violations of the FCA may be subject to significant civil fines and penalties for each false claim, currently ranging from $13,946-$27,894 per false claim, treble damages, and potential exclusion from participation in federal healthcare programs;
- HIPAA, which imposes criminal and civil liability for executing a scheme to defraud any healthcare benefit program and making false statements in connection with the delivery of or payment for healthcare benefits, items or services. Similar to the U.S. federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation;
- the U.S. federal Physician Payments Sunshine Act, which requires certain manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program, among others, to track and report annually to CMS information related to "payments or other transfers of value" made to U.S.-licensed physicians (defined to include doctors, dentists, optometrists, podiatrists and licensed chiropractors), physician assistants, nurse practitioners, clinical nurse specialists, certified registered nurse anesthetists, anesthesiology assistants, certified nurse midwives, and teaching hospitals; as well as tracking and reporting of ownership and investment interests held by the U.S.-licensed physicians (as defined by statute) and their immediate family members;
- analogous state laws and regulations that may apply to sales or marketing arrangements and claims for healthcare items or services reimbursed by non-governmental third-party payers, including private insurers, that may be broader in scope than their federal equivalents; state laws and regulations that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government or otherwise restrict payments that may be made to healthcare providers; state laws and regulations that require drug manufacturers to report information related to payments and other transfers of value to physicians and other healthcare providers or require the disclosure of marketing expenditures and other pricing information; and
- similar and other laws and regulations in the U.S. (federal, state and local), in the EU (including member countries), and other countries and jurisdictions.

Ensuring our compliance with applicable laws and regulations involves substantial costs, and it is possible that governmental authorities or third parties will assert that our business practices fail to comply with these laws and regulations. If our actions are found to be in violation of any laws and regulations, we may be subject to significant civil, criminal, and administrative damages, penalties, and fines, as well as exclusion from participation in government healthcare programs, curtailment or restructuring of our operations, and reputational harm, any of which could have a material adverse effect on our business, financial condition, or results of operations.

If a successful product liability or clinical trial claim or series of claims is brought against us for uninsured liabilities or in excess of insured liabilities, we could incur substantial liability.

The use of our drug candidates in clinical trials and the sale of any products for which we obtain marketing approval will expose us to the risk of product liability and clinical trial liability claims. Product liability claims might be brought against us by consumers, healthcare providers, or others selling or otherwise coming into contact with our products. Clinical trial liability claims may be filed against us for damages suffered by clinical trial subjects or their families. If we cannot successfully defend ourselves against product liability claims, we could incur substantial liabilities. In addition, regardless of merit or eventual outcome, product liability claims may result in:

- decreased demand for any approved drug candidates;
- impairment of our business reputation;

- withdrawal of clinical trial participants;
- costs of related litigation;
- distraction of management's attention;
- substantial monetary awards to patients or other claimants;
- loss of revenues; and
- the inability to successfully commercialize any approved drug candidates.

We currently have clinical trial liability insurance coverage for all of our clinical trials. However, our insurance coverage may not be sufficient to reimburse us for any expenses or losses we may suffer. Moreover, insurance coverage is becoming increasingly expensive, and, in the future, we may not be able to maintain insurance coverage at a reasonable cost or in sufficient amounts to protect us against losses due to liability. If and when we obtain marketing approval for any of our drug candidates, we intend to expand our insurance coverage to include the sale of commercial products; however, we may be unable to obtain this product liability insurance on commercially reasonable terms. On occasion, large judgments have been awarded in class action lawsuits based on drugs that had unanticipated side effects. A successful product liability claim or series of claims brought against us could cause our ordinary share price to decline and, if judgments exceed our insurance coverage, could decrease our cash and adversely affect our business.

Risks Related to Our Dependence on Third Parties

We rely on third parties to conduct our clinical trials, and those third parties may not perform satisfactorily, including failing to meet established deadlines for the completion of any such clinical trials.

We do not have the ability to independently conduct clinical trials for our drug candidates, and we rely on third parties, such as consultants, contract research organizations, medical institutions, and clinical investigators to assist us with these activities. Our reliance on these third parties for clinical development activities results in reduced control over these activities. Furthermore, these third parties may also have relationships with other entities, some of which may be our competitors. Although we have and will enter into agreements with these third parties, we will be responsible for confirming that our clinical trials are conducted in accordance with their general investigational plans and protocols. Moreover, the FDA, the EMA, and other comparable regulatory authorities require us to comply with regulations and standards, commonly referred to as cGCPs, for conducting, recording, and reporting the results of clinical trials to assure that data and reported results are credible and accurate and that the trial participants are adequately protected. Our reliance on third parties does not relieve us of these responsibilities and requirements. If we or any of our third-party contractors fail to comply with applicable cGCPs, the clinical data generated in our clinical trials may be deemed unreliable and the FDA, the EMA, or other comparable regulatory authorities may require us to perform additional clinical trials before approving our marketing applications. We cannot assure you that upon inspection by a given regulatory authority, such regulatory authority will determine that any of our clinical trials complies with cGCP regulations. In addition, our clinical trials must be conducted with product produced under cGMPs. Our failure to comply with these regulations may require us to repeat clinical trials, which would delay the regulatory approval process. Requirements regarding clinical trial data may evolve, and any such changes to data requirements may cause the FDA or comparable foreign regulatory authorities to disagree with data from preclinical studies or clinical trials, and to require further studies.

To date, we believe our consultants, contract research organizations, and other third parties with which we are working have generally performed satisfactorily; however, if these third parties do not successfully carry out their contractual duties, meet expected deadlines, or comply with applicable regulations, we have been, and may be, required to replace them. Although we believe that there are a number of other third-party contractors we could engage to continue these activities, we may not be able to enter into arrangements with alternative third-party contractors or to do so on commercially reasonable terms, which may result in a delay of our planned clinical trials. Accordingly, we may be delayed in obtaining regulatory approvals for our drug candidates and may be delayed in our efforts to successfully develop our drug candidates.

In addition, our third-party contractors are not our employees, and except for remedies available to us under our agreements with such third-party contractors, we cannot control whether or not they devote sufficient time and resources to our ongoing clinical and nonclinical programs. If third-party contractors do not successfully carry out their contractual duties or obligations or meet expected deadlines, if they need to be replaced or if the quality or accuracy of the clinical data they obtain is compromised due to the failure to adhere to our clinical protocols, regulatory requirements or for other reasons, our clinical trials may be extended, delayed or terminated and we may not be able to obtain regulatory approval for or successfully

commercialize our drug candidates. As a result, our results of operations and the commercial prospects for our drug candidates would be harmed, our costs could increase and our ability to generate revenues could be delayed.

If we do not establish additional strategic collaborations, we may have to alter our research, development, and/or commercialization plans.

Research, development, and potential commercialization of our drug candidates will require substantial additional cash to fund expenses. Our strategy includes potentially collaborating with additional leading pharmaceutical and biotechnology companies to assist us in furthering research, development, and/or potential commercialization of some of our drug candidates in some or all geographies. It may be difficult to enter into one or more of such collaborations in the future. We face significant competition in seeking appropriate collaborators and these collaborations are complex and time-consuming to negotiate and document. We may not be able to negotiate collaborations on acceptable terms, or at all, in which case we may have to curtail the development of a particular drug candidate, reduce or delay its development program or one or more of our other development programs, delay its potential commercialization or increase our expenditures and undertake development or commercialization activities at our own expense. If we elect to increase our expenditures to fund development or commercialization activities on our own, we will need to obtain additional capital, which may not be available to us on acceptable terms, or at all. If we do not have sufficient funds, we will not be able to bring our drug candidates to market and generate product revenue.

We have no manufacturing capacity and depend on third-party manufacturers to supply us with nonclinical and clinical trial supplies of all of our drug candidates, and we will depend on third-party manufacturers to supply us with any drug product for commercial sale if we obtain marketing approval from the FDA, the EMA, or any other comparable regulatory authority for any of our drug candidates.

We do not own or operate facilities for the manufacture, packaging, labeling, storage, testing, or distribution of nonclinical or clinical supplies of any of our drug candidates. We instead contract with and rely on third parties to manufacture, package, label, store, test, and distribute nonclinical and clinical supplies of our drug candidates, and we plan to continue to do so for the foreseeable future. We also rely on third-party consultants to assist us with managing these third parties and with our manufacturing strategy. Certain of these third parties have failed to perform these activities for us and any of these third parties may fail to perform these activities for us in the future, which could cause nonclinical or clinical development of our drug candidates to be delayed, which could have an adverse effect on our business, financial condition, results of operations, and/or growth prospects.

If the FDA, the EMA, or any other comparable regulatory authority approves any of our drug candidates for commercial sale, we expect to continue to rely, at least initially, on third parties to manufacture, package, label, store, test, and distribute commercial supplies of such approved drug product. Significant scale-up of manufacturing may require additional comparability validation studies, which the FDA, the EMA, or other comparable regulatory authorities must review and approve. Our third-party manufacturers might not be able to successfully establish such comparability or increase their manufacturing capacity in a timely or economic manner, or at all. If our third-party manufacturers are unable to successfully establish comparability or increase their manufacturing capacity for any drug product, and we are unable to timely establish our own manufacturing capabilities, the commercial launch of that drug candidate could be delayed or there could be a shortage in supply, which could have an adverse effect on our business, financial condition, results of operations, and/or growth prospects.

Our third-party manufacturers' facilities could be damaged by fire, power interruption, information system failure, natural disaster or other similar event, which could cause a delay or shortage in supplies of our drug candidates, which could have an adverse effect on our business, financial condition, results of operations, and/or growth prospects.

Our drug candidates require, and any future drug product will require, precise, high quality manufacturing, packaging, labeling, storage, and testing that meet stringent cGMP, other regulatory requirements and other standards. Our third-party manufacturers are subject to ongoing periodic and unannounced inspections by the FDA, the EMA, and other comparable regulatory authorities to ensure compliance with these cGMPs, other regulatory requirements and other standards. We do not have control over, and are dependent upon, our third-party manufacturers' compliance with these cGMPs, regulations and standards. Any failure by a third-party manufacturer to comply with these cGMPs, regulations or standards or that compromises the safety of any of our drug candidates or any drug product could cause a delay or suspension of production of nonclinical or clinical supplies of our drug candidates or commercial supplies of drug product, cause a delay or suspension of nonclinical or clinical development, product approval and/or commercialization of our drug candidates or drug product, result in seizure or recall of clinical or commercial supplies, result in fines and civil penalties, result in liability for any patient injury or death or otherwise increase our costs, any of which could have an adverse effect on our business, financial condition, results of operations, and/or growth prospects. If a third-party manufacturer cannot or fails to perform its contractual commitments, does not have sufficient capacity to meet our nonclinical, clinical or eventual commercial requirements or fails to meet cGMPs, regulations or other standards, we have been, and may be, required to replace it or qualify an additional third-party

manufacturer. Although we believe there are a number of potential alternative manufacturers, the number of manufacturers with the necessary manufacturing and regulatory expertise and facilities to manufacture biologics like our antibodies is limited. In addition, we have incurred, and could incur, significant additional costs and delays in identifying and qualifying any new third-party manufacturer, due to the technology transfer to such new manufacturer and because the FDA, the EMA, and other comparable regulatory authorities must approve any new manufacturer prior to manufacturing our drug candidates. Such approval would require successful technology transfer, comparability and other testing and compliance inspections. Transferring manufacturing to a new manufacturer could therefore interrupt supply, delay our clinical trials and any commercial launch, and/or increase our costs for our drug candidates, any of which could have an adverse effect on our business, financial condition, results of operations, and/or growth prospects.

