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, 2023

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

For the transition period from _____ to _____

Commission File Number: 001-37627

WAVE LIFE SCIENCES LTD.

(Exact name of registrant as specified in its charter)

Singapore	**98-1356880**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
7 Straits View #12-00, Marina One East Tower Singapore	**018936**
(Address of principal executive offices)	**(Zip Code)**

+65 6236 3388
(Registrant's telephone number, including area code)

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

Title of each class	Trading symbol	Name of each exchange on which registered
$0 Par Value Ordinary Shares	WVE	The Nasdaq Global 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 (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

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

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

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

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

The number of outstanding ordinary shares of the registrant as of April 25, 2023 was 98,371,910.

WAVE LIFE SCIENCES LTD.

QUARTERLY REPORT ON FORM 10-Q

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As used in this Quarterly Report on Form 10-Q, unless otherwise stated or the context otherwise indicates, references to "Wave," the "Company," "we," "our," "us" or similar terms refer to Wave Life Sciences Ltd. and our wholly-owned subsidiaries.

Special Note Regarding Forward-Looking Statements

This Quarterly Report on Form 10-Q contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act"), and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), that relate to future events or to our future operations or financial performance. Any forward-looking statement involves known and unknown risks, uncertainties and other factors that may cause our actual results, levels of activity, performance or achievements to differ materially from any future results, levels of activity, performance or achievements expressed or implied by such forward-looking statement. In some cases, forward-looking statements are identified by the words "anticipate," "believe," "continue," "could," "estimate," "expect," "future," "goals," "intend," "likely," "may," "might," "ongoing," "objective," "plan," "potential," "predict," "project," "seek," "should," "strategy," "target," "will" and "would" or the negative of these terms, or other comparable terminology intended to identify statements about the future, although not all forward-looking statements contain these identifying words. Forward-looking statements include statements, other than statements of historical fact, about, among other things: our ability to fund our future operations; our financial position, revenues, costs, expenses, uses of cash and capital requirements; our need for additional financing or the period for which our existing cash resources will be sufficient to meet our operating requirements; the success, progress, number, scope, cost, duration, timing or results of our research and development activities, preclinical studies and clinical trials, including the timing for initiation or completion of or availability of results from any preclinical studies and clinical trials or for submission, review or approval of any regulatory filing; the timing of, and our ability to, obtain and maintain regulatory approvals for any of our product candidates; the potential benefits that may be derived from any of our product candidates; our strategies, prospects, plans, goals, expectations, forecasts or objectives; the success of our collaborations with third parties; any payment that our collaboration partners may make to us; our ability to identify and develop new product candidates; our intellectual property position; our commercialization, marketing and manufacturing capabilities and strategy; our estimates regarding future expenses and needs for additional financing; our ability to develop sales and marketing capabilities; our ability to identify, recruit and retain key personnel; our financial performance; developments and projections relating to our competitors in the industry; our liquidity and working capital requirements; the expected impact of new accounting standards; and our expectations regarding the impact of the coronavirus ("COVID-19") and variants thereof on our business, including on our research and development activities, preclinical studies and clinical trials, supply of drug product, and workforce.

Although we believe that we have a reasonable basis for each forward-looking statement contained in this report, we caution you that these statements are based on our estimates or projections of the future that are subject to known and unknown risks and uncertainties and other important factors that may cause our actual results, level of activity, performance or achievements expressed or implied by any forward-looking statement to differ. These risks, uncertainties and other factors include, among other things, our critical accounting policies; the ability of our preclinical studies to produce data sufficient to support the filing of global clinical trial applications and the timing thereof; our ability to continue to build and maintain the company infrastructure and personnel needed to achieve our goals; the clinical results and timing of our programs, which may not support further development of our product candidates; actions of regulatory agencies, which may affect the initiation, timing and progress of clinical trials; our effectiveness in managing current and future clinical trials and regulatory processes; the success of our platform in identifying viable candidates; the continued development and acceptance of nucleic acid therapeutics as a class of drugs; our ability to demonstrate the therapeutic benefits of our stereopure candidates in clinical trials, including our ability to develop candidates across multiple therapeutic modalities; our ability to obtain, maintain and protect intellectual property; our ability to enforce our patents against infringers and defend our patent portfolio against challenges from third parties; our ability to fund our operations and to raise additional capital as needed; competition from others developing therapies for similar uses; the severity and duration of the COVID-19 pandemic; the COVID-19 pandemic, and variants thereof, may negatively impact the conduct of, and the timing of enrollment, completion and reporting with respect to, our clinical trials; any other impacts on our business as a result of or related to the COVID-19 pandemic, the conflict involving Russia and Ukraine, global economic uncertainty, rising inflation, rising interest rates or market disruptions, as well as other risks and uncertainties under the caption "Risk Factors" contained in this Quarterly Report on Form 10-Q and in other filings we make with the Securities and Exchange Commission (the "SEC").

Each forward-looking statement contained in this report is based on a combination of facts and factors currently known by us and our expectations of the future, about which we cannot be certain. As a result of these factors, we cannot assure you that the forward-looking statements in this Quarterly Report on Form 10-Q will prove to be accurate. Furthermore, if our forward-looking statements prove to be inaccurate, the inaccuracy may be material. In light of the significant uncertainties in these forward-looking statements, these statements should not be regarded as representations or warranties by us or any other person that we will achieve our objectives and plans in any specified timeframe, or at all. We caution you not to place undue reliance on any forward-looking statement.

In addition, any forward-looking statement in this report represents our views only as of the date of this report and should not be relied upon as representing our views as of any subsequent date. We anticipate that subsequent events and developments may cause our views to change. Although we may elect to update these forward-looking statements publicly at some point in the future, we undertake no obligation to publicly update any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by applicable law. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments we may make.

The Wave Life Sciences Ltd. and Wave Life Sciences Pte. Ltd. names, the Wave Life Sciences mark, PRISM and the other registered and pending trademarks, trade names and service marks of Wave Life Sciences Ltd. appearing in this Quarterly Report on Form 10-Q are the property of Wave Life Sciences Ltd. This Quarterly Report on Form 10-Q also contains additional trade names, trademarks and service marks belonging to Wave Life Sciences Ltd. and to other companies. We do not intend our use or display of other parties' trademarks, trade names or service marks to imply, and such use or display should not be construed to imply, a relationship with, or endorsement or sponsorship of us by, these other parties. Solely for convenience, the trademarks and trade names in this Quarterly Report on Form 10-Q are referred to without the ® and ™ symbols, but such reference should not be construed as any indicator that their respective owners will not assert, to the fullest extent under applicable law, their rights thereto.

PART I - FINANCIAL INFORMATION

Item 1. Financial Statements

WAVE LIFE SCIENCES LTD.
UNAUDITED CONSOLIDATED BALANCE SHEETS

(In thousands, except share amounts)

	March 31, 2023	December 31, 2022
Assets		
Current assets:		
Cash and cash equivalents	$ 207,562	$ 88,497
Prepaid expenses	9,231	7,932
Other current assets	2,798	2,108
Total current assets	219,591	98,537
Long-term assets:		
Property and equipment, net of accumulated depreciation of $39,197 and $37,846 as of March 31, 2023 and December 31, 2022, respectively	16,005	17,284
Operating lease right-of-use assets	25,838	26,843
Restricted cash	4,660	3,660
Other assets	1,176	62
Total long-term assets	47,679	47,849
Total assets	$ 267,270	$ 146,386
Liabilities, Series A preferred shares and shareholders' equity (deficit)		
Current liabilities:		
Accounts payable	$ 11,906	$ 16,915
Accrued expenses and other current liabilities	7,622	17,552
Current portion of deferred revenue	106,960	31,558
Current portion of operating lease liability	6,078	5,496
Total current liabilities	132,566	71,521
Long-term liabilities:		
Deferred revenue, net of current portion	130,820	79,774
Operating lease liability, net of current portion	30,534	32,118
Other liabilities	190	190
Total long-term liabilities	161,544	112,082
Total liabilities	$ 294,110	$ 183,603
Series A preferred shares, no par value; 3,901,348 shares issued and outstanding at March 31, 2023 and December 31, 2022	$ 7,874	$ 7,874
Shareholders' equity (deficit):		
Ordinary shares, no par value; 98,104,844 and 86,924,643 shares issued and outstanding at March 31, 2023 and December 31, 2022, respectively	$ 837,886	$ 802,833
Additional paid-in capital	122,192	119,442
Accumulated other comprehensive income (loss)	(50)	(29)
Accumulated deficit	(994,742)	(967,337)
Total shareholders' equity (deficit)	$ (34,714)	$ (45,091)
Total liabilities, Series A preferred shares and shareholders' equity (deficit)	$ 267,270	$ 146,386

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

WAVE LIFE SCIENCES LTD.
UNAUDITED CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE LOSS

(In thousands, except share and per share amounts)

	Three Months Ended March 31,	
	2023	2022
Revenue	$ 12,929	$ 1,750
Operating expenses:		
Research and development	30,979	27,470
General and administrative	12,235	12,374
Total operating expenses	43,214	39,844
Loss from operations	(30,285)	(38,094)
Other income, net:		
Dividend income and interest income, net	1,873	26
Other income, net	1,007	254
Total other income, net	2,880	280
Loss before income taxes	(27,405)	(37,814)
Income tax provision	—	—
Net loss	$ (27,405)	$ (37,814)
Net loss per share attributable to ordinary shareholders—basic and diluted	$ (0.27)	$ (0.62)
Weighted-average ordinary shares used in computing net loss per share attributable to ordinary shareholders—basic and diluted	102,056,712	60,516,616
Other comprehensive loss:		
Net loss	$ (27,405)	$ (37,814)
Foreign currency translation	(21)	(86)
Comprehensive loss	$ (27,426)	$ (37,900)

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

WAVE LIFE SCIENCES LTD.
UNAUDITED CONSOLIDATED STATEMENTS OF SERIES A PREFERRED SHARES AND SHAREHOLDERS' EQUITY (DEFICIT)

(In thousands, except share amounts)

	Series A Preferred Shares		Ordinary Shares		Additional Paid-In-	Accumulated Other Comprehensive Income (Loss)	Accumulated	Total Shareholders' Equity (Deficit)
	Shares	Amount	Shares	Amount	Capital		Deficit	
Balance at December 31, 2021	3,901,348	$ 7,874	59,841,116	$ 749,851	$ 87,980	$ 181	$ (805,514)	$ 32,498
Issuance of ordinary shares pursuant to the at-the-market equity program, net	—	—	458,092	1,167	—	—	—	1,167
Share-based compensation	—	—	—	—	3,971	—	—	3,971
Vesting of RSUs	—	—	468,226	—	—	—	—	—
Option exercises	—	—	15,000	37	—	—	—	37
Issuance of ordinary shares under the ESPP	—	—	77,534	174	—	—	—	174
Other comprehensive loss	—	—	—	—	—	(86)	—	(86)
Net loss	—	—	—	—	—	—	(37,814)	(37,814)
Balance at March 31, 2022	3,901,348	$ 7,874	60,859,968	$ 751,229	$ 91,951	$ 95	$ (843,328)	$ (53)