Rentschler Biopharma SE ("Rentschler") and Catalent Indiana, LLC ("Catalent Indiana") are our third-party manufacturers of clinical supplies of birtamimab. We are dependent on Rentschler and Catalent Indiana to manufacture these clinical supplies.

Catalent Pharma Solutions, LLC ("Catalent Pharma") and Berkshire Sterile Manufacturing, LLC ("Berkshire") are our third-party manufacturers of clinical supplies of our drug candidate PRX012. We are dependent on Catalent Pharma and Berkshire to manufacture these clinical supplies.

We are dependent on Roche, and its third-party manufacturers if applicable, to manufacture clinical supplies of prasinezumab.

We are dependent on Novo Nordisk, and its third-party manufacturers if applicable, to manufacture clinical supplies of NNC6019.

We are dependent on BMS, and its third-party manufacturers if applicable, to manufacture clinical supplies of BMS-986446.

In July 2021, the Company sold the equity interests of a subsidiary that owns and has exclusive licenses to intellectual property rights and other assets pertaining to the investigational humanized monoclonal antibody known as NNC6019 (formerly PRX004), and we might not realize the anticipated benefits of such transaction.

On July 8, 2021, the Company, together with its wholly owned subsidiary, Prothena Biosciences Limited ("PBL"), entered into a Share Purchase Agreement with Novo Nordisk and NNRE (together with Novo Nordisk, "Buyer"), pursuant to which PBL sold and transferred to NNRE, all issued and outstanding ordinary shares of Neotope Neuroscience Limited, a wholly owned subsidiary of PBL, for an aggregate purchase price of up to $1.23 billion. The aggregate purchase price consists of an upfront payment of $60 million in cash, subject to customary purchase price adjustments, and an aggregate of $1.17 billion in cash, payable on Buyer's achievement of certain development, commercialization and net sales-based milestones. On November 21, 2022, we earned a $40 million milestone payment. There can be no assurance that such remaining milestones will be met. If we do not receive additional milestone payments as a result of the transaction in anticipated amounts or at all, we may need to seek additional sources of capital to pursue further research, development, and/or commercialization of our drug candidates, and this could have a material adverse effect on our business, financial condition, results of operations, and/or growth prospects.

We depend on third-party suppliers for key raw materials used in our manufacturing processes, and the loss of these third-party suppliers or their inability to supply us with adequate raw materials could harm our business.

We rely on third-party suppliers for the raw materials required for the production of our drug candidates. Our dependence on these third-party suppliers and the challenges we may face in obtaining adequate supplies of raw materials involve several risks, including limited control over pricing, availability, quality, and delivery schedules. We cannot be certain that our suppliers will continue to provide us with the quantities of these raw materials that we require or satisfy our anticipated specifications and quality requirements. Any supply interruption in limited or sole sourced raw materials could materially harm our ability to manufacture our products until a new source of supply, if any, could be identified and qualified. Although we believe there are currently several other suppliers of these raw materials, we may be unable to find a sufficient alternative supply channel in a reasonable time or on commercially reasonable terms. Any performance failure on the part of our suppliers could delay the development and potential commercialization of our drug candidates, including limiting supplies necessary for clinical trials and regulatory approvals, which would have a material adverse effect on our business.

Risks Related to Our Intellectual Property

If we are unable to adequately protect or enforce the intellectual property relating to our drug candidates our ability to successfully commercialize our drug candidates will be harmed.

Our success depends in part on our ability to obtain patent protection both in the U.S. and in other countries for our drug candidates. Our ability to protect our drug candidates from unauthorized or infringing use by third parties depends in substantial part on our ability to obtain and maintain valid and enforceable patents. Due to evolving legal standards relating to the patentability, validity and enforceability of patents covering pharmaceutical inventions and the scope of claims made under these patents, our ability to obtain, maintain and enforce patents is uncertain and involves complex legal, factual and scientific questions. Accordingly, rights under any issued patents may not provide us with sufficient protection for our drug candidates or provide sufficient protection to afford us a commercial advantage against competitive products or processes. Additionally, our ability to obtain patent protection for our drug candidates also depends on our collaborators, partners, contractors, and employees involved in the generation of intellectual property to carry out their contractual duties, including those to assign or license relevant intellectual property rights developed on our behalf to us.

In addition, the strength of patents in the biotechnology and pharmaceutical field can be uncertain, and evaluating the scope of such patents involves complex legal, factual, and scientific analyses and has in recent years been the subject of much litigation, resulting in court decisions, including Supreme Court decisions, which have increased uncertainties as to the ability to enforce patent rights in the future. We cannot guarantee that any patents will issue from any pending or future patent applications owned by or licensed to us or our affiliates. In addition, the coverage claimed in a patent application can be significantly reduced before the patent is issued, and its scope can be reinterpreted after issuance. Consequently, we may not obtain or maintain adequate patent protection for any of our programs and product candidates. Even if patents have issued or will issue, we cannot guarantee that the claims of these patents are or will be valid or enforceable or will provide us with any significant protection against competitive products or otherwise be commercially valuable to us. Patent applications in the U.S. are maintained in confidence for up to 18 months after their filing. In some cases, however, patent applications remain confidential in the U.S. Patent and Trademark Office (the "USPTO") for the entire time prior to issuance as a U.S. patent. Similarly, publication of discoveries in the scientific or patent literature often lags behind actual discoveries. Consequently, we cannot be certain that we or our licensors or co-owners were the first to invent, or the first to file patent applications on, our drug candidates or their use as drugs. In the event that a third party has also filed a U.S. patent application relating to our drug candidates or a similar invention, we may have to participate in interference or derivation proceedings declared by the USPTO to determine priority of invention in the U.S. The costs of these proceedings could be substantial and it is possible that our efforts would be unsuccessful, resulting in a loss of our U.S. patent position. Furthermore, we may not have identified all U.S. and non-U.S. patents or published applications that affect our business either by blocking our ability to commercialize our drugs or by covering similar technologies. Composition-of-matter patents on the biological or chemical active pharmaceutical ingredient are generally considered to be the strongest form of intellectual property protection for pharmaceutical products, as such patents provide protection without regard to any method of use. We cannot be certain that the claims in our patent applications covering composition-of-matter of our drug candidates will be considered patentable by the USPTO and courts in the U.S. or by the patent offices and courts in other countries, nor can we be certain that the claims in our issued composition-of-matter patents will not be found invalid or unenforceable if challenged. Method-of-use patents protect the use of a product for the specified method. This type of patent does not prevent a competitor from making and marketing a product that is identical to our product for an indication that is outside the scope of the patented method. Moreover, even if competitors do not actively promote their product for our targeted indications, physicians may prescribe these products "off-label." Although off-label prescriptions may infringe or contribute to the infringement of method-of-use patents, the practice is common and such infringement is difficult to prevent or prosecute.

We cannot guarantee that any of our patent searches or analyses, including the identification of relevant patents, the scope of patent claims or the expiration of relevant patents, are complete or thorough, nor can we be certain that we have identified each and every third-party patent and pending application in the United States and abroad that is relevant to or necessary for the commercialization of our drug candidates in any jurisdiction. The scope of a patent claim is determined by an interpretation of the law, the written disclosure in a patent and the patent's prosecution history. Our interpretation of the relevance or the scope of a patent or a pending application may be incorrect, which may negatively impact our ability to market our products. We may incorrectly determine that our products are not covered by a third-party patent or may incorrectly predict whether a third-party's pending application will issue with claims of relevant scope. Our determination of the expiration date of any patent in the United States or abroad that we consider relevant may be incorrect, which may negatively impact our ability to develop and market our drug candidates. Our failure to identify and correctly interpret relevant patents may negatively impact our ability to develop and market our products.

We may be subject to a third-party preissuance submission of prior art to the USPTO and foreign patent agencies, or become involved in opposition, derivation, reexamination, *inter partes* review, post-grant review, or other patent office

proceedings or litigation, in the U.S. or elsewhere, challenging our patent rights or the patent rights of others. An adverse determination in any such submission, proceeding or litigation could result in loss of exclusivity or in patent claims being narrowed, invalidated, or held unenforceable, in whole or in part, which could limit our ability to stop others from using or commercializing similar or identical technology and products, or limit the duration of the patent protection of our technology and products. In addition, given the amount of time required for the development, testing and regulatory review of new drug candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized. Any failure to obtain or maintain patent protection with respect to our drug candidates could have a material adverse effect on our business, financial condition, results of operations, and/or growth prospects.

Changes in U.S. patent law could diminish the value of patents in general, thereby impairing our ability to protect our products.

As is the case with other biopharmaceutical companies, our success is heavily dependent on intellectual property, particularly patents. Obtaining and enforcing patents in the biopharmaceutical industry involves both technological and legal complexity and is costly, time-consuming, and inherently uncertain. Changes in either the patent laws or interpretation of the patent laws in the United States could increase the uncertainties and costs, and may diminish our ability to protect our inventions, obtain, maintain, and enforce our intellectual property rights and, more generally, could affect the value of our intellectual property or narrow the scope of our owned and licensed patents. Recent patent reform legislation in the United States and other countries, including the Leahy-Smith America Invents Act, or the Leahy-Smith Act, signed into law on September 16, 2011, could increase those uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents. The Leahy-Smith Act includes a number of significant changes to U.S. patent law. These include provisions that affect the way patent applications are prosecuted, redefine prior art and provide more efficient and cost-effective avenues for competitors to challenge the validity of patents. These include allowing third-party submission of prior art to the USPTO during patent prosecution and additional procedures to attack the validity of a patent by USPTO administered post-grant proceedings, including post-grant review, *inter partes* review, and derivation proceedings. After March 2013, under the Leahy-Smith Act, the United States transitioned to a first inventor to file system in which, assuming that the other statutory requirements are met, the first inventor to file a patent application will be entitled to the patent on an invention regardless of whether a third party was the first to invent the claimed invention. A third party that files a patent application in the USPTO after March 2013, but before we file an application covering the same invention, could therefore be awarded a patent covering an invention of ours even if we had made the invention before it was made by such third party. This will require us to be cognizant going forward of the time from invention to filing of a patent application. Since patent applications in the United States and most other countries are confidential for a period of time after filing or until issuance, we cannot be certain that we or our licensors were the first to either (i) file any patent application related to our drug candidates and other proprietary technologies we may develop or (ii) invent any of the inventions claimed in our or our licensor's patents or patent applications. Even where we have a valid and enforceable patent, we may not be able to exclude others from practicing the claimed invention where the other party can show that they used the invention in commerce before our filing date or the other party benefits from a compulsory license. However, the Leahy-Smith Act and its implementation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents, all of which could have a material adverse effect on our business, financial condition, results of operations, and/or growth prospects.

Recent U.S. Supreme Court rulings have narrowed the scope of patent protection available in certain circumstances and weakened the rights of patent owners in certain situations. In addition to increasing uncertainty with regard to our ability to obtain patents in the future, this combination of events has created uncertainty with respect to the value of patents once obtained. Depending on decisions by Congress, the federal courts, the USPTO and the relevant law-making bodies in other countries, the laws and regulations governing patents could change in unpredictable ways that would weaken our ability to obtain new patents or to enforce our existing patents and patents that we might obtain in the future. We cannot predict how future decisions by Congress, the federal courts or the USPTO may impact the value of our patents.

Obtaining and maintaining our patent protection depends on compliance with various procedural, document submission, fee payment, and other requirements imposed by governmental patent agencies, and our patent protection could be reduced or eliminated for non-compliance with these requirements.

Periodic maintenance fees on any issued patent are due to be paid to the USPTO and foreign patent agencies in several stages over the lifetime of the patent. The USPTO and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment, and other similar provisions during the patent application process. Although an inadvertent lapse, including due to the effect of geopolitical conflict on us or our patent maintenance vendors, can in many cases be cured by payment of a late fee or by other means in accordance with the applicable rules, there are situations in which noncompliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. Noncompliance events that could result in abandonment or lapse of a patent or patent

application or invalidity of an issued patent include failure to respond to official actions within prescribed time limits, non-payment of fees, failure to properly legalize and submit formal documents, and failure to submit certain prior art. In any such event, our competitors might be able to enter the market, which would have a material adverse effect on our business.

The lives of our patents may not be sufficient to effectively protect our products and business.

Patents have a limited lifespan. In the United States, if all maintenance fees are paid timely, the natural expiration of a patent is generally 20 years after its first effective filing date. Although various extensions may be available, the life of a patent, and the protection it affords, is limited. Given the amount of time required for the development, testing, and regulatory review of new drug candidates, patents protecting such candidates might expire before or shortly after such drug candidates are commercialized. Even if patents covering our drug candidates are obtained, once a patent covering a drug candidate has expired, we may be open to competition, including biosimilar or generic medications. As a result, our patent portfolio may not provide us with sufficient rights to exclude others from commercializing drug candidates similar or identical to ours. Our patents issued as of December 31, 2023, are anticipated to expire on dates ranging from 2024 to 2042, subject to any patent extensions that may be available for such patents. If patents are issued on our patent applications pending as of December 31, 2023, the resulting patents are projected to expire on dates ranging from 2025 to 2044. In addition, although upon issuance in the United States a patent's life can be increased based on certain delays caused by the USPTO, this increase can be reduced or eliminated based on certain delays caused by the patent applicant during patent prosecution. A patent term extension based on regulatory delay may be available in the United States. However, only a single patent can be extended for each first regulatory review period for a product, and any patent can be extended only once, for a single product. Moreover, the scope of protection during the period of the patent term extension does not extend to the full scope of the claim, but instead only to the scope of the product as approved. Laws governing analogous patent term extensions in foreign jurisdictions vary widely, as do laws governing the ability to obtain multiple patents from a single patent family. Additionally, we may not receive an extension if we fail to exercise due diligence during the testing phase or regulatory review process, apply within applicable deadlines, fail to apply prior to expiration of relevant patents or otherwise fail to satisfy applicable requirements. If we are unable to obtain patent term extension or restoration, or the term of any such extension is less than we request, the period during which we will have the right to exclusively market our product will be shortened and our competitors may obtain approval of competing products following our patent expiration and may take advantage of our investment in development and clinical trials by referencing our clinical and preclinical data to launch their product earlier than might otherwise be the case, and our revenue could be reduced, possibly materially. If we do not have sufficient patent life to protect our products, our business and results of operations will be adversely affected.

We may be subject to claims challenging the inventorship or ownership of our patents and other intellectual property.

We may be subject to claims that former employees, collaborators, or other third parties have an interest in our patents or other intellectual property as an inventor or co-inventor. The failure to name the proper inventors on a patent application can result in the patents issuing thereon being unenforceable. Inventorship disputes may arise from conflicting views regarding the contributions of different individuals named as inventors, the effects of foreign laws where foreign nationals are involved in the development of the subject matter of the patent, conflicting obligations of third parties involved in developing our drug candidates or as a result of questions regarding co-ownership of potential joint inventions. For example, we may have inventorship disputes arise from conflicting obligations of consultants or others who are involved in developing our drug candidates. Alternatively, or additionally, we may enter into agreements to clarify the scope of our rights in such intellectual property. Litigation may be necessary to defend against these and other claims challenging inventorship. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights, such as exclusive ownership of, or right to use, valuable intellectual property. Such an outcome could have a material adverse effect on our business. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees.

We or our licensors may have relied on third-party consultants or collaborators or on funds from third parties, such as the U.S. government, such that we or our licensors are not the sole and exclusive owners of the patents we in-licensed. If other third parties have ownership rights or other rights to our patents, including in-licensed patents, they may be able to license such patents to our competitors, and our competitors could market competing products and technology. This could have a material adverse effect on our competitive position, business, financial conditions, results of operations, and prospects.

In addition, while it is our policy to require our employees and contractors who may be involved in the conception or development of intellectual property to execute agreements assigning such intellectual property to us, we may be unsuccessful in executing such an agreement with each party who, in fact, conceives or develops intellectual property that we regard as our own. The assignment of intellectual property rights may not be self-executing, or the assignment agreements have been, and may be, breached, and we have been, and may be, forced to bring claims against third parties, or defend claims that they may bring against us, to determine the ownership of what we regard as our intellectual property. We may not have adequate remedies for any breach of our assignment agreements or related claims. Such claims related to the ownership of what we

regard as our intellectual property could have a material adverse effect on our business, financial condition, results of operations, and/or growth prospects.

We may not be able to protect our intellectual property rights throughout the world.

Patents are of national or regional effect, and filing, prosecuting, maintaining, and defending patents on drug candidates in all countries throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the United States can have a different scope and strength than do those in the United States. In addition, the laws of some foreign countries, particularly certain developing countries, do not currently, or may not in the future, protect intellectual property rights to the same extent as federal and state laws in the United States. Consequently, we may not be able to prevent third parties from practicing our inventions in all countries outside the United States, or from selling or importing products made using our inventions in and into the United States or other jurisdictions. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and further, may export otherwise infringing products to territories where we have patent protection, but enforcement rights are not as strong as those in the United States. These products may compete with our products and our patents or other intellectual property rights may not be effective or adequate to prevent them from competing.

We license patent rights from third-party owners. Such licenses may be subject to early termination if we fail to comply with our obligations in our licenses with third parties, which could result in the loss of rights or technology that are material to our business.

We are a party to licenses that give us rights to third-party intellectual property or technology that is necessary or useful for our business, and we may enter into additional licenses in the future. Under these license agreements we are obligated to pay the licensor fees, which may include annual license fees, milestone payments, royalties, a percentage of revenues associated with the licensed technology and a percentage of sublicensing revenue. In addition, under certain of such agreements, we are required to diligently pursue the development of products using the licensed technology. If we fail to comply with these obligations, including due to our use of the intellectual property licensed to us in an unauthorized manner, and fail to cure our breach within a specified period of time, the licensor may have the right to terminate the applicable license, in which event we could lose valuable rights and technology that are material to our business, harming our ability to develop, manufacture, and/or commercialize our platform or drug candidates .

In addition, the agreements under which we license intellectual property or technology to or from third parties are complex, and certain provisions in such agreements may be susceptible to multiple interpretations. The resolution of any contract interpretation disagreement that may arise could narrow what we believe to be the scope of our rights to the relevant intellectual property or technology or increase what we believe to be our financial or other obligations under the relevant agreement, either of which could have a material adverse effect on our business, financial condition, results of operations, and/or growth prospects. Moreover, if disputes over intellectual property that we have licensed prevent or impair our ability to maintain our current licensing arrangements on commercially acceptable terms, we may be unable to successfully develop and commercialize the affected drug candidates. Our business also would suffer if any current or future licensors fail to abide by the terms of the license, if the licensors fail to enforce licensed patents against infringing third parties, if the licensed patents or other rights are found to be invalid or unenforceable, or if we are unable to enter into necessary licenses on acceptable terms. Moreover, our licensors may own or control intellectual property that has not been licensed to us and, as a result, we may be subject to claims, regardless of their merit, that we are infringing or otherwise violating the licensor's rights.

In addition, while we cannot currently determine the amount of the royalty obligations we would be required to pay on sales of future products, if any, the amounts may be significant. The amount of our future royalty obligations will depend on the technology and intellectual property we use in products that we successfully develop and commercialize, if any. Therefore, even if we successfully develop and commercialize products, we may be unable to achieve or maintain profitability.

If we are unable to successfully obtain rights to required third-party intellectual property rights or maintain the existing intellectual property rights we have, we may have to abandon development of the relevant research programs or drug candidates and our business, financial condition, results of operations, and/or growth prospects could suffer.

Licensing of intellectual property is of critical importance to our business and involves complex legal, business and scientific issues and is complicated by the rapid pace of scientific discovery in our industry. Disputes may also arise between us and our licensors regarding intellectual property subject to a license agreement, including those relating to:

- the scope of rights granted under the license agreement and other interpretation-related issues;
- whether and the extent to which our technology and processes infringe on intellectual property of the licensor that is not subject to the license agreement;

- our right to sublicense patent and other rights to third parties under collaborative development relationships;
- whether we are complying with our diligence obligations with respect to the use of the licensed technology in relation to our development and commercialization of our drug candidates, and what activities satisfy those diligence obligations;
- the priority of invention of patented technology;
- the amount and timing of payments owed under license agreements; and
- the allocation of ownership of inventions and know-how resulting from the joint creation or use of intellectual property by our licensors and by us and our partners.

If disputes over intellectual property that we have licensed prevent or impair our ability to maintain our current licensing arrangements on acceptable terms, we may be unable to successfully develop and commercialize the affected drug candidates. We are generally also subject to all of the same risks with respect to protection of intellectual property that we license as we are for intellectual property that we own, which are described below. If we or our licensors fail to adequately protect this intellectual property, our ability to commercialize our products could suffer.

We depend, in part, on our licensors to file, prosecute, maintain, defend, and enforce patents and patent applications that are material to our business.

If the licensor retains control of prosecution of the patents and patent applications licensed to us, we may have limited or no control over the manner in which the licensor chooses to prosecute or maintain its patents and patent applications and have limited or no right to continue to prosecute any patents or patent applications that the licensor elects to abandon. If our licensors or any future licensees having rights to file, prosecute, maintain, and defend our patent rights fail to conduct these activities for patents or patent applications covering any of our drug candidates, including due to the impact of geopolitical conflict on our licensors' business operations, our ability to develop and commercialize those drug candidates may be adversely affected and we may not be able to prevent competitors from making, using, or selling competing products. We cannot be certain that such activities by our licensors have been or will be conducted in compliance with applicable laws and regulations or will result in valid and enforceable patents or other intellectual property rights. Pursuant to the terms of the license agreements with some of our licensors, the licensors may have the right to control enforcement of our licensed patents or defense of any claims asserting the invalidity of these patents and, even if we are permitted to pursue such enforcement or defense, we cannot ensure the cooperation of our licensors. We cannot be certain that our licensors will allocate sufficient resources or prioritize their or our enforcement of such patents or defense of such claims to protect our interests in the licensed patents. Even if we are not a party to these legal actions, an adverse outcome could harm our business because it might prevent us from continuing to license intellectual property that we may need to operate our business. In addition, even when we have the right to control patent prosecution of licensed patents and patent applications, enforcement of licensed patents, or defense of claims asserting the invalidity of those patents, we may still be adversely affected or prejudiced by actions or inactions of our licensors and their counsel that took place prior to or after our assuming control. In the event we breach any of our obligations related to such prosecution, we may incur significant liability to our licensing partners.

We may wish to form collaborations in the future with respect to our drug candidates, but may not be able to do so or to realize the potential benefits of such transactions, which may cause us to alter or delay our development and commercialization plans.

Our drug candidates may also require specific components to work effectively and efficiently, and rights to those components may be held by others. We may be unable to in-license any compositions, methods of use, processes or other third-party intellectual property rights from third parties that we identify. We may fail to obtain any of these licenses at a reasonable cost or on reasonable terms, which would harm our business. If we fail to obtain licenses to necessary third-party intellectual property rights, we may need to cease use of the compositions or methods covered by such third-party intellectual property rights and may need to seek to develop alternative approaches that do not infringe on such intellectual property rights which may entail additional costs and development delays, even if we were able to develop such alternatives, which may not be feasible. Even if we are able to obtain a license, it may be non-exclusive, thereby giving our competitors access to the same technologies licensed to us. In that event, we may be required to expend significant time and resources to develop or license replacement technology. Any delays in entering into new collaborations or strategic partnership agreements related to our drug candidates could delay the development and commercialization of our drug candidates in certain geographies, which could harm our business prospects, financial condition, and results of operations.