	Series A Preferred Shares		Ordinary Shares		Additional Paid-In-	Accumulated Other Comprehensive Income (Loss)	Accumulated	Total Shareholders' Equity (Deficit)
	Shares	Amount	Shares	Amount	Capital		Deficit	
Balance at December 31, 2022	3,901,348	$ 7,874	86,924,643	$ 802,833	$ 119,442	$ (29)	$ (967,337)	$ (45,091)
Issuance of ordinary shares	—	—	10,683,761	34,623	—	—	—	34,623
Share-based compensation	—	—	—	—	2,750	—	—	2,750
Vesting of RSUs	—	—	363,161	—	—	—	—	—
Option exercises	—	—	181	1	—	—	—	1
Issuance of ordinary shares under the ESPP	—	—	133,098	429	—	—	—	429
Other comprehensive loss	—	—	—	—	—	(21)	—	(21)
Net loss	—	—	—	—	—	—	(27,405)	(27,405)
Balance at March 31, 2023	3,901,348	$ 7,874	98,104,844	$ 837,886	$ 122,192	$ (50)	$ (994,742)	$ (34,714)

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

WAVE LIFE SCIENCES LTD.
UNAUDITED CONSOLIDATED STATEMENTS OF CASH FLOWS

(In thousands)

	Three Months Ended March 31,	
	2023	2022
Cash flows from operating activities		
Net loss	$ (27,405)	$ (37,814)
Adjustments to reconcile net loss to net cash provided by (used in) operating activities:		
Amortization of right-of-use assets	1,005	784
Depreciation of property and equipment	1,433	1,730
Share-based compensation expense	2,750	3,971
Changes in operating assets and liabilities:		
Prepaid expenses	(1,299)	(356)
Other assets	(1,804)	(851)
Accounts payable	(4,674)	2,490
Accrued expenses and other current liabilities	(9,930)	(7,932)
Deferred revenue	126,448	(1,584)
Operating lease liabilities	(1,002)	(1,179)
Other non-current liabilities	—	868
Net cash provided by (used in) operating activities	85,522	(39,873)
Cash flows from investing activities		
Purchases of property and equipment	(489)	(208)
Purchase of short-term investments	—	(50,000)
Net cash used in investing activities	(489)	(50,208)
Cash flows from financing activities		
Proceeds from issuance of ordinary shares	34,623	—
Proceeds from issuance of ordinary shares pursuant to the at-the-market equity program, net of offering costs	—	1,105
Proceeds from the exercise of share options	1	37
Proceeds from the ESPP	429	174
Net cash provided by financing activities	35,053	1,316
Effect of foreign exchange rates on cash, cash equivalents and restricted cash	(21)	(86)
Net increase (decrease) in cash, cash equivalents and restricted cash	120,065	(88,851)
Cash, cash equivalents and restricted cash, beginning of period	92,157	154,215
Cash, cash equivalents and restricted cash, end of period	$ 212,222	$ 65,364

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

1. THE COMPANY

Organization

Wave Life Sciences Ltd. (together with its subsidiaries, "Wave" or the "Company") is a clinical-stage RNA medicines company committed to delivering life-changing treatments for people battling devastating diseases. Using PRISM, Wave's proprietary discovery and drug development platform that enables the precise design, optimization, and production of novel stereopure oligonucleotides, Wave is working to develop best- or first-in-class medicines that target the transcriptome (the full set of ribonucleic acid ("RNA") molecules produced from the human genome) to treat genetically defined diseases with a high degree of unmet need.

The Company was incorporated in Singapore on July 23, 2012 and has its principal U.S. office in Cambridge, Massachusetts. The Company was incorporated with the purpose of combining two commonly held companies, Wave Life Sciences USA, Inc. ("Wave USA"), a Delaware corporation (formerly Ontorii, Inc.), and Wave Life Sciences Japan, Inc. ("Wave Japan"), a company organized under the laws of Japan (formerly Chiralgen., Ltd.), which occurred on September 13, 2012. On May 31, 2016, Wave Life Sciences Ireland Limited ("Wave Ireland") was formed as a wholly-owned subsidiary of Wave Life Sciences Ltd. On April 3, 2017, Wave Life Sciences UK Limited ("Wave UK") was formed as a wholly-owned subsidiary of Wave Life Sciences Ltd.

The Company's primary activities since inception have been developing and evolving PRISM to design, develop and commercialize oligonucleotide therapeutics, advancing the Company's differentiated portfolio, building the Company's research, development and manufacturing capabilities, advancing programs into the clinic, furthering clinical development of such clinical-stage programs, building the Company's intellectual property, and assuring adequate capital to support these activities.

Liquidity

Since its inception, the Company has not generated any product revenue and has incurred recurring net losses. To date, the Company has primarily funded its operations through private placements of debt and equity securities, public and other registered offerings of its equity securities and collaborations with third parties. Until the Company can generate significant revenue from product sales, if ever, the Company expects to continue to finance operations through a combination of public or private equity or debt financings or other sources, which may include collaborations with third parties. Adequate additional financing may not be available to the Company on acceptable terms, or at all. The inability to raise capital as and when needed would have a negative impact on the Company's financial condition and ability to pursue its business strategy.

As of March 31, 2023, the Company had cash and cash equivalents of $207.6 million. The Company expects that its existing cash and cash equivalents will be sufficient to fund its operations for at least the next twelve months. The Company has based this expectation on assumptions that may prove to be incorrect, and the Company may use its available capital resources sooner than it currently expects. If the Company's anticipated operating results are not achieved in future periods, planned expenditures may need to be further reduced in order to extend the time period over which the then-available resources would be able to fund the Company's operations. In addition, the Company may elect to raise additional funds before it needs them if the conditions for raising capital are favorable due to market conditions or strategic considerations, even if the Company expects it has sufficient funds for its current or future operating plans.

Risks and Uncertainties

The Company is subject to risks common to companies in the biotechnology industry including, but not limited to, new technological innovations, protection of proprietary technology, maintaining internal manufacturing capabilities, dependence on key personnel, compliance with government regulations and the need to obtain additional financing. The Company's therapeutic programs will require significant additional research and development efforts, including extensive preclinical and clinical testing and regulatory approval, prior to commercialization of any product candidates. These efforts require significant amounts of additional capital, adequate personnel infrastructure and extensive compliance-reporting capabilities. There can be no assurance that the Company's research and development efforts will be successful, that adequate protection for the Company's intellectual property will be obtained, that any products developed will obtain necessary government regulatory approval or that any approved products will be commercially viable. Even if the Company's product development efforts are successful, it is uncertain when, if ever, the Company will generate significant revenue from product sales. The Company operates in an environment of rapid change in technology and substantial competition from pharmaceutical and biotechnology companies.

Basis of Presentation

The Company has prepared the accompanying consolidated financial statements in conformity with generally accepted accounting principles in the United States ("U.S. GAAP") and in U.S. dollars.

2. SIGNIFICANT ACCOUNTING POLICIES

The significant accounting policies described in the Company's audited financial statements as of and for the year ended December 31, 2022, and the notes thereto, which are included in the Company's Annual Report on Form 10-K for the year ended December 31, 2022, filed with the Securities and Exchange Commission ("SEC") on March 23, 2023, as amended (the "2022 Annual Report on Form 10-K"), have had no material changes during the three months ended March 31, 2023, except as described below.

Use of Estimates

The Company's consolidated financial statements are prepared in accordance with U.S. GAAP. The preparation of the Company's financial statements and related disclosures requires the Company to make estimates and assumptions that affect the reported amount of assets, liabilities, revenue, costs and expenses and related disclosures. Management considers many factors in selecting appropriate financial accounting policies and in developing the estimates and assumptions that are used in the preparation of the financial statements. Management must apply significant judgment in this process. The Company believes that its revenue recognition policy, particularly (a) assessing the number of performance obligations; (b) determining the transaction price; (c) allocating the transaction price to the performance obligations in the contract; and (d) determining the pattern over which performance obligations are satisfied, including estimates to complete performance obligations, and the assumptions and estimates used in the Company's analysis of contracts with contract research organizations ("CROs") and contract manufacturing organizations ("CMOs") to estimate the contract expense, involve a greater degree of judgment, and therefore the Company considers them to be its critical accounting policies. The Company evaluates its estimates and assumptions on an ongoing basis. The Company's actual results may differ from these estimates under different assumptions and conditions.

Unaudited Interim Financial Data

The accompanying interim consolidated balance sheet as of March 31, 2023, the related interim consolidated statements of operations and comprehensive loss for the three months ended March 31, 2023 and 2022, the consolidated statements of Series A preferred shares and shareholders' equity (deficit) for the three months ended March 31, 2023 and 2022, the consolidated statements of cash flows for the three months ended March 31, 2023 and 2022, and the related interim information contained within the notes to the unaudited consolidated financial statements have been prepared in accordance with the rules and regulations of the SEC for interim financial information. Accordingly, they do not include all of the information and the notes required by U.S. GAAP for complete financial statements. The financial data and other information disclosed in these notes related to the three months ended March 31, 2023 and 2022 are unaudited. In the opinion of management, the unaudited interim consolidated financial statements reflect all adjustments, consisting of normal and recurring adjustments, necessary for the fair presentation of the Company's financial position and results of operations for the three months ended March 31, 2023 and 2022. The results of operations for the interim periods are not necessarily indicative of the results to be expected for the year ending December 31, 2023 or any other interim period or future year or period.

3. ACCRUED EXPENSES AND OTHER CURRENT LIABILITIES

Accrued expenses and other current liabilities consist of the following:

	March 31, 2023	December 31, 2022
	(in thousands)	
Accrued compensation	$ 3,582	$ 12,287
Accrued expenses related to CROs and CMOs	2,131	3,516
Accrued expenses and other current liabilities	1,909	1,749
Total accrued expenses and other current liabilities	$ 7,622	$ 17,552

4. SHARE-BASED COMPENSATION

The Wave Life Sciences Ltd. 2021 Equity Incentive Plan was approved by the Company's shareholders and went into effect on August 10, 2021 and was amended effective as of August 9, 2022 (as amended, the "2021 Plan"). The 2021 Plan serves as the successor to the Wave Life Sciences Ltd. 2014 Equity Incentive Plan, as amended (the "2014 Plan"), such that outstanding awards granted under the 2014 Plan continue to be governed by the terms of the 2014 Plan, but no awards may be made under the 2014 Plan after August 10, 2021. The aggregate number of ordinary shares authorized for issuance of awards under the 2021 Plan was originally 5,450,000 ordinary shares, and was subsequently increased to 11,450,000 in August 2022, plus the number of ordinary shares underlying any awards under the 2014 Plan that are forfeited, cancelled or otherwise terminated (other than by exercise or withheld by the Company to satisfy any tax withholding obligation) on or after August 10, 2021.

The 2021 Plan authorizes (and the 2014 Plan previously authorized) the board of directors or a committee of the board of directors to, among other things, grant non-qualified share options, restricted awards, which include restricted shares and restricted share units ("RSUs"), and performance awards to eligible employees and directors of the Company. The Company accounts for grants to its non-employee directors as grants to employees.

Options generally vest over periods of one to four years, and options that are forfeited or cancelled are available to be granted again. The contractual life of options is generally five or ten years from the grant date. RSUs can be time-based or performance-based. Time-based RSUs generally vest over a period of one to four years. The vesting of performance-based RSUs is contingent on the achievement of certain performance milestones. Any RSUs that are forfeited are available to be granted again.

During the three months ended March 31, 2023, the Company granted an aggregate of 4,624,050 options and 48,575 time-based RSUs to employees.

As of March 31, 2023, 1,742,735 ordinary shares remained available for future grant under the 2021 Plan.

The Wave Life Sciences Ltd. 2019 Employee Share Purchase Plan ("ESPP") allows full-time and certain part-time employees to purchase the Company's ordinary shares at a discount to fair market value. Eligible employees may enroll in a six-month offering period beginning every January 15th and July 15th. Ordinary shares are purchased at a price equal to 85% of the lower of the fair market value of the Company's ordinary shares on the first business day or the last business day of an offering period. During the three months ended March 31, 2023, 133,098 ordinary shares were issued under the ESPP. As of March 31, 2023, there were 583,315 ordinary shares available for issuance under the ESPP.

5. COLLABORATION AGREEMENTS

GSK Collaboration and Equity Agreements

On December 13, 2022, Wave USA and Wave UK entered into a Collaboration and License Agreement (the "GSK Collaboration Agreement") with GlaxoSmithKline Intellectual Property (No. 3) ("GSK"). Pursuant to the GSK Collaboration Agreement, Wave and GSK have agreed to collaborate on the research, development, and commercialization of oligonucleotide therapeutics, including an exclusive global license to WVE-006. The discovery collaboration component has an initial four-year research term and combines Wave's proprietary discovery and drug development platform, PRISM, with GSK's unique insights from human genetics and its global development and commercial capabilities. On January 27, 2023, the GSK Collaboration Agreement became effective, and GSK paid Wave an upfront payment of $120.0 million.

Simultaneously with the execution of the GSK Collaboration Agreement, Wave entered into a Share Purchase Agreement (the "SPA") on December 13, 2022, with Glaxo Group Limited ("GGL"), an affiliate of GSK, pursuant to which Wave agreed to sell 10,683,761 of its ordinary shares to GGL at a purchase price of $4.68 per share (the "GSK Equity Investment"). The GSK Equity Investment closed on January 26, 2023, following the completion of customary closing conditions. The ordinary shares purchased by GGL are subject to lock-up and standstill restrictions and carry certain registration rights, customary for transactions of this kind. The Company did not incur any material costs in connection with the issuance of the ordinary shares under the SPA.

The GSK Collaboration Agreement has three components:

1. An exclusive global license for GSK to WVE-006, the Company's preclinical, first-in-class A-to-I(G) RNA editing candidate for alpha-1 antitrypsin deficiency, with development and commercialization responsibilities transferring to GSK after the Company completes the first-in-patient study (the "AATD Collaboration"). The Company will be responsible for preclinical, regulatory, manufacturing, and clinical activities for WVE-006 through the initial Phase 1/2 study, at the Company's sole cost. Thereafter, GSK will be responsible for advancing WVE-006 through pivotal studies, registration, and global commercialization at GSK's sole cost;
2. A discovery research collaboration which enables GSK to advance up to eight programs leveraging PRISM and the Company's oligonucleotide expertise and discovery capabilities (the "Discovery Research Collaboration"); and
3. A discovery collaboration which enables the Company to advance up to three programs leveraging targets informed by GSK's novel insights ("Wave's Collaboration Programs").

Under the GSK Collaboration Agreement, each party grants to the other party certain licenses to the collaboration products to enable the other party to perform its obligations and exercise its rights under the GSK Collaboration Agreement, including license grants to enable each party to conduct research, development and commercialization activities pursuant to the terms of the GSK Collaboration Agreement. The parties' exclusivity obligations to each other are limited on a target-by-target basis with regard to targets in the collaboration. GSK may terminate the GSK Collaboration Agreement for convenience, in its entirety or on a target-by-target basis. Subject to certain exceptions, each party has the right to terminate the GSK Collaboration Agreement on a target-by-target basis if the other party, or a related party, challenges the patentability, enforceability or validity of any patents within the licensed technology that cover any product that is subject to the GSK Collaboration Agreement. In the event of any material breach of the GSK Collaboration Agreement by a party, subject to cure rights, the other party may terminate the GSK Collaboration Agreement in its entirety if the breach relates to all targets or on a target-by-target basis if the breach relates to a specific target. In the event that GSK and its affiliates cease development, manufacturing and commercialization activities with respect to compounds or products subject to the GSK Collaboration Agreement and directed to a particular target, the Company may terminate the GSK Collaboration Agreement with respect to such target. Either party may terminate the GSK Collaboration Agreement for the other party's insolvency. In certain termination circumstances, the Company would receive a license from GSK to continue researching, developing and manufacturing certain products.

The GSK Collaboration Agreement, unless terminated earlier, will continue until the date on which: (i) with respect to a validation target, the date on which such validation target is not advanced into a collaboration program; or (ii) with respect to a collaboration target, the royalty term has expired for all collaboration products directed to the applicable collaboration target. The GSK Collaboration Agreement includes options to extend the research term for up to three additional years, which would increase the number of programs available to both parties. The Company will lead all preclinical research for GSK and the Company's collaboration programs up to investigational new drug ("IND")-enabling studies. The Company will lead IND-enabling studies, clinical development and commercialization for the Company's collaboration programs. GSK collaboration programs will transfer to GSK for IND-enabling studies, clinical development and commercialization.

The GSK Collaboration Agreement is managed by a joint steering committee in which both parties are represented equally. In addition, the AATD Collaboration is overseen by a joint development committee, a joint patent committee advises on intellectual property activities, and the Discovery Research Collaboration is overseen by a joint research committee. Both parties are represented equally for these committees and report to the joint steering committee.

The Company assessed this arrangement in accordance with ASC Topic 606, Revenue from Contracts with Customers ("ASC 606") and concluded that the contract counterparty, GSK, is a customer for the AATD Collaboration prior to GSK exercising its option and, for the Discovery Research Collaboration programs during the target validation research term. The Company identified the following material promises under the arrangement: (1) the exclusive global license for WVE-006; (2) the research and development services for WVE-006 through the Phase 1/2 study; (3) the discovery research services under the Discovery Research Collaboration to perform target validation programs; (4) research and development license for the Discovery Research Collaboration; and (5) the research and development services for the GSK collaboration programs through completion of a candidate selection. The research and development services for WVE-006 were determined to not be distinct from the exclusive global license and should therefore be combined into a single performance obligation for the AATD Collaboration. The research and development services for the Discovery Research Collaboration were determined to not be distinct from the research and development license for the Discovery Research Collaboration and should therefore be combined into a single performance obligation. In addition, the Company determined that the option to advance up to eight programs from the Discovery Research Collaboration was priced at fair value and did not provide a material right to GSK.

Based on these assessments, the Company identified two performance obligations in the GSK Collaboration Agreement: (1) AATD Collaboration consisting of the research and development services through completion of the Phase 1/2 study and research and development license for WVE-006 and (2) Discovery Research Collaboration which consists of research and development services for validating the targets and license for research and development license for targets.

At the outset of the arrangement, the transaction price included fixed consideration of the $120.0 million upfront, the $15.4 million in premium related to the GSK Equity Investment and the estimated variable consideration related to the additional target validation research funding. The Company allocated the estimated variable consideration to the Discovery Research Collaboration programs and then allocated the fixed consideration to the performance obligations on a relative standalone selling price basis. The Company determined that the GSK Collaboration Agreement did not contain a significant financing component. The program initiation fees to research and preclinically develop the GSK collaboration programs and the additional potential milestone payments were excluded from the transaction price, as all milestone amounts were fully constrained at the inception of the GSK Collaboration Agreement. The Company will reevaluate the transaction price at the end of each reporting period, and as uncertain events are resolved or other changes in circumstances occur, the Company will adjust its estimate of the transaction price.

The Company developed the estimated standalone selling price for the global license for WVE-006, under the AATD Collaboration, using a discounted cash flow model. In developing this estimate for the standalone selling price, the Company applied significant judgment in the assumptions relating to forecasted future cash flows, the discount rate, and the probability of success. For the performance obligation associated with the research and development services under the Discovery Research Collaboration and the research and development services for WVE-006 under the AATD Collaboration, the Company determined the standalone selling price using estimates of the costs to perform the research and development services, including expected internal and external costs for services and supplies, adjusted to reflect a profit margin. The total estimated cost of the research and development services reflected the nature of the services to be performed and the Company's best estimate of the length of time required to perform the services.

Revenue associated with the AATD Collaboration performance obligation is being recognized as the research and development services are provided using an input measure, according to the costs incurred and the total costs expected to be incurred to satisfy the performance obligation. The revenue associated with the Discovery Research Collaboration performance obligation is being recognized as the research and development services are provided using an input measure, according to the costs incurred and the total costs expected to be incurred to satisfy the performance obligation. The amounts received that have not yet been recognized as revenue are recorded in deferred revenue on the Company's consolidated balance sheet. Additional funding related to the Company's research activities related to Discovery Research Collaboration will be recorded as accounts receivable when contractually enforceable and recorded as deferred revenue, or as revenue as the services are provided.

During the three months ended March 31, 2023, the Company recognized revenue of approximately $12.3 million under the GSK Collaboration Agreement using the input method described above.

The aggregate amount of the transaction price allocated to the Company's unsatisfied and partially unsatisfied performance obligations and recorded in deferred revenue on March 31, 2023 is approximately $127.1 million, of which $75.8 million is included in current liabilities and $51.3 million is included in long-term liabilities.

Takeda Collaboration and Equity Agreements

In February 2018, Wave USA and Wave UK entered into a global strategic collaboration (the "Takeda Collaboration") with Takeda Pharmaceutical Company Limited ("Takeda"), pursuant to which Wave USA, Wave UK and Takeda agreed to collaborate on the research, development and commercialization of oligonucleotide therapeutics for disorders of the Central Nervous System ("CNS"). The Takeda Collaboration provides the Company with at least $230.0 million in committed cash and Takeda with the option to co-develop and co-commercialize the Company's CNS development programs in (1) Huntington's disease ("HD"); (2) amyotrophic lateral sclerosis ("ALS") and frontotemporal dementia ("FTD"); and (3) the Company's discovery-stage program targeting *ATXN3* for the treatment of spinocerebellar ataxia 3 ("SCA3") (collectively, "Category 1 Programs"). In addition, the Takeda Collaboration provided Takeda the right to exclusively license multiple preclinical programs for CNS disorders, including Alzheimer's disease and Parkinson's disease (collectively, "Category 2 Programs"). In April 2018, the Takeda Collaboration became effective and Takeda paid the Company $110.0 million as an upfront payment. Takeda also agreed to fund the Company's research and preclinical activities in the amount of $60.0 million during the four-year research term and to reimburse the Company for any collaboration-budgeted research and preclinical expenses incurred by Wave that exceed that amount.