The licensing and acquisition of third-party intellectual property rights is a competitive practice, and companies that may be more established, or have greater resources than we do, may also be pursuing strategies to license or acquire third-party intellectual property rights that we may consider necessary or attractive in order to commercialize our drug candidates. More established companies may have a competitive advantage over us due to their larger size and cash resources or greater clinical

development and commercialization capabilities. There can be no assurance that we will be able to successfully complete such negotiations and ultimately acquire the rights to the intellectual property surrounding the additional drug candidates that we may seek to acquire.

Moreover, some of our owned and in-licensed patents or patent applications or future patents are or may be co-owned with third parties. If we are unable to obtain an exclusive license to any such third-party co-owners' interest in such patents or patent applications, such co-owners may be able to license their rights to other third parties, including our competitors, and our competitors could market competing products and technology. In addition, we may need the cooperation of any such co-owners of our patents in order to enforce such patents against third parties, and such cooperation may not be provided to us. Furthermore, our owned and in-licensed patents may be subject to a reservation of rights by one or more third parties. Any of the foregoing could have a material adverse effect on our competitive position, business, financial conditions, results of operations and prospects.

Litigation regarding patents, patent applications, and other proprietary rights may be expensive and time consuming. If we are involved in such litigation, it could cause delays in bringing drug candidates to market and harm our ability to operate.

Our success will depend in part on our ability to operate without infringing the proprietary rights of third parties. Although we are not currently aware of any litigation or other proceedings or third-party claims of intellectual property infringement related to our drug candidates, the pharmaceutical industry is characterized by extensive litigation regarding patents and other intellectual property rights, as well as administrative proceedings for challenging patents, including interference, derivation, *inter partes* review, post-grant review, and reexamination proceedings before the USPTO, or oppositions and other comparable proceedings in foreign jurisdictions, as well as administrative proceedings for challenging patents, including interference, derivation, *inter partes* review, post-grant review, and reexamination proceedings before the USPTO, or oppositions and other comparable proceedings in foreign jurisdictions. Other parties may hold or obtain patents in the future and allege that the use of our technologies infringes these patent claims or that we are employing their proprietary technology without authorization. Furthermore, patent reform and changes to patent laws add uncertainty to the possibility of challenge to our patents in the future. We cannot assure you that our drug candidates and other proprietary technologies we may develop will not infringe existing or future patents owned by third parties.

In addition, third parties may challenge our existing or future patents. Competitors may also infringe our patents or other intellectual property or the intellectual property of our licensors. To cease such infringement or unauthorized use, we may be required to file patent infringement claims, which can be expensive and time-consuming and divert the time and attention of our management and scientific personnel. Proceedings involving our patents or patent applications or those of others could result in adverse decisions regarding:

- the patentability of our inventions relating to our drug candidates; and/or
- the enforceability, validity or scope of protection offered by our patents relating to our drug candidates; and/or
- findings that our drug candidates, products, or activities infringe third-party patents or other intellectual property rights.

Litigation or other legal proceedings relating to intellectual property claims, with or without merit, is unpredictable and generally expensive and time consuming and, even if resolved in our favor, is likely to divert significant resources from our core business including distracting our technical and management personnel from their normal responsibilities. Such litigation or proceedings could substantially increase our operating losses and reduce the resources available for development activities or any future sales, marketing or distribution activities. We may not have sufficient financial or other resources to adequately conduct such litigation or proceedings. Some of our competitors may be able to sustain the costs of such litigation or proceedings more effectively than we can because of their greater financial resources and more mature and developed intellectual property portfolios. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could have a material adverse effect on our ability to compete in the marketplace.

Third parties asserting their patent or other intellectual property rights against us may seek and obtain injunctive or other equitable relief, which could effectively block our ability to further develop and commercialize our drug candidates or force us to cease some of our business operations. Defense of these claims, regardless of their merit, would involve substantial litigation expense and would be a substantial diversion of management and other employee resources from our business, cause development delays, and may impact our reputation. Claims that we have misappropriated the confidential information or trade secrets of third parties could have a similar negative impact on our business.

In the event we are able to establish third-party infringement of our patents, the court may decide not to grant an injunction against further infringing activity and instead award only monetary damages, which may or may not be an adequate remedy. Furthermore, because of the substantial amount of discovery required in connection with intellectual property

litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our ordinary shares.

If we are unable to avoid infringing the patent rights of others, we may be required to seek a license, defend an infringement action, or challenge the validity of the patents in court. Patent litigation is costly and time consuming. We may not have sufficient resources to bring these actions to a successful conclusion. In addition, if we do not obtain a license, develop or obtain non-infringing technology, fail to defend an infringement action successfully, or have infringed patents declared invalid, we may:

- incur substantial monetary damages, including treble damages and attorneys' fees for willful infringement;
- obtain one or more licenses from third parties and potentially pay royalties;
- redesign our infringing products, which may be impossible on a cost-effective basis or require substantial time and monetary expenditure;
- encounter significant delays in bringing our drug candidates to market; and/or
- be precluded from participating in the manufacture, use, or sale of our drug candidates or methods of treatment requiring licenses.

In that event, we would be unable to further develop and commercialize our drug candidates, which could harm our business significantly.

If our trademarks and trade names are not adequately protected, then we may not be able to build name recognition in our markets of interest and our business may be adversely affected.

Our current or future trademarks or trade names may be challenged, infringed, circumvented, declared generic or descriptive, or determined to be infringing on other marks. We may not be able to protect our rights to these trademarks and trade names or may be forced to stop using these names , which we need for name recognition by potential partners or customers in our markets of interest. During trademark registration proceedings, we may receive rejections of our applications by the USPTO or in other foreign jurisdictions. Although we would be given an opportunity to respond to those rejections, we may be unable to overcome such rejections. In addition, in the USPTO and in comparable agencies in many foreign jurisdictions, third parties are given an opportunity to oppose pending trademark applications and to seek to cancel registered trademarks. Opposition or cancellation proceedings may be filed against our trademarks, and our trademarks may not survive such proceedings. If we are unable to establish name recognition based on our trademarks and trade names, we may not be able to compete effectively and our business may be adversely affected. We may license our trademarks and trade names to third parties, such as distributors. Though these license agreements may provide guidelines for how our trademarks and trade names may be used, a breach of these agreements or misuse of our trademarks and tradenames by our licensees may jeopardize our rights in or diminish the goodwill associated with our trademarks and trade names.

Moreover, any name we have proposed to use with our drug candidate in the United States must be approved by the FDA, regardless of whether we have registered it, or applied to register it, as a trademark. Similar requirements exist in Europe. The FDA typically conducts a review of proposed product names, including an evaluation of potential for confusion with other product names. If the FDA (or an equivalent administrative body in a foreign jurisdiction) objects to any of our proposed proprietary product names, it may be required to expend significant additional resources in an effort to identify a suitable substitute name that would qualify under applicable trademark laws, not infringe the existing rights of third parties and be acceptable to the FDA. Furthermore, in many countries, owning and maintaining a trademark registration may not provide an adequate defense against a subsequent infringement claim asserted by the owner of a senior trademark. At times, competitors or other third parties may adopt trade names or trademarks similar to ours, thereby impeding our ability to build brand identity and possibly leading to market confusion. In addition, there could be potential trade name or trademark infringement claims brought by owners of other registered trademarks or trademarks that incorporate variations of our registered or unregistered trademarks or trade names. If we assert trademark infringement claims, a court may determine that the marks we have asserted are invalid or unenforceable, or that the party against whom we have asserted trademark infringement has superior rights to the marks in question. In this case, we could ultimately be forced to cease use of such trademarks.

We may be unable to adequately prevent disclosure of trade secrets and other proprietary information.

We rely on trade secrets to protect our proprietary technologies, especially where we do not believe patent protection is appropriate or obtainable; however, trade secrets are difficult to protect. We rely in part on confidentiality agreements with our employees, consultants, outside scientific collaborators, sponsored researchers, and other advisors to protect our trade secrets

and other proprietary information. These agreements may not effectively prevent disclosure of confidential information and may not provide an adequate remedy in the event of unauthorized disclosure of confidential information. Any disclosure, either intentional or unintentional, by our employees, the employees of third parties with whom we share our facilities or third-party consultants and vendors that we engage to perform research, clinical trials or manufacturing activities, or misappropriation by third parties (such as through a cybersecurity breach) of our trade secrets or proprietary information could enable competitors to duplicate or surpass our technological achievements, thus eroding our competitive position in our market. In addition, others may independently discover our trade secrets and proprietary information, and we would have no right to prevent them from using that technology or information to compete with us. Costly and time-consuming litigation could be necessary to enforce and determine the scope of our proprietary rights, and failure to obtain or maintain trade secret protection could adversely affect our competitive business position. Furthermore, the laws of some foreign countries do not protect proprietary rights to the same extent or in the same manner as the laws of the United States. As a result, we may encounter significant problems in protecting and defending our intellectual property both in the United States and abroad. If we are unable to prevent unauthorized material disclosure of our intellectual property to third parties, or misappropriation of our intellectual property by third parties, we will not be able to establish or maintain a competitive advantage in our market, which could materially adversely affect our business, operating results, and financial condition.

We may be subject to claims that our employees, collaborators, partners, contractors, or advisors have wrongfully used or disclosed alleged trade secrets of third parties.

Many of our employees were previously employed at universities, Elan or Elan subsidiaries, or other biotechnology or pharmaceutical companies, including our competitors or potential competitors. Likewise, our collaborators, partners, contractors, and advisors may have in the past, or may currently, work with or for universities, or other biotechnology or pharmaceutical companies, including our competitors or potential competitors. Although we try to ensure that our employees do not use the proprietary information or know-how of third parties is not disclosed to us or used in their work for us, we may be subject to claims that we or our employees, collaborators, partners, contractors, or advisors have used or disclosed intellectual property, including trade secrets or other proprietary information, of third parties. Litigation may be necessary to defend against these claims. Even if we are successful in defending against these claims, litigation could result in substantial cost and be a distraction to our management and employees. If our defenses to these claims fail, in addition to requiring us to pay monetary damages, a court could prohibit us from using technologies or features that are essential to our drug candidates, if such technologies or features are found to incorporate, be derived from, or benefited from the knowledge of the trade secrets or other proprietary information of third parties. Moreover, any such litigation or the threat thereof may adversely affect our reputation, our ability to form strategic alliances or sublicense our rights to collaborators, engage with scientific advisors or hire employees or consultants, each of which would have an adverse effect on our business, results of operations and financial condition. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management.

Intellectual property rights do not necessarily address all potential threats to our competitive advantage.

The degree of future protection afforded by our intellectual property rights is uncertain because intellectual property rights have limitations and may not adequately protect our business or permit us to maintain our competitive advantage. For example:

- others may be able to make drug candidates that are similar to ours but that are not covered by the claims of the patents that we own or have exclusively licensed;
- we or our licensors or future collaborators might not have been the first to make the inventions covered by the issued patent or pending patent application that we own or have exclusively licensed;
- we or our licensors or future collaborators might not have been the first to file patent applications covering certain of our inventions;
- others may independently develop similar or alternative technologies or duplicate any of our technologies without infringing our intellectual property rights;
- it is possible that our pending patent applications will not lead to issued patents;
- issued patents that we own or have exclusively licensed may be held invalid or unenforceable, as a result of legal challenges by our competitors;
- our competitors might conduct research and development activities in countries where we do not have patent rights and then use the information learned from such activities to develop competitive products for sale in our major commercial markets;
- we may not develop additional proprietary technologies that are patentable;

- we cannot predict the scope of protection of any patent issuing based on our patent applications, including whether the patent applications that we own or in-license will result in issued patents with claims that cover our drug candidates or uses thereof in the United States or in other foreign countries;
- the claims of any patent issuing based on our patent applications may not provide protection against competitors or any competitive advantages, or may be challenged by third parties;
- if enforced, a court may not hold that our patents are valid, enforceable and infringed;
- we may need to initiate litigation or administrative proceedings to enforce and/or defend our patent rights which will be costly whether we win or lose;
- we may choose not to file a patent in order to maintain certain trade secrets or know-how, and a third party may subsequently file a patent covering such intellectual property;
- we may fail to adequately protect and police our trademarks and trade secrets; and
- the patents of others may have an adverse effect on our business, including if others obtain patents claiming subject matter similar to or improving that covered by our patents and patent applications.