Simultaneously with Wave USA and Wave UK's entry into the collaboration and license agreement with Takeda (the "Takeda Collaboration Agreement"), the Company entered into a share purchase agreement with Takeda (the "Takeda Equity Agreement," and together with the Takeda Collaboration Agreement, the "Takeda Agreements") pursuant to which it agreed to sell to Takeda 1,096,892 of its ordinary shares at a purchase price of $54.70 per share. In April 2018, the Company closed the Takeda Equity Agreement and received aggregate cash proceeds of $60.0 million. The Company did not incur any material costs in connection with the issuance of the shares.

With respect to Category 1 Programs, the Company will be responsible for researching and developing products and companion diagnostics for Category 1 Programs through completion of the first proof of mechanism study for such products. Takeda will have an exclusive option for each target and all associated products and companion diagnostics for such target, which it may exercise at any time through completion of the proof of mechanism study. If Takeda exercises this option, the Company will receive an opt-in payment and will lead manufacturing and joint clinical co-development activities and Takeda will lead joint co-commercial activities in the United States and all commercial activities outside of the United States. Global costs and potential profits will be shared 50:50 and the Company will be eligible to receive development and commercial milestone payments. In addition to its 50% profit share, the Company is eligible to receive option exercise fees and development and commercial milestone payments for each of the Category 1 Programs.

With respect to Category 2 Programs, the Company granted Takeda the right to exclusively license multiple preclinical programs during a four-year research term (subject to limited extension for programs that were initiated prior to the expiration of the research term, in accordance with the Takeda Collaboration Agreement) ("Category 2 Research Term"). During that term, the Takeda Collaboration provided that the parties may collaborate on preclinical programs for up to six targets at any one time. The Company was responsible for researching and preclinically developing products and companion diagnostics directed to the agreed upon targets through completion of Investigational New Drug application ("IND")-enabling studies in the first major market country. Thereafter, Takeda would have an exclusive worldwide license to develop and commercialize products and companion diagnostics directed to such targets, subject to the Company's retained rights to lead manufacturing activities for products directed to such targets. Takeda agreed to fund the Company's research and preclinical activities in the amount of $60.0 million during the research term and reimburse the Company for any collaboration-budgeted research and preclinical expenses incurred by the Company that exceeded that amount. The Company was also eligible to receive tiered high single-digit to mid-teen royalties on Takeda's global commercial sales of products from each Category 2 Program.

Under the Takeda Collaboration Agreement, each party granted to the other party specific intellectual property licenses to enable the other party to perform its obligations and exercise its rights under the Takeda Collaboration Agreement, including license grants to enable each party to conduct research, development and commercialization activities pursuant to the terms of the Takeda Collaboration Agreement.

The term of the Takeda Collaboration Agreement commenced on April 2, 2018 and, unless terminated earlier, will continue until the date on which: (i) with respect to each Category 1 Program target for which Takeda does not exercise its option, the expiration or termination of the development program with respect to such target; (ii) with respect to each Category 1 Program target for which Takeda exercises its option, the date on which neither party is researching, developing or manufacturing any products or companion diagnostics directed to such target; or (iii) with respect to each Category 2 Program target, the date on which royalties are no longer payable with respect to products directed to such target.

Takeda may terminate the Takeda Collaboration Agreement for convenience on 180 days' notice, in its entirety or on a target-by-target basis. Subject to certain exceptions, each party has the right to terminate the Takeda Collaboration Agreement on a target-by-target basis if the other party, or a third party related to such party, challenges the patentability, enforceability or validity of any patents within the licensed technology that cover any product or companion diagnostic that is subject to the Takeda Collaboration Agreement. In the event of any material breach of the Takeda Collaboration Agreement by a party, subject to cure rights, the other party may terminate the Takeda Collaboration Agreement in its entirety if the breach relates to all targets or on a target-by-target basis if the breach relates to a specific target. In the event that Takeda and its affiliates cease development, manufacturing and commercialization activities with respect to compounds or products subject to the Takeda Collaboration Agreement and directed to a particular target, the Company may terminate the Takeda Collaboration Agreement with respect to such target. Either party may terminate the Takeda Collaboration Agreement for the other party's insolvency. In certain termination circumstances, the Company would receive a license from Takeda to continue researching, developing and manufacturing certain products, and companion diagnostics.

The Takeda Collaboration is managed by a joint steering committee in which both parties are represented equally. The joint steering committee is tasked with overseeing the scientific progression of each Category 1 Program and, prior to the Amendment (discussed below), the Category 2 Programs.

The Company assessed this arrangement in accordance with ASC 606 and concluded that the contract counterparty, Takeda, is a customer for Category 1 Programs prior to Takeda exercising its option, and for Category 2 Programs during the Category 2 Research Term. The Company identified the following material promises under the arrangement: (1) the non-exclusive, royalty-free research and development license for each Category 1 Program; (2) the research and development services for each Category 1 Program through completion of the first proof of mechanism study; (3) the exclusive option to license, co-develop and co-commercialize each Category 1 Program; (4) the right to exclusively license the Category 2 Programs; and (5) the research and preclinical development services of the Category 2 Programs through completion of IND-enabling studies. The research and development services for each Category 1 Program were determined to not be distinct from the research and development license and should therefore be combined into a single performance obligation for each Category 1 Program. The research and preclinical development services for the Category 2 Programs were determined to not be distinct from the exclusive licenses for the Category 2 Programs and therefore were combined into a single performance obligation.

Additionally, the Company determined that the exclusive option for each Category 1 Program was priced at a discount, and, as such, provide material rights to Takeda, representing three separate performance obligations. Based on these assessments, the Company identified seven performance obligations in the Takeda Collaboration Agreement: (1) research and development services through completion of the first proof of mechanism and non-exclusive research and development license for HD; (2) research and development services through completion of the first proof of mechanism and non-exclusive research and development license for ALS and FTD; (3) research and development services through completion of the first proof of mechanism and non-exclusive research and development license for SCA3; (4) the material right provided for the exclusive option to license, co-develop and co-commercialize HD; (5) the material right provided for the exclusive option to license, co-develop and co-commercialize ALS and FTD; (6) the material right provided for the exclusive option to license, co-develop and co-commercialize SCA3; and (7) the research and preclinical development services and right to exclusively license the Category 2 Programs.

At the outset of the arrangement, the transaction price included the $110.0 million upfront consideration received and the $60.0 million of committed research and preclinical funding for the Category 2 Programs. The Company determined that the Takeda Collaboration Agreement did not contain a significant financing component. The option exercise fees to license, co-develop and co-commercialize each Category 1 Program that may be received are excluded from the transaction price until each customer option is exercised. The potential milestone payments were excluded from the transaction price, as all milestone amounts were fully constrained at the inception of the Takeda Collaboration Agreement. The Company will reevaluate the transaction price at the end of each reporting period and as uncertain events are resolved or other changes in circumstances occur, if necessary, will adjust its estimate of the transaction price.

The Company allocated the transaction price to the performance obligations on a relative standalone selling price basis. For the performance obligations associated with the research and development services through completion of the first proof of mechanism and non-exclusive research and development license for HD; the research and development services through completion of the first proof of mechanism and non-exclusive research and development license for ALS and FTD; the research and development services through completion of the first proof of mechanism and non-exclusive research and development license for SCA3; and the research and preclinical development services and right to exclusively license the Category 2 Programs, the Company determined the standalone selling price using estimates of the costs to perform the research and development services, including expected internal and external costs for services and supplies, adjusted to reflect a profit margin. The total estimated cost of the research and development services reflected the nature of the services to be performed and the Company's best estimate of the length of time required to perform the services. For the performance obligations associated with the material right provided for the exclusive option to license, co-develop and co-commercialize HD; the material right provided for the exclusive option to license, co-develop and co-commercialize ALS and FTD; and the material right provided for the exclusive option to license, co-develop and co-commercialize SCA3, the Company estimated the standalone fair value of the option to license each Category 1 Program utilizing an adjusted market assessment approach, and determined that any standalone fair value in excess of the amounts to be paid by Takeda associated with each option represented a material right.

Revenue associated with the research and development services for each Category 1 Program performance obligation is being recognized as the research and development services are provided using an input method, according to the costs incurred on each Category 1 Program and the total costs expected to be incurred to satisfy each Category 1 Program performance obligation. Prior to the Amendment (as defined below), revenue associated with the research and preclinical development services for the Category 2 Programs performance obligation was recognized as the research and preclinical development services are provided using an input method, according to the costs incurred on Category 2 Programs and the total costs expected to be incurred to satisfy the performance obligation. The amount allocated to the material right for each Category 1 Program option will be recognized on the date that Takeda exercises each respective option, or immediately as each option expires unexercised. The amounts received that have not yet been recognized as revenue are recorded in deferred revenue on the Company's consolidated balance sheet.

On October 15, 2021, Wave USA, Wave UK and Takeda entered into the Second Amendment to the Takeda Collaboration Agreement (the "Amendment"), which discontinued the Category 2 component of the Takeda Collaboration. The Category 1 Programs under the Collaboration Agreement remain in effect and are unchanged by the Amendment. Pursuant to the Amendment, Takeda agreed to pay the Company an additional $22.5 million as full payment for reimbursable Category 2 Programs collaboration-budgeted research and preclinical expenses. The Company received this payment from Takeda related to the Category 2 component and recognized the full amount as collaboration revenue in the year ended December 31, 2021.

Through March 31, 2023, the Company had recognized revenue of $81.8 million as collaboration revenue under the Takeda Collaboration Agreement in the Company's consolidated statements of operations and comprehensive loss. During the three months ended March 31, 2023 and March 31, 2022, the Company recognized revenue of approximately $0.7 million and $1.6 million, respectively, under the Takeda Collaboration Agreement in the Company's consolidated statements of operations and comprehensive loss.

The aggregate amount of the transaction price allocated to the Company's unsatisfied and partially unsatisfied performance obligations and recorded in deferred revenue as of December 31, 2022 was $111.3 million, of which approximately $31.6 million was included in current liabilities and $79.8 million was included in long-term liabilities. The aggregate amount of the transaction price allocated to the Company's unsatisfied and partially unsatisfied performance obligations and recorded in deferred revenue at March 31, 2023 is $110.7 million, of which $31.1 million is included in current liabilities and $79.6 million is included in long-term liabilities. The Company expects to recognize revenue for the portion of the deferred revenue that relates to the research and development services for each Category 1 Program as costs are incurred, over the remaining research term. The Company expects to recognize revenue for the portion of the deferred revenue that relates to the material right for each Category 1 Program option upon Takeda's exercise of such option, or immediately as each option expires unexercised.

6. NET LOSS PER ORDINARY SHARE

The Company applies the two-class method to calculate its basic and diluted net loss per share attributable to ordinary shareholders, as its Series A preferred shares are participating securities. The two-class method is an earnings allocation formula that treats a participating security as having rights to earnings that otherwise would have been available to ordinary shareholders.