Should any of these events occur, they could significantly harm our business, results of operations, and prospects.

Risks Related to Our Ordinary Shares

The market price of our ordinary shares may fluctuate widely.

Our ordinary shares commenced trading on the Nasdaq Global Market on December 21, 2012 and currently trade on the Nasdaq Global Select Market. We cannot predict the prices at which our ordinary shares may trade. The market price of our ordinary shares may fluctuate widely, depending upon many factors, some of which may be beyond our control, including:

- our ability to obtain financing as needed;
- progress in and results from our ongoing or future nonclinical research and clinical trials;
- the execution of our agreements with third parties, including with Roche, BMS, and Novo Nordisk;
- failure or delays in advancing our nonclinical drug candidates or other drug candidates we may develop in the future into clinical trials;
- results of clinical trials conducted by others, including on drugs that would compete with our drug candidates;
- issues in manufacturing our drug candidates;
- regulatory developments or enforcement in the U.S. and other countries;
- developments or disputes concerning patents or other proprietary rights;
- introduction of technological innovations or new commercial products by our competitors;
- changes in estimates or recommendations by securities analysts, if any, who cover our company;
- public concern over our drug candidates;
- litigation;
- future sales of our ordinary shares by us or by existing shareholders;
- general market conditions;
- changes in the structure of healthcare payment systems;
- failure of any of our drug candidates, if approved, to achieve commercial success;
- economic and other external factors or other disasters or crises;
- period-to-period fluctuations in our financial results;
- overall fluctuations in U.S. equity markets;
- our quarterly or annual results, or those of other companies in our industry;
- announcements by us or our competitors of significant acquisitions or dispositions;
- the operating and ordinary share price performance of other comparable companies;

- investor perception of our company and the drug development industry;
- natural or environmental disasters that investors believe may affect us;
- changes in tax laws or regulations applicable to our business or the interpretations of those tax laws and regulations by taxing authorities; or
- fluctuations in the budgets of federal, state and local governmental entities around the world.

These and other external factors may cause the market price and demand for our ordinary shares to fluctuate substantially, which may limit or prevent investors from readily selling their ordinary shares and may otherwise negatively affect the liquidity of our ordinary shares. In particular, stock markets in general have experienced volatility that has often been unrelated to the operating performance of a particular company. These broad market fluctuations may adversely affect the trading price of our ordinary shares. Some companies that experienced volatility in the trading price of their stock have been the subject of securities class action litigation. If any of our shareholders brought a lawsuit against us, we could incur substantial costs defending the lawsuit. Such a lawsuit could also divert the time and attention of our management.

Your percentage ownership in Prothena may be diluted in the future.

As with any publicly traded company, your percentage ownership in us may be diluted in the future because of equity issuances for acquisitions, capital raising transactions (including the sale of ordinary shares pursuant to our Amended Distribution Agreement, as may be further amended from time to time), or otherwise. We may need to raise additional capital in the future. If we are able to raise additional capital, we may issue equity or convertible debt instruments, which may severely dilute your ownership interest in us. In addition, we intend to continue to grant option awards to our directors, officers and employees, which would dilute your ownership stake in us. As of March 31, 2024, the number of ordinary shares available for issuance pursuant to outstanding and future equity awards under our equity plans was 13,438,701.

If we are unable to maintain effective internal controls, our business could be adversely affected.

We are subject to the reporting and other obligations under the U.S. Securities Exchange Act of 1934, as amended, including the requirements of Section 404 of the U.S. Sarbanes-Oxley Act, which require annual management assessments of the effectiveness of our internal control over financial reporting. In addition, under Section 404(b) of the U.S. Sarbanes-Oxley Act, if we are either an “accelerated filer” or “large accelerated filer,” our independent registered public accounting firm must attest to the effectiveness of our internal control over financial reporting. The rules governing the standards that must be met for management to assess our internal control over financial reporting are complex and require significant documentation, testing and possible remediation to meet the detailed standards under the rules. During the course of its testing, our management may identify material weaknesses or deficiencies which may not be remedied in time to meet the deadline imposed by the Sarbanes-Oxley Act. These reporting and other obligations place significant demands on our management and administrative and operational resources, including accounting resources.

Our management is responsible for establishing and maintaining adequate internal control over financial reporting. Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of our financial statements for external purposes in accordance with accounting principles generally accepted in the U.S. During the course of our review and testing of our internal controls, we have identified, and may identify in the future, deficiencies and may be unable to remediate them before we must provide the required reports. Furthermore, if we have a material weakness in our internal controls over financial reporting, we may not detect errors on a timely basis and our consolidated financial statements may be materially misstated. We, or our independent registered public accounting firm (if required), may not be able to conclude on an ongoing basis that we have effective internal control over financial reporting, which could harm our operating results, cause investors to lose confidence in our reported financial information and cause the trading price of our stock to fall.

We cannot provide assurance that a material weakness will not occur in the future, or that we will be able to conclude on an ongoing basis that we have effective internal controls over financial reporting in accordance with Section 404 and the related rules and regulations of the SEC when required. A material weakness in internal control over financial reporting is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of a company’s annual or interim consolidated financial statements will not be prevented or detected on a timely basis by the company’s internal controls. If we cannot in the future favorably assess, or our independent registered public accounting firm (if required), is unable to provide an unqualified attestation report on, the effectiveness of our internal controls over financial reporting, investor confidence in the reliability of our financial reports may be adversely affected, which could have a material adverse effect on our share price. In addition, any failure to report our financial results on an accurate and timely basis could result in sanctions, lawsuits, delisting of our shares from the Nasdaq Global Select Market or other adverse consequences that would have an adverse effect on our business, financial position and results of operations.

If we were treated as a passive foreign investment company for U.S. federal income tax purposes, it could result in adverse U.S. federal income tax consequences to United States holders of our ordinary shares.

Significant potential adverse U.S. federal income tax implications generally apply to U.S. investors owning shares of a passive foreign investment company ("PFIC"), directly or indirectly. In general, we would be a PFIC for a taxable year if either (i) 75% or more of our income constitutes passive income, or (ii) 50% or more of our assets produce passive income or are held for the production of passive income. Changes in the composition of our active or passive income, passive assets or changes in our fair market value may cause us to become a PFIC. A separate determination must be made each taxable year as to whether we are a PFIC (after the close of each taxable year).

We do not believe we were a PFIC for U.S. federal income tax purposes for our taxable year ended December 31, 2023. However, the application of the PFIC rules is subject to uncertainties in a number of respects, and we cannot assure that the U.S. Internal Revenue Service (the "IRS") will not take a contrary position. We also cannot assure that we will not be a PFIC for U.S. federal income tax purposes for the current taxable year or any future taxable year.

We may not be able to successfully maintain our tax rates, which could adversely affect our business and financial condition, results of operations and growth prospects.

We are incorporated in Ireland and maintain subsidiaries or offices in Ireland and the U.S. We are able to achieve a low average tax rate through the performance of certain functions and ownership of certain assets in tax-efficient jurisdictions, together with intra-group service agreements. However, changes in tax laws or interpretations thereof in any of these jurisdictions could adversely affect our ability to do so in the future. Taxing authorities, such as the IRS and the Irish Revenue Commissioners ("Irish Revenue"), actively audit and otherwise challenge these types of arrangements, and have done so in our industry. We are subject to reviews and audits by the IRS, Irish Revenue and other taxing authorities from time to time, and the IRS, Irish Revenue or other taxing authority may challenge our structure and inter-group arrangements. Responding to or defending against challenges from taxing authorities could be expensive and time consuming, and could divert management's time and focus away from operating our business. We cannot predict whether and when taxing authorities will conduct an audit, challenge our tax structure or the cost involved in responding to any such audit or challenge. If we are unsuccessful, we may be required to pay taxes for prior periods, interest, fines or penalties, and may be obligated to pay increased taxes in the future, all of which could have an adverse effect on our business, financial condition, results of operations, and/or growth prospects. In addition to the impact on changes in tax laws, our provision for income tax can be materially impacted, for example, by the geographical mix of our profits and losses, changes in our business, such as internal restructuring and acquisitions, changes and accounting guidance and other regulatory, legislative or judicial developments changes in tax rates, tax audit determinations, changes in our uncertain tax positions, changes in our intent and capacity to permanently reinvest foreign earnings, changes to our transfer pricing practices, tax deductions attributed to equity compensation and changes in our need for a valuation allowance for deferred tax assets.

Future changes to the tax laws relating to multinational corporations could adversely affect us.

Under current law, we are treated as a foreign corporation for U.S. federal tax purposes. However, changes to the U.S. Internal Revenue Code, U.S. Treasury Regulations or other IRS guidance thereunder could adversely affect our status as a foreign corporation or otherwise affect our effective tax rate. For example, in 2017 the United States enacted tax reform that contained significant changes to corporate taxation, including a provision that requires capitalization and amortization of research and development costs over five years for tax years beginning after December 31, 2021. In addition, the Irish Government, Irish Revenue, U.S. Congress, the IRS, the Organization for Economic Co-operation and Development ("OECD"), and other governments and agencies in jurisdictions where we do business have recently focused on issues related to the taxation of multinational corporations, including the OECD's Global Anti-Base Erosion Model Rules (Pillar Two), which apply a 15% global minimum tax rate on a jurisdiction-by-jurisdiction basis to groups with turnover of not less than €750 million in at least two of the four prior fiscal years. Pillar Two has been implemented into Irish law with effect for periods beginning on or after December 31, 2023. As a result of Pillar Two or other policy changes, whether at national or supranational level, the tax laws in Ireland, the U.S., and other countries in which we do business could change on a prospective or retroactive basis, and any such changes could have an adverse effect on our business, financial condition, results of operations, and/or growth prospects.

Irish law differs from the laws in effect in the United States and may afford less protection to holders of our ordinary shares.

It may not be possible to enforce court judgments obtained in the U.S. against us in Ireland based on the civil liability provisions of the U.S. federal or state securities laws. In addition, there is uncertainty as to whether the courts of Ireland would recognize or enforce judgments of U.S. courts obtained against us or our directors or officers based on the civil liabilities provisions of the U.S. federal or state securities laws or hear actions against us or those persons based on those laws. We have been advised that the U.S. currently does not have a treaty with Ireland providing for the reciprocal recognition and

enforcement of judgments in civil and commercial matters. Therefore, a final judgment for the payment of money rendered by any U.S. federal or state court based on civil liability, whether or not based solely on federal or state securities laws, would not automatically be enforceable in Ireland.

As an Irish incorporated company, we are governed by the Irish Companies Act 2014, as amended (the "Companies Act"), which differs in some material respects from laws generally applicable to U.S. corporations and shareholders, including, among others, differences relating to interested director and officer transactions and shareholder lawsuits. Likewise, the duties of directors and officers of an Irish company generally are owed to the company only. Shareholders of Irish companies generally do not have a personal right of action against directors or officers of the company and may exercise such rights of action on behalf of the company only in limited circumstances. Accordingly, holders of our ordinary shares may have more difficulty protecting their interests than would holders of securities of a corporation incorporated in a jurisdiction of the U.S.

The operation of the Irish Takeover Rules may affect the ability of certain parties to acquire our ordinary shares.

Under the Irish Takeover Panel Act, 1997, Takeover Rules, 2022 (the "Irish Takeover Rules"), if an acquisition of ordinary shares were to increase the aggregate holding of the acquirer and its concert parties to ordinary shares that represent 30% or more of the voting rights of the company, the acquirer and, in certain circumstances, its concert parties would be required (except with the consent of the Irish Takeover Panel) to make an offer for the outstanding ordinary shares at a price not less than the highest price paid for the ordinary shares by the acquirer or its concert parties during the previous 12 months. This requirement would also be triggered by an acquisition of ordinary shares by a person holding (together with its concert parties) ordinary shares that represent between 30% and 50% of the voting rights in the company if the effect of such acquisition were to increase that person's percentage of the voting rights by 0.05% within a 12 month period. Under the Irish Takeover Rules, certain separate concert parties are presumed to be acting in concert. Our board of directors and their relevant family members, related trusts and "controlled companies" are presumed to be acting in concert with any corporate shareholder who holds 20% or more of our shares. The application of these presumptions may result in restrictions upon the ability of any of the concert parties and/or members of our board of directors to acquire more of our securities, including under the terms of any executive incentive arrangements. In the future, we may consult with the Irish Takeover Panel with respect to the application of this presumption and the restrictions on the ability to acquire further securities, although we are unable to provide any assurance as to whether the Irish Takeover Panel will overrule this presumption. Accordingly, the application of the Irish Takeover Rules may restrict the ability of certain of our shareholders and directors to acquire our ordinary shares.

Irish law differs from the laws in effect in the United States with respect to defending unwanted takeover proposals and may give our board of directors less ability to control negotiations with hostile offerors.

We are subject to the Irish Takeover Rules, pursuant to which our Board is not permitted to take any action that might frustrate an offer for our ordinary shares once our Board has received an approach that may lead to an offer or has reason to believe that such an offer is or may be imminent, subject to certain exceptions. Potentially frustrating actions such as (i) the issue of ordinary shares, options or convertible securities, (ii) material acquisitions or disposals, (iii) entering into contracts other than in the ordinary course of business, or (iv) any action, other than seeking alternative offers, which may result in frustration of an offer, are prohibited during the course of an offer or at any earlier time during which our Board has reason to believe an offer is or may be imminent. These provisions may give our Board less ability to control negotiations with hostile offerors and protect the interests of holders of ordinary shares than would be the case for a corporation incorporated in a jurisdiction of the U.S.

Irish law requires that our shareholders renew every five years the authority of our Board of Directors to issue shares and to do so for cash without applying the statutory pre-emption right, and if our shareholders do not renew these authorizations by May 17, 2027 (or any renewal is subject to limitations), our ability to raise additional capital to fund our operations would be limited.

As an Irish incorporated company, we are governed by the Companies Act. The Companies Act requires that every five years our shareholders renew the separate authorities of our Board to (a) allot and issue shares, and (b) opt out of the statutory pre-emption right that otherwise applies to share issuances for cash (which pre-emption right would require that shares issued for cash be offered to our existing shareholders on a pro rata basis before the shares may be issued to new shareholders). At our shareholders' annual general meeting held on May 17, 2022, our shareholders authorized our Board to issue ordinary shares up to the amount of our authorized share capital, and to opt out of the statutory pre-emption right for such issuances. Under Irish law, these authorizations will expire on May 17, 2027, five years after our shareholders last renewed these authorizations. Irish law requires that our shareholders renew the authority for our Board to issue ordinary shares by a resolution approved by not less than 50% of the votes cast at a general meeting of our shareholders. Irish law requires that our shareholders renew the authority of our Board to opt out of the statutory pre-emption right in share issuances for cash by a resolution approved by not less than 75% of the votes cast at a general meeting of our shareholders. If these authorizations are not renewed before May 17, 2027, or are renewed with limitations, our Board would be limited in its ability to issue shares, which would limit our ability to

raise additional capital to fund our operations, including the research, development and potential commercialization of our drug candidates.

Transfers of our ordinary shares may be subject to Irish stamp duty.

Irish stamp duty may be payable in respect of transfers of our ordinary shares (currently at the rate of 1% of the price paid or the market value of the shares acquired, if greater).

Under the Irish Stamp Duties Consolidation Act, 1999 (the "Stamp Duties Act"), a transfer of our ordinary shares from a seller who holds shares through The Depository Trust Company ("DTC") to a buyer who holds the acquired shares through DTC will not be subject to Irish stamp duty. Shareholders may also transfer their shares into or out of DTC without giving rise to Irish stamp duty provided that there is no change in the beneficial ownership of such shares and the transfer into or out of DTC is not effected in contemplation of a subsequent sale of such shares to a third party; in order to benefit from this exemption from Irish stamp duty, the seller must confirm to us that there is no change in the ultimate beneficial ownership of the shares as a result of the transfer and there is no agreement for the sale of the shares by the beneficial owner to a third party being contemplated.

A transfer of our ordinary shares (i) by a seller who holds shares outside of DTC to any buyer, or (ii) by a seller who holds the shares through DTC to a buyer who holds the acquired shares outside of DTC, may be subject to Irish stamp duty. Payment of any Irish stamp duty is generally a legal obligation of the transferee.

Any Irish stamp duty payable on transfers of our ordinary shares could adversely affect the price of those shares.

We do not anticipate paying cash dividends, and accordingly, shareholders must rely on ordinary share appreciation for any return on their investment.

We anticipate losing money for the foreseeable future and, even if we do turn a profit, we do not anticipate declaring or paying any cash dividends for the foreseeable future. Therefore, the success of an investment in our ordinary shares will depend upon appreciation in their value and in order to receive any income or realize a return on your investment, you will need to sell your Prothena ordinary shares. There can be no assurance that our ordinary shares will maintain their price or appreciate in value.

Dividends paid by us may be subject to Irish dividend withholding tax.

Although we do not currently anticipate paying cash dividends, if we were to do so in the future, a dividend withholding tax (currently at a rate of 25%) may arise. A number of exemptions from dividend withholding tax exist such that shareholders resident in the U.S. and shareholders resident in other countries that have entered into a double taxation treaty with Ireland may be entitled to exemptions from dividend withholding tax subject to the completion of certain dividend withholding tax declaration forms.

Shareholders entitled to an exemption from Irish dividend withholding tax on any dividends received from us will not be subject to Irish income tax in respect of those dividends, unless they have some connection with Ireland other than their shareholding (for example, they are resident in Ireland). Non-Irish resident shareholders who receive dividends subject to Irish dividend withholding tax will generally have no further liability to Irish income tax on those dividends.

Prothena ordinary shares received by means of a gift or inheritance could be subject to Irish capital acquisitions tax.

Irish capital acquisitions tax ("CAT") could apply to a gift or inheritance of our ordinary shares irrespective of the place of residence, ordinary residence or domicile of the parties. This is because our ordinary shares will be regarded as property situated in Ireland. The person who receives the gift or inheritance has primary liability for CAT. Gifts and inheritances passing between spouses are exempt from CAT. It is recommended that each shareholder consult his or her own tax advisor as to the tax consequences of holding our ordinary shares or receiving dividends from us.

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

None.

ITEM 3. DEFAULTS UPON SENIOR SECURITIES

None.

ITEM 4. MINE SAFETY DISCLOSURES

Not Applicable.

ITEM 5. OTHER INFORMATION

On February 26, 2024 , Carol D. Karp , Chief Regulatory Officer , adopted a Rule 10b5-1 trading arrangement that was intended to satisfy the affirmative defense of Rule 10b5-1(c) for the sale of up to 105,000 shares of the Company's ordinary shares until June 3, 2025. However, this plan was terminated on March 29, 2024 . On March 29, 2024 , Ms. Karp adopted a Rule 10b5-1 trading arrangement that is intended to satisfy the affirmative defense of Rule 10b5-1(c) for the sale of up to 105,000 shares of the Company's ordinary shares until June 3, 2025.

On February 26, 2024 , Tran B. Nguyen , Chief Strategy Officer and Chief Financial Officer , adopted a Rule 10b5-1 trading arrangement that is intended to satisfy the affirmative defense of Rule 10b5-1(c) for the sale of up to 510,150 shares of the Company's ordinary shares until May 15, 2025.

On March 13, 2024 , Gene G. Kinney , President and Chief Executive Officer , adopted a Rule 10b5-1 trading arrangement that is intended to satisfy the affirmative defense of Rule 10b5-1(c) for the sale of up to 141,599 shares of the Company's ordinary shares until June 15, 2025.

On March 21, 2024 , Richard T. Collier , director , adopted a Rule 10b5-1 trading arrangement that is intended to satisfy the affirmative defense of Rule 10b5-1(c) for the sale of up to 18,229 shares of the Company's ordinary shares until May 22, 2025.

On March 21, 2024 , Shane M. Cooke , director , adopted a Rule 10b5-1 trading arrangement that is intended to satisfy the affirmative defense of Rule 10b5-1(c) for the sale of up to 18,229 shares of the Company's ordinary shares until May 22, 2025.

On March 21, 2024 , Hideki Garren , Chief Medical Officer , adopted a Rule 10b5-1 trading arrangement that is intended to satisfy the affirmative defense of Rule 10b5-1(c) for the sale of up to 90,000 shares of the Company's ordinary shares until June 30, 2025.

On March 26, 2024 , Lars G. Ekman , director , adopted a Rule 10b5-1 trading arrangement that is intended to satisfy the affirmative defense of Rule 10b5-1(c) for the sale of up to 18,229 shares of the Company's ordinary shares until May 22, 2025.

ITEM 6. EXHIBITS

EXHIBIT INDEX

Exhibit No.	Description	Previously Filed				Filed Herewith
		Form	File No.	Filing Date	Exhibit	
10.1	Offer letter, dated February 12, 2024, between Prothena Biosciences Inc and David A. Ford					X
10.2	Side Letters to Master Collaboration Agreement, dated as of March 20, 2018, between Prothena Biosciences Limited and Celgene Switzerland LLC					X
31.1	Certification of Principal Executive Officer pursuant to Rule 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002					X
31.2	Certification of Principal Financial Officer pursuant to Rule 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002					X
32.1*	Certification of Principal Executive Officer and Principal Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002					X
101.INS	XBRL Instance Document - The instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document					X
101.SCH	Inline XBRL Taxonomy Extension Schema Document					X
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document					X
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document					X
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document					X
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document					X
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)					

Indicates management contract or compensatory plan or arrangement.

* *Exhibit 32.1 is being furnished and shall not be deemed to be "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or otherwise subject to the liability of that section, nor shall such exhibit be deemed to be incorporated by reference in any registration statement or other document filed under the Securities Act of 1933, as amended, or the Exchange Act, except as otherwise specifically stated in such filing.*

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended, the Registrant has duly caused this Quarterly Report on Form 10-Q to be signed on its behalf by the undersigned, thereunto duly authorized.

Dated: May 8, 2024

Prothena Corporation plc
(Registrant)

/s/ Gene G. Kinney

Gene G. Kinney
President and Chief Executive Officer

/s/ Tran B. Nguyen

Tran B. Nguyen
Chief Financial Officer and Chief Strategy Officer

Exhibit 10.1

David Ford

February 12, 2024

Dear David:

I am pleased to confirm this offer for you to join Prothena Biosciences Inc ("Prothena" or the "Company"). We are confident in your knowledge, expertise and judgment, and believe your performance will meet our team's high-quality objectives and standards.