As of March 31, 2023, there are 7,093,656 vested and exercisable pre-funded warrants ("Pre-Funded Warrants") outstanding to purchase ordinary shares for the exercise price of $0.0001 per share, provided that, unless and until the Company obtains shareholder approval for the issuance of the shares underlying the Pre-Funded Warrants, a holder will not be entitled to exercise any portion of any Pre-Funded Warrant, which, upon giving effect to such exercise, would cause (i) the aggregate number of our ordinary shares beneficially owned by the holder (together with its affiliates) to exceed 19.99% of the number of our ordinary shares outstanding immediately after giving effect to the exercise, or (ii) the combined voting power of our securities beneficially owned by the holder (together with its affiliates) to exceed 19.99% of the combined voting power of all of our securities then outstanding immediately after giving effect to the exercise, as such percentage ownership is determined in accordance with the terms of the Pre-Funded Warrants. The Pre-Funded Warrants are included in the weighted-average shares outstanding used in the calculation of basic net loss per share as the exercise price is negligible and the warrants are fully vested and exercisable.

Basic loss per share is computed by dividing net loss attributable to ordinary shareholders and Pre-Funded Warrant holders by the weighted-average number of ordinary shares and Pre-Funded Warrants outstanding.

The Company's potentially dilutive shares, which include outstanding share options to purchase ordinary shares, RSUs, and Series A preferred shares, are considered to be ordinary share equivalents and are only included in the calculation of diluted net loss per share when their effect is dilutive.

The following potential ordinary shares, presented based on amounts outstanding at each period end, were excluded from the calculation of diluted net loss per share attributable to ordinary shareholders for the periods indicated because including them would have had an anti-dilutive effect:

	As of March 31,	
	2023	2022
Options to purchase ordinary shares	14,235,350	8,760,336
RSUs	614,449	1,420,568
Series A preferred shares	3,901,348	3,901,348

Additionally, for the periods presented, the two-class method does not impact the net loss per ordinary share as the Company was in a net loss position for each of the periods presented and holders of Series A preferred shares do not participate in losses.

7. INCOME TAXES

During the three months ended March 31, 2023 and 2022, the Company recorded no income tax provision. The Company maintained a full valuation allowance for the three months ended March 31, 2023 and 2022 in all jurisdictions due to uncertainty regarding future taxable income.

8. GEOGRAPHIC DATA

Substantially all of the Company's long-lived assets were located in the United States as of March 31, 2023 and December 31, 2022.

9. RELATED PARTY TRANSACTIONS

The Company had the following related party transactions:

- In 2012, the Company entered into a consulting agreement for scientific advisory services with Dr. Gregory L. Verdine, one of the Company's founders and a member of the Company's board of directors. The consulting agreement does not have a specific term and may be terminated by either party upon 14 days' prior written notice. Pursuant to the consulting agreement, the Company pays Dr. Verdine approximately $13 thousand per month, plus reimbursement for certain expenses. In October 2022, the compensation committee of the Company's board of directors granted Dr. Verdine a non-qualified share option for 163,467 ordinary shares in lieu of cash as payment under this consulting agreement for the service period of October 1, 2022 through December 31, 2024, the monthly vesting of which is subject to Dr. Verdine's continued service under the consulting agreement.
- In April 2023, the Company engaged Shin Nippon Biomedical Laboratories Ltd., one of the Company's shareholders, to provide approximately $2.8 million in certain non-human primate contract research services to the Company.

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

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with our financial statements and related notes appearing elsewhere in this Quarterly Report on Form 10-Q and in our Annual Report on Form 10-K for the year ended December 31, 2022, filed with the Securities and Exchange Commission ("SEC") on March 23, 2023, as amended (the "2022 Annual Report on Form 10-K"). Some of the information contained in this discussion and analysis or set forth elsewhere in this Quarterly Report on Form 10-Q, including information with respect to our plans and strategy for our business, includes forward-looking statements that involve risks and uncertainties. As a result of many factors, including those factors set forth in the "Risk Factors" section of this Quarterly Report on Form 10-Q and the "Risk Factor" section of our 2022 Annual Report on Form 10-K, our actual results could differ materially from the results described in, or implied by, these forward-looking statements.

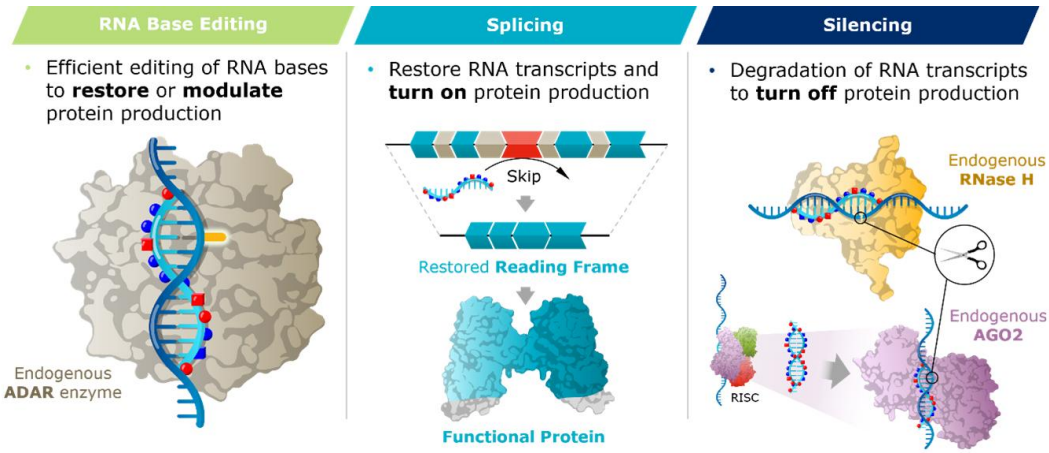
Overview

We are a clinical-stage RNA medicines company committed to delivering life-changing treatments for people battling devastating diseases. Using PRISM, our proprietary discovery and drug development platform that enables the precise design, optimization, and production of novel stereopure oligonucleotides, we are working to develop first- or best-in-class medicines that target the transcriptome (the full set of ribonucleic acid, or "RNA," molecules produced from the human genome) to treat genetically defined diseases with a high degree of unmet need.

Our RNA-targeting oligonucleotides are designed to correct disease-causing mutations, modulate protein activity, restore the production of functional proteins or reduce the expression of disease-promoting RNAs or proteins. Data from our ongoing clinical and preclinical studies has demonstrated significant improvements in potency, durability, and distribution for our oligonucleotides designed through PRISM, compared with competitor chemistries. These data support our platform as best-in-class for designing and optimizing RNA-targeting medicines.

Since our inception, we have seen the value of developing RNA-targeting medicines compared to other nucleic acid therapeutics, including gene therapy and DNA editing. By intervening at the RNA level, we have the potential to address diseases that have historically been difficult to treat with small molecules or biologics, while retaining the ability to titrate dose, modulate duration of effect, and avoid risk of permanent off-target genetic changes and other challenges associated with DNA editing or gene therapy approaches. Oligonucleotides have additional advantages as a therapeutic class, including the ability to access multiple tissue types and the ability to modulate the frequency of dosing to ensure broad distribution within tissues over time. Oligonucleotides also have well-established manufacturing processes and validated test methods based on decades of improvements, as well as established regulatory, access, and reimbursement pathways.

Our approach is based on the scientific insight that the biological machinery necessary to address genetic diseases already exists in human cells and can be harnessed for therapeutic purposes with the right tools. We have built a versatile platform comprised of multiple therapeutic modalities, which provides flexibility to design built-for-purpose molecules that optimally address disease biology. These modalities are RNA base editing, splicing, and silencing, including both RNA interference ("RNAi") and antisense, all of which incorporate proprietary and novel chemistries to optimize the pharmacological properties of our therapeutic oligonucleotides.



We have a robust and diverse pipeline of potential first- or best-in-class programs. Our lead programs are designed to treat genetic diseases, including those in muscle, including Duchenne muscular dystrophy ("DMD"); liver, including alpha-1 antitrypsin deficiency ("AATD"); and the central nervous system ("CNS"), including Huntington's disease ("HD"), amyotrophic lateral sclerosis ("ALS") and frontotemporal dementia ("FTD"). These programs include:

- WVE-N531 (splicing), our exon 53 molecule for the treatment of DMD;
- WVE-006 (editing), our SERPINA1 molecule for the treatment of AATD;
- WVE-003 (silencing), our mHTT SNP3 molecule for the treatment of HD; and
- WVE-004 (silencing), our C9orf72 molecule for the treatment of C9orf72-associated ALS and FTD.

Over the last several years, we have built a leading RNA base editing capability. Our A-to-I RNA base editing oligonucleotides ("AIMers") enable access to areas of disease biology that are not viable for other therapeutic modalities. Our editing capability affords us the dexterity to address both rare diseases, as well as diseases impacting large patient populations.

AIMers are designed to target single bases on an RNA transcript and recruit proteins that exist in the body, called ADAR (adenosine deaminases acting on RNA) enzymes, which naturally possess the ability to change an adenine (A) to an inosine (I), which cells read as guanine (G). This approach enables both the correction of G-to-A point mutations, as well as the modulation of RNA to upregulate protein expression, modify protein-protein interactions, or alter RNA folding and processing. AIMers enable simplified delivery and avoid the risk of permanent changes to the genome and irreversible off-target effects with DNA-targeting approaches. AIMers are short in length, fully chemically modified, and use novel chemistry, including proprietary PN backbone modifications and chiral control, which make them distinct from other ADAR-mediated editing approaches.

Our PRISM platform was built on the recognition that a significant opportunity exists to tune the pharmacological properties of oligonucleotide therapeutics by leveraging three key features of these molecules: sequence, chemistry, and stereochemistry. Our unique ability to control stereochemistry provides the resolution necessary to optimize pharmacological profiles and develop and manufacture stereopure oligonucleotides. Stereopure oligonucleotides are comprised of molecules with atoms precisely and purposefully arranged in three-dimensional orientations at each linkage. These differ from the mixture-based oligonucleotides currently on the market or in development by others. Additionally, to mitigate pharmacological risks and potential manufacturing challenges, our approach focuses on designing short, chemically modified oligonucleotides without the need for complex delivery vehicles. We have also established and continue to enhance our internal current good manufacturing practices ("cGMP") manufacturing capabilities to increase control and visibility of our drug substance supply chain, while continuing to innovate oligonucleotide manufacturing.

PRISM also incorporates our novel, proprietary PN backbone chemistry modifications, which have been shown preclinically and clinically to increase potency, distribution, and durability of effect across our various modalities. PN chemistry is incorporated in all of our current clinical, preclinical and discovery-stage programs.

In December 2022, we announced a strategic collaboration with GlaxoSmithKline Intellectual Property (No. 3) ("GSK") to advance transformative oligonucleotide therapeutics, including WVE-006. The collaboration combines GSK's unique insights in human genetics, as well as its global development and commercial capabilities, with our PRISM platform and oligonucleotide expertise. The collaboration will enable us to continue building a pipeline of first-in-class oligonucleotide-based therapeutics and unlock new areas of disease biology, as well as realize the full value of WVE-006 as a potential best-in-class treatment for AATD that has the potential to simultaneously address both liver and lung manifestations of the disease.

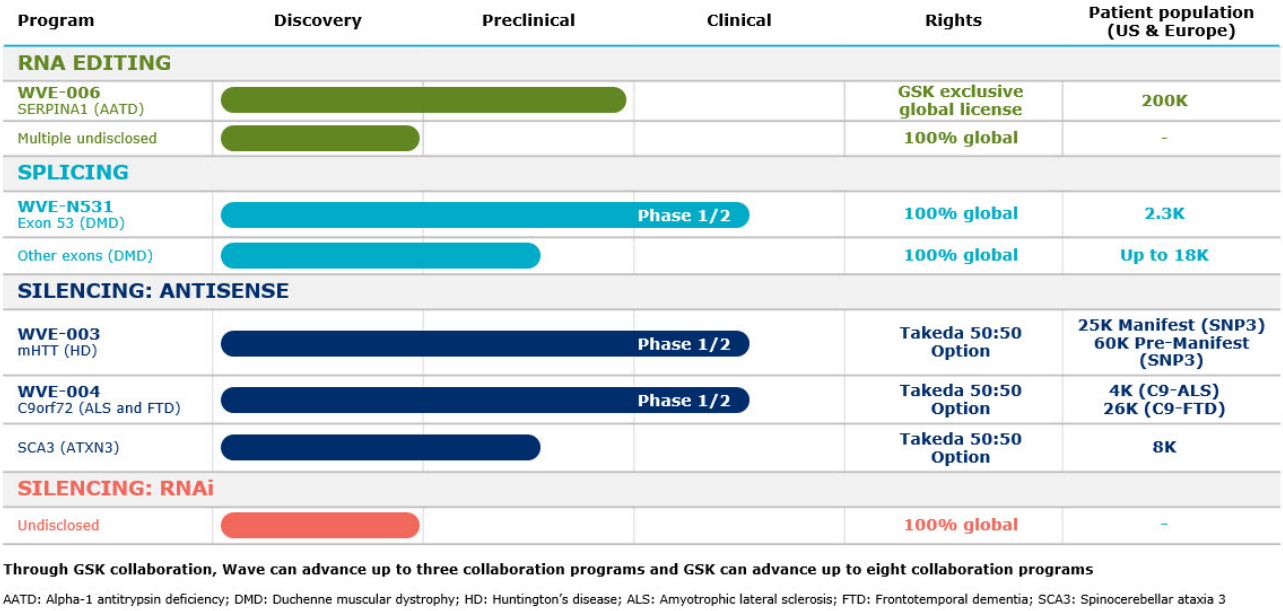
The GSK collaboration has three components:

(1) A discovery collaboration which enables us to advance up to three programs leveraging targets informed by GSK's novel insights;

(2) A discovery collaboration which enables GSK to advance up to eight programs leveraging PRISM and our oligonucleotide expertise and discovery capabilities; and

(3) An exclusive global license for GSK to WVE-006, our preclinical program for AATD that uses our proprietary AIMer technology. We will maintain development responsibilities for WVE-006 through completion of the first clinical study, at which point development and commercial responsibilities will transition to GSK.

Our Current Programs



Through GSK collaboration, Wave can advance up to three collaboration programs and GSK can advance up to eight collaboration programs

AATD: Alpha-1 antitrypsin deficiency; DMD: Duchenne muscular dystrophy; HD: Huntington's disease; ALS: Amyotrophic lateral sclerosis; FTD: Frontotemporal dementia; SCA3: Spinocerebellar ataxia 3

Additional details regarding our lead therapeutic programs are set forth below.

Duchenne muscular dystrophy ("DMD")

In DMD, we are advancing WVE-N531, which is designed to skip exon 53 within the dystrophin gene – a therapeutic approach that would address approximately 8-10% of DMD cases. WVE-N531 is designed to cause the cellular splicing machinery to skip over this exon during pre-mRNA processing, which restores the dystrophin mRNA reading frame and enables production of truncated, but functional, dystrophin protein. Exon skipping produces dystrophin from the endogenous dystrophin gene (not micro or mini dystrophin expressed from a vector), under the control of native gene-regulatory elements, resulting in normal expression. WVE-N531 is both our first splicing candidate and our first systemically administered candidate incorporating PN chemistry to be assessed in the clinic.

In December 2022 (data cut-off: December 6, 2022), we announced a positive update from Part A of the Phase 1b/2a proof-of-concept study of WVE-N531 in three boys with DMD amenable to exon 53 skipping. High muscle concentrations of WVE-N531 and exon skipping were observed six weeks after initiating biweekly multi-dosing at 10 mg/kg, achieving proof-of-concept in the study. WVE-N531 also appeared safe and well-tolerated.

To evaluate dystrophin protein restoration, we are initiating the Phase 2 portion of the WVE-N531 open-label study ("Part B"), and plan to enroll up to ten boys. Boys will be dosed at 10 mg/kg biweekly, and we plan to assess dystrophin protein after 24 and 48 weeks of dosing. The primary endpoint will be dystrophin protein levels, and the study will also evaluate pharmacokinetics, functional endpoints and safety and tolerability. We expect to initiate dosing in 2023 and to deliver data in 2024. Based on results from this study, we would consider advancing a broader DMD pipeline with PN-modified splicing oligonucleotides for skipping other exons, with the goal of providing new treatment options for a larger population of boys with DMD.

Alpha-1 antitrypsin deficiency ("AATD")

Our AATD program is the first to leverage our novel RNA editing capability and uses clinically proven *N*-acetylgalactosamine ("GalNAc")-conjugated AIMers with subcutaneous dosing. By correcting the single RNA base mutation that causes a majority of AATD cases with the Pi*ZZ phenotype (approximately 200,000 in the United States and Europe), RNA editing may provide an ideal approach for increasing circulating levels of wild-type Alpha-1 antitrypsin ("AAT") protein and reducing mutant protein aggregation in the liver, thus simultaneously addressing both the lung and liver manifestations of the disease.

In the third quarter of 2022, we announced WVE-006 as our development candidate for AATD. WVE-006 is first-in-class in AATD and is the most advanced program currently in development using an oligonucleotide to harness an endogenous enzyme for RNA editing. WVE-006 is currently in IND-enabling studies, and we expect to submit clinical trial applications (CTAs) in the second half of 2023. Additionally, under the GSK collaboration, GSK received the exclusive global license for WVE-006, with clinical

development and commercial responsibilities transitioning to GSK after we complete the first clinical trial. Under the terms of the collaboration, we are eligible to receive up to $525 million in development, launch and sales-related milestones, as well as double-digit tiered royalties as a percentage of net sales up to the high teens, for WVE-006.

Preclinical data show that treatment with WVE-006 resulted in approximately 50% RNA editing of SERPINA1 transcript and approximately 7-fold greater AAT protein levels (well above the predicted protective threshold of 11uM) at 13 weeks in an established AATD mouse model (NSG-PiZ). WVE-006 also led to restoration of approximately 50% wild-type M-AAT protein in serum and a 3-fold increase in neutrophil elastase inhibition activity, indicating that the restored M-AAT protein was functional. Wave's AATD AIMers are highly specific to SERPINA1 RNA *in vitro* and *in vivo* based on transcriptome-wide analyses.

If we are successful in the clinic with WVE-006, we will both validate our clinical approach to AATD, as well as validate the feasibility of RNA editing in humans.

Huntington's disease ("HD")

In HD, we are currently advancing WVE-003, a stereopure antisense oligonucleotide designed to selectively target an undisclosed single nucleotide polymorphism ("SNP"), "mHTT SNP3", associated with the disease-causing mutant huntingtin ("mHTT") mRNA transcript within the *Huntingtin ("HTT")* gene. Approximately 40% of the HD population carries SNP3 according to published literature (Carroll et al., Molecular Therapy, 2011).

WVE-003 incorporates our novel PN chemistry, as well as learnings from our first-generation HD programs. Targeting mRNA with SNP3 allows us to lower expression of transcript from the mutant allele, while leaving the healthy transcript relatively intact, thereby preserving wild-type (healthy) huntingtin ("wtHTT") protein, which is important for neuronal function. Our allele-selective approach may also enable us to address the pre-manifest, or asymptomatic, HD patient population in the future. In preclinical studies, WVE-003 showed dose-dependent and selective reduction of mHTT mRNA *in vitro*, as well as potent and durable knockdown of mHTT mRNA and protein *in vivo* in mouse models.

The SELECT-HD trial is a multicenter, randomized, double-blind, placebo-controlled Phase 1b/2a clinical trial to assess the safety and tolerability of intrathecally administered WVE-003 for patients with early manifest HD. Additional objectives include measurement of mHTT and wtHTT protein and exploratory pharmacokinetic, pharmacodynamic, clinical and magnetic resonance imaging ("MRI") endpoints. The SELECT-HD trial is designed to be adaptive, with dose level and dosing frequency being guided by an independent committee.

In September 2022 (data cut-off: August 29, 2022), we announced a positive update from SELECT-HD driven by the observation of reductions in mHTT protein in cerebrospinal fluid ("CSF") after study participants received either a single 30 or 60 mg dose of WVE-003. Additionally, wtHTT protein levels appeared consistent with allele-selectivity. Single doses (30 mg, 60 mg, and 90 mg) of WVE-003 appeared generally safe and well-tolerated. Based on the SELECT-HD data, we adapted the trial to expand the single dose cohorts, and we now expect to share additional single-dose, as well as multi-dose, biomarker and safety data in the second half of 2023. The update in expected timing for HD single-dose clinical data is due to a publicly announced cyber-attack that took place at Wave's mHTT assay vendor in April 2023. No Wave data or patient samples were impacted by the attack and Wave remains in close contact with the vendor as they address this issue.

C9orf72-associated amyotrophic lateral sclerosis and frontotemporal dementia (C9-ALS/FTD)

In ALS and FTD, we are advancing WVE-004, which uses our novel PN chemistry and preferentially targets the transcripts containing the hexanucleotide G4C2 expansion in the *C9orf72* gene. Approximately 2,000 ALS patients and 10,000 FTD patients in the United States have this mutation in *C9orf72*. In C9 BAC transgenic mice, WVE-004 led to substantial reductions in repeat-containing C9orf72 transcripts and dipeptide repeat ("DPR") proteins that are sustained for at least six months, without disrupting total C9orf72 protein expression.

The FOCUS-C9 trial is a global, multicenter, randomized, double-blind, placebo-controlled Phase 1b/2a clinical trial to assess the safety and tolerability of intrathecal doses of WVE-004 for patients with C9-ALS and/or C9-FTD. Additional objectives include measurement of poly(GP) proteins in the CSF, plasma and CSF pharmacokinetics, and exploratory biomarker and clinical endpoints. The FOCUS-C9 trial is designed to be adaptive with dose level and dosing frequency being guided by an independent committee.