Your start date will be **March 1, 2024**, and, subject to the discretion of the Prothena Corporation plc Board of Directors, you will be appointed **Chief People Officer** effective March 1, 2024, subject to your commencement of employment with the Company that day. In this position, you will report to Gene Kinney (President and CEO), although your duties, title and reporting relationship may change, based on the Company's needs and priorities. This is a full-time, exempt position – which means that you are not eligible for overtime pay under state and federal laws.

Your starting annualized salary will be **$470,000.00** (gross), paid twice per month. Your pay is subject to applicable taxes and withholdings.

Prothena embraces a pay-for-performance philosophy. All employees are currently eligible for an annual cash bonus under the terms of the Company's cash incentive plan (the Prothena Corporation plc Amended and Restated Incentive Compensation Plan). The amount of these annual cash bonuses is determined by the Company on the basis of a number of factors, including industry competitiveness, Prothena's business strategy, and the degree to which Company, function and/or individual goals are met. Your targeted cash bonus for our 2024 performance year will be **50%** of your actual salaried earnings during that year. A condition of earning any cash incentive award is that you remain employed through the pay date of an otherwise earned award, which will be paid no later than March 15, 2025. The cash bonus plan is operated at the sole discretion of Prothena, is subject to review on a regular basis and may change from time to time.

In connection with your start date and appointment as CPO, you will also be eligible to receive an option to acquire **85,000** shares of Prothena Corporation plc. This stock option award is at the discretion of the Compensation Committee of the Board of Directors of Prothena Corporation plc (the "Committee") and is subject to the approval, and terms and conditions of the Prothena Corporation plc 2018 Long Term Incentive Plan (as amended) and the terms and conditions of the award agreement for such a stock option. The grant date of this stock option will be **March 1, 2024**, the date you start with Prothena and are appointed CPO, or on such other date as determined by the Committee in its sole discretion. The option exercise price will be equal to the closing price of Prothena Corporation plc's ordinary shares on the NASDAQ Global Select Market on that date. Subject to your continued employment, the stock option will vest 25% on the first anniversary of the grant date, and monthly at a rate of 1/48th of the

award thereafter, such that the option will fully vest after a four-year period following the grant date.
On the first day of the month following your employment start date, you will be eligible to participate in Prothena's comprehensive health and welfare benefits program. On your start date, you will also be eligible to participate in our retirement benefits plan, as well as the Prothena Biosciences Inc Amended and Restated Severance Plan (**Tier I**). Details about these and other applicable plans will be provided separately.

The Company provides paid vacation time to full-time employees in accordance with the Company's vacation policy in its Employee Handbook, which will be provided to you upon commencement of your employment. You will also be eligible for paid sick time as required by state law. Additional information about paid sick time is contained in the Company's Employee Handbook.

Further information regarding onboarding requirements and/or documents needed on your employment start date (e.g., Employee Proprietary Information and Invention Assignment Agreement, Code of Conduct, Form I-9 completion process, direct deposit information, Form W-4 allowance elections) will be provided separately.

This offer is contingent upon your successful completion of a background check and a pre-employment drug test. More information regarding this process will be provided by Human Resources.

Additionally, your acceptance of this offer of employment and commencement of that employment means that you understand and agree that your employment relationship with the Company is at-will, for no specific period, and neither this letter nor any other oral or written representations may be considered a contract of employment for any specific period of time. As a result, you are free to resign your employment with Prothena at any time, for any reason or no reason. Similarly, Prothena is also free to end your employment at any time, with or without cause or advance notice. At-will employment also means that the Company may make decisions regarding other terms of your employment at any time with or without advance notice or cause, including but not limited to demotion, promotion, transfer, discipline, compensation and duties. Further, all benefits and compensation provided by the Company are contingent upon your continued employment.

To accept our offer, please sign this letter and return it to me by **Friday, February 23, 2024**. This offer is valid until then, after which time we will not be able to accommodate an acceptance of this offer. Accordingly, please sign and return this letter before the above-stated expiration date. If you do not intend to accept this offer, we would like to be notified as soon as possible.

This letter, along with the Company's policies and procedures, sets forth the terms of your employment with the Company if you accept this offer and commence that employment, and supersedes any prior representations or agreements, whether written or oral. This letter may be modified only by a written agreement signed by you and an authorized officer of the Company.

We look forward to having you join Prothena as a full-time employee. If you have any questions, or if you would like additional information to help you reach a decision, please feel free to contact me. Please be sure to bring with you on you first day of employment documentation that proves your eligibility to work in the U.S., your bank details and emergency contact information.

Sincerely,

/s/ Gene Kinney
Gene Kinney
President and CEO
Prothena Biosciences Inc

ACCEPTANCE:

/s/ David Ford 2/13/24
David Ford Date

Exhibit 10.1

CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) IS THE TYPE THAT THE REGISTRANT TREATS AS PRIVATE OR CONFIDENTIAL.

Bristol Myers Squibb
PO. Box 4000, Route 206 & Province Line Road, Princeton, NJ 08543-4000

SENT BY EMAIL AS PDF

January 16, 2024

Prothena Biosciences Limited
77 Sir John Rogerson's Quay, Block C
Grand Canal Docklands, Dublin 2, D02 VK60, Ireland
Attn: Company Secretary

Re: [***]

Dear Ms. Yvonne Tchrakian:

Reference is made to the Master Collaboration Agreement between Prothena Biosciences Limited, an Irish private limited company (hereinafter "**Prothena**"), and Celgene Switzerland LLC, a Delaware limited liability company and a subsidiary of Bristol-Myers Squibb Company (hereinafter "**Celgene**"), having an effective date of March 20, 2018 (the "**MCA**"). Celgene and Prothena are each referred to herein by name or as a "**Party**" or, collectively, as the "**Parties**." The terms in this letter agreement with initial letters capitalized shall have the meaning set forth in this letter agreement, and if not defined in this letter agreement, shall have the meaning set forth in the MCA.

[***] The Parties mutually agree to amend the MCA **[***]** as follows:

1.) **[***]**

2.) **[***]**

The provisions of this letter agreement shall constitute an amendment to the MCA, and, to the extent that any term or provision of this letter agreement may be deemed expressly inconsistent with any term or provision in the MCA, this letter agreement shall govern and control. Except as expressly modified by the terms of this letter agreement, all of the terms, conditions, and provisions of the MCA shall remain unchanged, unmodified and in full force and effect.

This letter agreement shall be governed by Article 12 of the MCA and this letter agreement may be executed in counterparts with the same effect as if both Parties had signed the same document. All such counterparts shall be deemed an original, shall be construed together, and shall constitute one and the same instrument. Any such counterpart to the extent delivered by Electronic Delivery shall be treated in all manner and respects as an original executed counterpart and shall be considered to have the same binding legal effect as if it were the original signed version thereof delivered in person. No Party hereto shall raise the use of Electronic Delivery to deliver a signature or the fact that any signature or agreement or instrument was transmitted or communicated through the use of Electronic Delivery as a defense to the formation of a contract, and each Party forever waives any such defense, except to the extent that such defense relates to lack of authenticity.

CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) IS THE TYPE THAT THE REGISTRANT TREATS AS PRIVATE OR CONFIDENTIAL.

Please have an authorized representative of Prothena sign below where indicated and return an executed copy to me at the address listed below. Upon the signing of this letter agreement by Prothena, this letter agreement shall be a binding agreement between and effective as of January 16, 2024.

Sincerely,

Celgene Switzerland, LLC

By: /s/ Blake Benner

Name: Blake Benner

Title: Director, Global Alliances, S&BD

The terms of this letter agreement are acknowledged and agreed:

Prothena Biosciences Limited

By: /s/ Yvonne Tchrakian

Name: Yvonne Tchrakian

Title: Director and Company Secretary

Date: January 16, 2024

cc: Prothena Bioscience Inc, 1800 Sierra Point Parkway, Brisbane, CA 94005, USA, Attn: Legal Department

CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) IS THE TYPE THAT THE REGISTRANT TREATS AS PRIVATE OR CONFIDENTIAL.

Bristol Myers Squibb
PO. Box 4000, Route 206 & Province Line Road, Princeton, NJ 08543-4000

SENT BY EMAIL AS PDF

February 2, 2024

Prothena Biosciences Limited
77 Sir John Rogerson's Quay, Block C
Grand Canal Docklands, Dublin 2, D02 VK60, Ireland
Attn: Company Secretary

Re: [***]

Dear Ms. Yvonne Tchrakian:

Reference is made to the Master Collaboration Agreement between Prothena Biosciences Limited, an Irish private limited company (hereinafter "**Prothena**"), and Celgene Switzerland LLC, a Delaware limited liability company and a subsidiary of Bristol-Myers Squibb Company (hereinafter "**Celgene**"), having an effective date of March 20, 2018 (the "**MCA**"). Celgene and Prothena are each referred to herein by name or as a "**Party**" or, collectively, as the "**Parties**." The terms in this letter agreement with initial letters capitalized shall have the meaning set forth in this letter agreement, and if not defined in this letter agreement, shall have the meaning set forth in the MCA.

[***] On January 16, 2024, the Parties amended the MCA [***] (the "16Jan2024 Agreement"). The Parties now mutually agree to amend the MCA and the 16Jan2024 Agreement [***] as follows:

1.) [***]

2.) [***]

The provisions of this letter agreement shall constitute an amendment to the MCA and the 16Jan2024 Agreement, and, to the extent that any term or provision of this letter agreement may be deemed expressly inconsistent with any term or provision in the MCA or the 16Jan2024 Agreement, this letter agreement shall govern and control. Except as expressly modified by the terms of this letter agreement, all of the terms, conditions, and provisions of the MCA shall remain unchanged, unmodified and in full force and effect.

This letter agreement shall be governed by Article 12 of the MCA and this letter agreement may be executed in counterparts with the same effect as if both Parties had signed the same document. All such counterparts shall be deemed an original, shall be construed together, and shall constitute one and the same instrument. Any such counterpart to the extent delivered by Electronic Delivery shall be treated in all manner and respects as an original executed counterpart and shall be considered to have the same binding legal effect as if it were the original signed version thereof delivered in person. No Party hereto shall raise the use of Electronic Delivery to deliver a signature or the fact that any signature or agreement or instrument was transmitted or communicated through the use of Electronic Delivery as a defense to the formation of a contract, and each Party forever waives any such defense, except to the extent that such defense relates to lack of authenticity.

CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) IS THE TYPE THAT THE REGISTRANT TREATS AS PRIVATE OR CONFIDENTIAL.

Please have an authorized representative of Prothena sign below where indicated and return an executed copy to me at the address listed below. Upon the signing of this letter agreement by Prothena, this letter agreement shall be a binding agreement between and effective as of February 2, 2024.

Sincerely,

Celgene Switzerland, LLC

By: /s/ Nisha Zaidi

Name: Nisha Zaidi

Title: Manager

The terms of this letter agreement are acknowledged and agreed:

Prothena Biosciences Limited

By: /s/ Yvonne M. Tchrakian

Name: Yvonne M. Tchrakian

Title: Director and Company Secretary

Date: February 2, 2024

cc: Prothena Bioscience Inc, 1800 Sierra Point Parkway, Brisbane, CA 94005, USA, Attn: Legal Department

CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) IS THE TYPE THAT THE REGISTRANT TREATS AS PRIVATE OR CONFIDENTIAL.

Bristol Myers Squibb
PO. Box 4000, Route 206 & Province Line Road, Princeton, NJ 08543-4000

SENT BY EMAIL AS PDF

March 15, 2024

Prothena Biosciences Limited
77 Sir John Rogerson's Quay, Block C
Grand Canal Docklands, Dublin 2, D02 VK60, Ireland
Attn: Company Secretary

Re: Extension of Initial Research Term

Dear Ms. Yvonne Tchrakian:

Reference is made to the Master Collaboration Agreement between Prothena Biosciences Limited, an Irish private limited company (hereinafter "**Prothena**"), and Celgene Switzerland LLC, a Delaware limited liability company and a subsidiary of Bristol-Myers Squibb Company (hereinafter "**Celgene**"), having an effective date of March 20, 2018 (the "**MCA**"). Celgene and Prothena are each referred to herein by name or as a "**Party**" or, collectively, as the "**Parties**." The terms in this letter agreement with initial letters capitalized shall have the meaning set forth in this letter agreement, and if not defined in this letter agreement, shall have the meaning set forth in the MCA.

The Parties mutually agree to amend the MCA by striking Section 1.41 of the MCA, the definition of "Initial Research Term", and replacing it as follows:

"1.41 "**Initial Research Term**" means the period beginning on the Effective Date and ending on [***]."

The provisions of this letter agreement shall constitute an amendment to the MCA, and, to the extent that any term or provision of this letter agreement may be deemed expressly inconsistent with any term or provision in the MCA, this letter agreement shall govern and control. Except as expressly modified by the terms of this letter agreement, all of the terms, conditions, and provisions of the MCA shall remain unchanged, unmodified and in full force and effect.

This letter agreement shall be governed by Article 12 of the MCA and this letter agreement may be executed in counterparts with the same effect as if both Parties had signed the same document. All such counterparts shall be deemed an original, shall be construed together, and shall constitute one and the same instrument. Any such counterpart to the extent delivered by Electronic Delivery shall be treated in all manner and respects as an original executed counterpart and shall be considered to have the same binding legal effect as if it were the original signed version thereof delivered in person. No Party hereto shall raise the use of Electronic Delivery to deliver a signature or the fact that any signature or agreement or instrument was transmitted or communicated through the use of Electronic Delivery as a defense to the formation of a contract, and each Party forever waives any such defense, except to the extent that such defense relates to lack of authenticity.

CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) IS THE TYPE THAT THE REGISTRANT TREATS AS PRIVATE OR CONFIDENTIAL.

Please have an authorized representative of Prothena sign below where indicated and return an executed copy to me at the address listed below. Upon the signing of this letter agreement by Prothena, this letter agreement shall be a binding agreement between and effective as of March 15, 2024.

Sincerely,

Celgene Switzerland, LLC

By: /s/ Blake Benner

Name: Blake Benner

Title: Authorized Signatory

The terms of this letter agreement are acknowledged and agreed:

Prothena Biosciences Limited

By: /s/ Yvonne M. Tchrakian

Name: Yvonne M. Tchrakian

Title: Director and Company Secretary

Date: March 15, 2024

cc: Prothena Biosciences Inc, 1800 Sierra Point Parkway, Brisbane, CA 94005, USA, Attn: Legal Department

CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) IS THE TYPE THAT THE REGISTRANT TREATS AS PRIVATE OR CONFIDENTIAL.

Bristol Myers Squibb
PO. Box 4000, Route 206 & Province Line Road, Princeton, NJ 08543-4000

SENT BY EMAIL AS PDF

May 1, 2024

Prothena Biosciences Limited
77 Sir John Rogerson's Quay, Block C
Grand Canal Docklands, Dublin 2, D02 VK60, Ireland
Attn: Company Secretary

Re: [***]

Dear Ms. Yvonne Tchrakian:

Reference is made to the Master Collaboration Agreement between Prothena Biosciences Limited, an Irish private limited company (hereinafter "**Prothena**"), and Celgene Switzerland LLC, a Delaware limited liability company and a subsidiary of Bristol-Myers Squibb Company (hereinafter "**Celgene**"), having an effective date of March 20, 2018 (the "**MCA**"). Celgene and Prothena are each referred to herein by name or as a "**Party**" or, collectively, as the "**Parties**." The terms in this letter agreement with initial letters capitalized shall have the meaning set forth in this letter agreement, and if not defined in this letter agreement, shall have the meaning set forth in the MCA.

[***] On January 16, 2024, the Parties amended the MCA **[***]** (the "16Jan2024 Agreement"). On February 2, 2024, the Parties amended the MCA and the 16Jan2024 Agreement **[***]** ("02Feb2024 Agreement"). The Parties now mutually agree to amend the MCA, the 16Jan2024 Agreement, and the 02Feb2024 Agreement **[***]** as follows:

1.) **[***]**

2.) **[***]**

The provisions of this letter agreement shall constitute an amendment to the MCA, 16Jan2024 Agreement, and the 02February2024 Agreement, and, to the extent that any term or provision of this letter agreement may be deemed expressly inconsistent with any term or provision in the MCA,16Jan2024 Agreement, or the 02February2024 Agreement, this letter agreement shall govern and control. Except as expressly modified by the terms of this letter agreement, all of the terms, conditions, and provisions of the MCA shall remain unchanged, unmodified and in full force and effect.

This letter agreement shall be governed by Article 12 of the MCA and this letter agreement may be executed in counterparts with the same effect as if both Parties had signed the same document. All such counterparts shall be deemed an original, shall be construed together, and shall constitute one and the same instrument. Any such counterpart to the extent delivered by Electronic Delivery shall be treated in all manner and respects as an original executed counterpart and shall be considered to have the same binding legal effect as if it were the original signed version thereof delivered in person. No Party hereto shall raise the use of Electronic Delivery to deliver a signature or the fact that any signature or agreement or instrument was transmitted or communicated through the use of Electronic Delivery as a defense to

the formation of a contract, and each Party forever waives any such defense, except to the extent that such defense relates to lack of authenticity.

Please have an authorized representative of Prothena sign below where indicated and return an executed copy to me at the address listed below. Upon the signing of this letter agreement by Prothena, this letter agreement shall be a binding agreement between and effective as of May 1, 2024.

[signature page follows]

Sincerely,

Celgene Switzerland, LLC

By: /s/ Maureen Gibbons

Name: Maureen Gibbons

Title: Authorized Signatory

The terms of this letter agreement are acknowledged and agreed:

Prothena Biosciences Limited

By: /s/ Yvonne M. Tchrakian

Name: Yvonne M. Tchrakian

Title: Director and Company Secretary

Date: May 2, 2024

cc: Prothena Bioscience Inc, 1800 Sierra Point Parkway, Brisbane, CA 94005, USA, Attn: Legal Department

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Bristol Myers Squibb
PO. Box 4000, Route 206 & Province Line Road, Princeton, NJ 08543-4000

SENT BY EMAIL AS PDF

May 1, 2024

Prothena Biosciences Limited
77 Sir John Rogerson's Quay, Block C
Grand Canal Docklands, Dublin 2, D02 VK60, Ireland
Attn: Company Secretary

Re: Extension of Initial Research Term

Dear Ms. Yvonne Tchrakian:

Reference is made to the Master Collaboration Agreement between Prothena Biosciences Limited, an Irish private limited company (hereinafter "**Prothena**"), and Celgene Switzerland LLC, a Delaware limited liability company and a subsidiary of Bristol-Myers Squibb Company (hereinafter "**Celgene**"), having an effective date of March 20, 2018, and as amended by Prothena and Celgene on March 15, 2024 (the "**MCA**"). Celgene and Prothena are each referred to herein by name or as a "**Party**" or, collectively, as the "**Parties**." The terms in this letter agreement with initial letters capitalized shall have the meaning set forth in this letter agreement, and if not defined in this letter agreement, shall have the meaning set forth in the MCA.

The Parties mutually agree to amend the MCA by striking Section 1.41 of the MCA, the definition of "Initial Research Term", and replacing it as follows:

"1.41 "**Initial Research Term**" means the period beginning on the Effective Date and ending on May 24, 2024."

The provisions of this letter agreement shall constitute an amendment to the MCA, and, to the extent that any term or provision of this letter agreement may be deemed expressly inconsistent with any term or provision in the MCA, this letter agreement shall govern and control. Except as expressly modified by the terms of this letter agreement, all of the terms, conditions, and provisions of the MCA shall remain unchanged, unmodified and in full force and effect.

This letter agreement shall be governed by Article 12 of the MCA and this letter agreement may be executed in counterparts with the same effect as if both Parties had signed the same document. All such counterparts shall be deemed an original, shall be construed together, and shall constitute one and the same instrument. Any such counterpart to the extent delivered by Electronic Delivery shall be treated in all manner and respects as an original executed counterpart and shall be considered to have the same binding legal effect as if it were the original signed version thereof delivered in person. No Party hereto shall raise the use of Electronic Delivery to deliver a signature or the fact that any signature or agreement or instrument was transmitted or communicated through the use of Electronic Delivery as a defense to the formation of a contract, and each Party forever waives any such defense, except to the extent that such defense relates to lack of authenticity.

CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) IS THE TYPE THAT THE REGISTRANT TREATS AS PRIVATE OR CONFIDENTIAL.

Please have an authorized representative of Prothena sign below where indicated and return an executed copy to me at the address listed below. Upon the signing of this letter agreement by Prothena, this letter agreement shall be a binding agreement between and effective as of May 1, 2024.

Sincerely,

Celgene Switzerland, LLC

By: /s/ Nisha Zaidi

Name: Nisha Zaidi

Title: Authorized Signatory

The terms of this letter agreement are acknowledged and agreed:

Prothena Biosciences Limited

By: /s/ Yvonne M. Tchrakian

Name: Yvonne M. Tchrakian

Title: Director and Company Secretary

Date: May 2, 2024

cc: Prothena Biosciences Inc, 1800 Sierra Point Parkway, Brisbane, CA 94005, USA, Attn: Legal Department

Exhibit 31.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER
PURSUANT TO RULE 13a-14(a)/15d-14(a), AS ADOPTED PURSUANT TO SECTION 302 OF
THE SARBANES-OXLEY ACT OF 2002

I, Gene G. Kinney, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Prothena Corporation plc;

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

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

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

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

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

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

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

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

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

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

Date: May 8, 2024

/s/ Gene G. Kinney

Gene G. Kinney

President and Chief Executive Officer

(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER
PURSUANT TO RULE 13a-14(a)/15d-14(a), AS ADOPTED PURSUANT TO SECTION 302 OF
THE SARBANES-OXLEY ACT OF 2002

I, Tran B. Nguyen, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Prothena Corporation plc;

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

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

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

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

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

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

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

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

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

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

Date: May 8, 2024

/s/ Tran B. Nguyen

Tran B. Nguyen
Chief Financial Officer
(Principal Financial Officer)

Exhibit 32.1

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

Pursuant to the requirement set forth in Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and Section 1350 of Chapter 63 of Title 18 of the United States Code (18 U.S.C. §1350), Gene G. Kinney, President and Chief Executive Officer of Prothena Corporation plc (the "Company") and Tran B. Nguyen, Chief Financial Officer of the Company, each hereby certify that, to the best of his knowledge:

1. The Company's Quarterly Report on Form 10-Q for the fiscal quarter ended March 31, 2024, to which this Certification is attached as Exhibit 32.1 (the "Report") fully complies with the requirements of Section 13(a) or Section 15(d) of the Exchange Act; and

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

Date: May 8, 2024

/s/ Gene G. Kinney

Gene G. Kinney
President and Chief Executive Officer
(Principal Executive Officer)

/s/ Tran B. Nguyen

Tran B. Nguyen
Chief Financial Officer
(Principal Financial Officer)

A signed original of this written statement required by Rule 13a-14(b) of the Securities Exchange Act of 1934 and 18 U.S.C. Section 1350 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

This certification accompanies the Form 10-Q to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of the Company under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before or after the date of the Form 10-Q), irrespective of any general incorporation language contained in such filing.