In April 2022 (data cut-off: March 24, 2022), we announced a positive update from FOCUS-C9 driven by the observation of potent and durable reductions of poly(GP) dipeptide repeat proteins in CSF, a C9-ALS/C9-FTD disease biomarker that, when reduced in CSF, indicates WVE-004's engagement of target in the brain and spinal cord. Based on the poly(GP) reduction data, the observation period for single dose cohorts was extended and additional patients were enrolled into the trial to further characterize the depth of knockdown, durability and longer-term safety profile. Additionally, we have initiated multi-dosing cohorts, starting at 10 mg monthly and moving through 10 mg quarterly based on the potency and durability of pharmacodynamic effects. Additional single and multidose data are expected in the first half of 2023. Additionally, an open-label extension trial for FOCUS-C9 participants was initiated in the fourth quarter of 2022 and is ongoing.

Discovery Pipeline

We are working to pursue new targets across multiple disease areas, given preclinical data indicating our oligonucleotides can distribute to various tissues and cells without complex delivery vehicles. We are also focusing on targets that have been genetically validated and offer biomarkers for target engagement to enable early proof-of-concept in the clinic. We expect this research to result in multiple new programs with first-in-class potential being added to our pipeline over the next several years.

In April 2023, we announced the publication of preclinical data for our novel siRNA formats in the journal of Nucleic Acids Research. The preclinical data demonstrated unprecedented Ago2 loading following administration of single subcutaneous GalNAc-siRNA dose, leading to improved potency and durability *in vivo* versus comparator siRNA formats.

Financial Operations Overview

We have never been profitable, and since our inception, we have incurred significant operating losses. Our net loss was $27.4 million and $37.8 million for the three months ended March 31, 2023 and 2022, respectively. As of March 31, 2023 and December 31, 2022, we had an accumulated deficit of $994.7 million and $967.3 million, respectively. We expect to continue to incur significant expenses and operating losses for the foreseeable future.

Revenue

We recognize collaboration revenue under the GSK Collaboration Agreement, which became effective in January 2023 (as defined in Note 5 in the notes to the unaudited consolidated financial statements appearing elsewhere in this Quarterly Report on Form 10-Q, "Note 5"), and the Takeda Collaboration Agreement (as defined in Note 5), which became effective in April 2018. We have not generated any product revenue since our inception and do not expect to generate any revenue from the sale of products for the foreseeable future.

Operating Expenses

Our operating expenses since inception have consisted primarily of research and development expenses and general and administrative expenses.

Research and Development Expenses

Research and development expenses consist primarily of costs incurred for our research activities, including our discovery efforts, and the development of our product candidates, which include:

- compensation-related expenses, including employee salaries, bonuses, share-based compensation expense and other related benefits expenses for personnel in our research and development organization;
- expenses incurred under agreements with third parties, including contract research organizations ("CROs") that conduct research, preclinical and clinical activities on our behalf, as well as contract manufacturing organizations ("CMOs") that manufacture drug product for use in our preclinical studies and clinical trials;
- expenses incurred related to our internal manufacturing of drug substance for use in our preclinical studies and clinical trials;
- expenses related to compliance with regulatory requirements;
- expenses related to third-party consultants;
- research and development supplies and services expenses; and
- facility-related expenses, including rent, maintenance and other general operating expenses.

We recognize research and development costs as incurred. We recognize external development costs based on an evaluation of the progress to completion of specific tasks using information provided to us by our vendors. Payments for these activities are based on the terms of the individual agreements, which may differ from the pattern of costs incurred, and are reflected in our financial statements as prepaid or accrued expenses.

Our primary research and development focus since inception has been the development of our proprietary discovery and drug development platform, PRISM. We are using PRISM, which includes our novel PN backbone chemistry modifications, to design, develop and commercialize a broad pipeline of nucleic acid therapeutic candidates that target RNA using RNA editing, splicing, and silencing.

Our research and development expenses consist primarily of expenses related to our CROs, CMOs, consultants, other external vendors and fees paid to global regulatory agencies to conduct our clinical trials, in addition to compensation-related expenses, internal manufacturing expenses, facility-related expenses and other general operating expenses. These expenses are incurred in connection with research and development efforts and our preclinical studies and clinical trials. We track certain external expenses on a program-by-program basis. However, we do not allocate compensation-related expenses, internal manufacturing expenses, equipment repairs and maintenance expense, facility-related expenses or other operating expenses to specific programs. These expenses, which are not allocated on a program-by-program basis, are included in the "PRISM and other research and development expenses" category along with other external expenses related to our discovery and development programs, as well as platform development and identification of potential drug discovery candidates.

Product candidates in later stages of clinical development generally have higher development costs than those in earlier stages of clinical development, primarily due to the increased size and duration of later-stage clinical trials. We expect to continue to incur significant research and development expenses in the foreseeable future as we continue to manage our existing clinical trials, initiate additional clinical trials for certain product candidates, pursue later stages of clinical development for certain product candidates, maintain our manufacturing capabilities and continue to discover and develop additional product candidates in multiple therapeutic areas.

General and Administrative Expenses

General and administrative expenses consist primarily of compensation-related expenses, including salaries, bonuses, share-based compensation and other related benefits costs for personnel in our executive, finance, corporate, legal and administrative functions, as well as compensation-related expenses for our board of directors. General and administrative expenses also include legal fees; expenses associated with being a public company; professional fees for accounting, auditing, tax and consulting services; insurance costs; travel expenses; other operating costs; and facility-related expenses.

Other Income, Net

Other income, net is comprised primarily of dividend income and refundable tax credits from tax authorities. We recognize refundable tax credits when there is reasonable assurance that we will comply with the requirements of the refundable tax credit and that the refundable tax credit will be received.

Income Taxes

We are a Singapore multi-national company subject to taxation in the United States and various other jurisdictions.

Critical Accounting Policies and Significant Judgments and Estimates

Our consolidated financial statements are prepared in accordance with generally accepted accounting principles in the United States of America. The preparation of our financial statements and related disclosures requires us to make estimates and assumptions that affect the reported amount of assets, liabilities, revenue, costs and expenses and related disclosures. Management considers many factors in selecting appropriate financial accounting policies and in developing the estimates and assumptions that are used in the preparation of the financial statements. Management must apply significant judgment in this process. We believe that our revenue recognition policy, particularly (a) assessing the number of performance obligations; (b) determining the transaction price; (c) allocating the transaction price to the performance obligations in the contract; and (d) determining the pattern over which performance obligations are satisfied, including estimates to complete performance obligations, and the assumptions and estimates used in our analysis of contracts with CROs and CMOs to estimate the contract expense, involve a greater degree of judgment, and therefore we consider them to be our critical accounting policies. We evaluate our estimates and assumptions on an ongoing basis. Our actual results may differ from these estimates under different assumptions and conditions.

Results of Operations

Comparison of the three months ended March 31, 2023 and 2022

	Three Months Ended March 31,		
	2023	2022	Change
		(in thousands)	
Revenue	$ 12,929	$ 1,750	$ 11,179
Operating expenses:			
Research and development	30,979	27,470	3,509
General and administrative	12,235	12,374	(139)
Total operating expenses	43,214	39,844	3,370
Loss from operations	(30,285)	(38,094)	7,809
Total other income, net	2,880	280	2,600
Loss before income taxes	(27,405)	(37,814)	10,409
Income tax provision	—	—	—
Net loss	$ (27,405)	$ (37,814)	$ 10,409

Revenue

During the three months ended March 31, 2023, revenue of $12.9 million was earned under the GSK Collaboration Agreement and the Takeda Collaboration Agreement. During the three months ended March 31, 2022, revenue of $1.8 million was earned primarily under the Takeda Collaboration Agreement only, as the GSK Collaboration Agreement became effective in January 2023. The year-over-year increase is primarily driven by the revenue earned under the GSK Collaboration Agreement.

Research and Development Expenses

	Three Months Ended March 31,		
	2023	2022	Change
		(in thousands)	
ALS and FTD program	$ 2,717	$ 1,739	$ 978
HD programs	3,322	2,193	1,129
DMD programs	314	425	(111)
AATD program	1,568	311	1,257
PRISM and other research and development expenses (1)	23,058	22,802	256
Total research and development expenses	$ 30,979	$ 27,470	$ 3,509

(1) Includes expenses related to discovery and development programs, identification of potential drug discovery candidates, compensation, internal manufacturing, equipment repairs and maintenance, facilities and other operating expenses, which are not allocated to specific programs.

Research and development expenses were $31.0 million for the three months ended March 31, 2023, compared to $27.5 million for the three months ended March 31, 2022. The increase of $3.5 million was due to the following:

- an increase of $1.0 million in external expenses related to our ALS and FTD program, WVE-004 (PN-modified silencing oligonucleotide);
- an increase of $1.1 million in external expenses related to our HD programs, including our WVE-003 (PN-modified silencing oligonucleotide) program;
- a decrease of $0.1 million in external expenses related to our DMD programs, including WVE-N531 (PN-modified splicing oligonucleotide);
- an increase of $1.3 million in external expenses related to our AATD program, WVE-006 (PN-modified RNA editing oligonucleotide); and
- an increase of $0.3 million in internal and external research and development expenses that are not allocated on a program-by-program basis and are related to other discovery and development programs, including PRISM and the identification of potential drug discovery candidates, mainly due to increases in compensation-related expenses and facilities-related expenses, partially offset by decreases in other external research and development expenses.

General and Administrative Expenses

General and administrative expenses were $12.2 million for the three months ended March 31, 2023, as compared to $12.4 million for the three months ended March 31, 2022. The decrease is primarily driven by decreases in compensation-related expenses and other external general and administrative expenses, partially offset by increases in facilities-related expenses.

Other Income, Net

Other income, net for the three months ended March 31, 2023 and 2022 was $2.9 million and $0.3 million, respectively, and consisted of dividend income and estimated refundable tax credits. The increase in other income year-over-year was driven by increases in dividend income and estimated refundable tax credits.

Income Tax Provision

During the three months ended March 31, 2023 and 2022, we recorded no income tax provision. We maintained a full valuation allowance for the three months ended March 31, 2023 and 2022 in all jurisdictions due to uncertainty regarding future taxable income.

Liquidity and Capital Resources

Since our inception, we have not generated any product revenue and have incurred recurring net losses. To date, we have primarily funded our operations through public and other registered offerings of our ordinary shares, collaborations with third parties and private placements of debt and equity securities. Through March 31, 2023, we have received an aggregate of approximately $1,191.2 million in net proceeds from these transactions, consisting of $630.9 million in net proceeds from public and other registered offerings of our ordinary shares, $471.0 million from our collaborations and $89.3 million in net proceeds from private placements of our debt and equity securities.

As of March 31, 2023, we had cash and cash equivalents totaling $207.6 million, restricted cash of $4.7 million and an accumulated deficit of $994.7 million.

We expect that our existing cash and cash equivalents will be sufficient to fund our operations for at least the next twelve months. We have based this expectation on assumptions that may prove to be incorrect, and we may use our available capital resources sooner than we currently expect. In addition, we may elect to raise additional funds before we need them if the conditions for raising capital are favorable due to market conditions or strategic considerations, even if we expect we have sufficient funds for our current or future operating plans.

Our operating lease commitments as of March 31, 2023 total approximately $45.2 million, of which $6.8 million is related to payments in 2023 and $38.4 million is related to payments beyond 2023.

Until we can generate significant revenue from product sales, if ever, we expect to continue to finance our operations through a combination of public or private equity or debt financings or other sources, which may include collaborations with third parties. In May 2019, we filed a shelf registration statement on Form S-3ASR with the SEC pursuant to which we registered for sale an indeterminate amount of any combination of our ordinary shares, debt securities, warrants, rights and/or units from time to time and at prices and on terms that we may determine. Our shelf registration statement on Form S-3ASR also included a prospectus covering up to an aggregate of $250.0 million in ordinary shares that we may issue and sell from time to time, through Jefferies LLC (“Jefferies”) acting as our sales agent, pursuant to the open market sales agreement that we entered into with Jefferies in May 2019, as amended in March 2020 and March 2022 (as amended, the “Sales Agreement”), for our “at-the-market” equity program. Since we no longer qualified as a “well-known seasoned issuer” at the time of the filing of our Annual Report on Form 10-K for the year ended December 31, 2019, we previously amended the shelf registration statement to register for sale up to $500.0 million of any combination of our ordinary shares, debt securities, warrants, rights and/or units from time to time and at prices and on terms that we may determine, including the $250.0 million in ordinary shares that we may issue and sell from time to time pursuant to our “at-the-market” equity program. This registration statement, which we refer to as the “2019 Form S-3,” remained effective until our 2022 Form S-3 (as defined below) was declared effective on May 4, 2022, after which time we may no longer offer or sell any securities under the 2019 Form S-3.

On March 3, 2022, we filed a new universal shelf registration on Form S-3 with the SEC, which was declared effective by the SEC on May 4, 2022, pursuant to which we registered for sale up to $500.0 million of any combination of our ordinary shares, debt securities, warrants, rights and/or units from time to time and at prices and on terms that we may determine, which we refer to as the “2022 Form S-3.” The 2022 Form S-3 includes a prospectus covering up to approximately $132.0 million in ordinary shares that had not yet been issued or sold under our Sales Agreement with Jefferies. As of March 31, 2023, we have $430.0 million in securities available for issuance under the 2022 Form S-3, including approximately $132.0 million in ordinary shares available for issuance under our at-the-market equity program.

Adequate additional financing may not be available to us on acceptable terms, or at all. Our inability to raise capital as and when needed would have a negative impact on our financial condition and our ability to pursue our business strategy. We will need to generate significant revenue to achieve profitability, and we may never do so.

Cash Flows

The following table summarizes our cash flow activity:

	Three Months Ended March 31,	
	2023	2022
	(in thousands)	
Net cash provided by (used in) operating activities	$ 85,522	$ (39,873)
Net cash used in investing activities	(489)	(50,208)
Net cash provided by financing activities	35,053	1,316
Effect of foreign exchange rates on cash, cash equivalents and restricted cash	(21)	(86)
Net increase (decrease) in cash, cash equivalents and restricted cash	$ 120,065	$ (88,851)

Operating Activities

During the three months ended March 31, 2023, operating activities provided $85.5 million of cash, primarily due to the $126.4 million increase in deferred revenue, driven by our GSK Collaboration Agreement, which became effective in January 2023, partially offset by our net loss of $27.4 million, the $9.9 million decrease in accrued expenses and other current liabilities and the $4.7 million decrease in accounts payable.

During the three months ended March 31, 2022, operating activities used $39.9 million of cash, primarily due to our net loss of $37.8 million.

Investing Activities

During the three months ended March 31, 2023, investing activities used $0.5 million of cash, related to purchases of property and equipment.

During the three months ended March 31, 2022, investing activities used $50.2 million of cash, of which $50.0 million related to purchases of short-term investments and $0.2 million related to purchases of property and equipment.

Financing Activities

During the three months ended March 31, 2023, net cash provided by financing activities was $35.1 million, which was primarily due to the GSK Equity Investment (as defined in Note 5).

During the three months ended March 31, 2022, net cash provided by financing activities was $1.3 million, which was primarily due to the net proceeds from sales of ordinary shares under our “at-the-market” equity program.

Funding Requirements

We expect to continue to incur significant expenses in connection with our ongoing research and development activities and our internal cGMP manufacturing activities. Furthermore, we anticipate that our expenses will continue to vary if and as we:

- continue to conduct our clinical trials evaluating our product candidates in patients;
- conduct research and preclinical development of discovery targets and advance additional programs into clinical development;
- file clinical trial applications with global regulatory agencies and conduct clinical trials for our programs;
- make strategic investments in continuing to innovate our research and development platform, PRISM, and in optimizing our manufacturing processes and formulations;
- maintain our manufacturing capabilities through our internal facility and our CMOs;
- maintain our intellectual property portfolio and consider the acquisition of complementary intellectual property;
- seek and obtain regulatory approvals for our product candidates;
- respond to the impacts of the COVID-19 global pandemic, the conflict involving Russia and Ukraine, global economic uncertainty, rising inflation, rising interest rates or market disruptions on our business; and
- establish and build capabilities to market, distribute and sell our product candidates.

We may experience delays or encounter issues with any of the above, including but not limited to failed studies, complex results, safety issues or other regulatory challenges.

Because of the numerous risks and uncertainties associated with the development of drug candidates and because the extent to which we may enter into collaborations with third parties for development of product candidates is unknown, we are unable to estimate the amounts of future capital outlays and operating expenses associated with completing the research and development for our therapeutic programs. Our future capital requirements for our therapeutic programs will depend on many factors, including:

- the progress, results and costs of conducting research and continued preclinical and clinical development for our therapeutic programs and future potential pipeline candidates;
- the number and characteristics of product candidates and programs that we pursue;
- the cost of manufacturing clinical supplies of our product candidates;
- whether and to what extent milestone events are achieved under our collaborations with Takeda and GSK or any potential future licensee or collaborator;
- the costs, timing and outcome of regulatory review of our product candidates;
- our ability to obtain marketing approval for our product candidates;
- the impacts of the COVID-19 global pandemic, the conflict involving Russia and Ukraine, global economic uncertainty, rising inflation, rising interest rates or market disruptions on our business;
- the costs and timing of future commercialization activities, including manufacturing, marketing, sales and distribution, for any of our product candidates for which we receive marketing approval;
- market acceptance of our product candidates, to the extent any are approved for commercial sale, and the revenue, if any, received from commercial sales of our product candidates for which we receive marketing approval;
- the costs and timing of preparing, filing and prosecuting patent applications, maintaining and enforcing our intellectual property rights and defending any intellectual property-related claims;
- the effect of competing technological and market developments; and
- the extent to which we acquire or invest in businesses, products and technologies, including entering into licensing or collaboration arrangements for product candidates.

Identifying potential product candidates and conducting preclinical testing and clinical trials is a time-consuming, expensive and uncertain process that takes years to complete, and we may never generate the necessary data or results required to obtain marketing approval and achieve product sales. In addition, our product candidates, if approved, may not achieve commercial success. Our product revenue, if any, will be derived from sales of products that we do not expect to be commercially available for many years, if ever. Accordingly, we will need to obtain substantial additional funds to achieve our business objectives.

Adequate additional funds may not be available to us on acceptable terms when we need them, or at all. We do not currently have any committed external source of funds, except for possible future payments from Takeda or GSK under our collaborations with them. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the ownership interest of our existing shareholders will be diluted, and the terms may include liquidation or other preferences that adversely affect the rights of our shareholders. Additional debt financing and preferred equity financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends and may require the issuance of warrants, which could potentially dilute our shareholders' ownership interests.

If we raise additional funds through collaborations, strategic alliances or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams, research programs or product candidates or grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds through equity or debt financings when needed, we may be required to delay, limit, reduce or terminate our product development programs or any future commercialization efforts or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

Market risk represents the risk of loss that may impact our financial position due to adverse changes in financial market prices and rates. Our market risk exposure is primarily the result of fluctuations in interest rates and foreign exchange rates, as well as, to a lesser extent, inflation and capital market risk.

Interest Rate Risk

We are exposed to interest rate risk in the ordinary course of our business. Our cash and cash equivalents are comprised of funds held in checking accounts and money market accounts.

Foreign Currency Risk

Due to our operations outside of the United States, we are exposed to market risk related to changes in foreign currency exchange rates. Historically, we have not hedged our foreign currency exposure. Changes in the relative values of currencies occur regularly and, in some instances, could materially adversely affect our business, our financial conditions, our results of operations or our cash flows. For the three months ended March 31, 2023 and 2022, changes in foreign currency exchange rates did not have a material impact on our historical financial position, our business, our financial condition, our results of operations or our cash flows.

Inflation Risk

We do not believe that inflation had a material effect on our business, financial condition, results of operations or cash flows in the last two years. If global inflation trends continue, we expect appreciable increases in clinical trial, labor, and other operating costs.

Capital Market Risk

We currently have no product revenues and depend on funds raised through other sources. One possible source of funding is through further equity offerings. Our ability to raise funds in this manner depends upon capital market forces affecting our share price, including impacts of the COVID-19 pandemic and global economic uncertainty on the capital markets.

Item 4. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our principal executive officer and principal financial officer, evaluated the effectiveness of our disclosure controls and procedures as of March 31, 2023. The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to its management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of March 31, 2023, our principal executive officer and principal financial officer concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting identified in connection with the evaluation of such internal control required by Rule 13a-15(d) and 15d-15(d) of the Exchange Act that occurred during the three months ended March 31, 2023 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II – OTHER INFORMATION

Item 1. Legal Proceedings

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

Item 1A. Risk Factors

In addition to the other information set forth in this Quarterly Report on Form 10-Q, you should carefully consider the factors discussed under the caption "Risk Factors" that appear in Item 1A of our 2022 Annual Report on Form 10-K.

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

Recent Sales of Unregistered Equity Securities

None.

Issuer Purchases of Equity Securities

We did not repurchase any of our equity securities during the three months ended March 31, 2023.

Item 3. Defaults Upon Senior Securities

None.

Item 4. Mine Safety Disclosures

Not applicable.

Item 5. Other Information

None.

Item 6. Exhibits

Exhibit Number	Exhibit Description	Filed with this Report	Incorporated by Reference herein from Form or Schedule	Filing Date	SEC File/Reg. Number
10.1	Investor Agreement by and between Glaxo Group Limited and the Registrant, dated as of January 26, 2023		Form 10-K (Exhibit 10.5)	03/23/2023	001-37627
31.1	Rule 13a-14(a)/15d-14(a) Certification of Principal Executive Officer	X			
31.2	Rule 13a-14(a)/15d-14(a) Certification of Principal Financial Officer	X			
32*	Section 1350 Certifications of Principal Executive Officer and Principal Financial Officer	X			
101.INS	Inline XBRL Instance Document – The instance document does not appear in the interactive data file because its Inline XBRL tags are embedded within the Inline XBRL document	X			
101.SCH	Inline XBRL Taxonomy Extension Schema Document	X			
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document	X			
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document	X			
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document	X			
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document	X			
104	Cover Page Interactive Data File (formatted in Inline XBRL and contained in Exhibit 101)	X			

(*) The certifications attached as Exhibit 32 that accompany this Quarterly Report on Form 10-Q are not deemed filed with the Securities and Exchange Commission and are not to be incorporated by reference into any filing of Wave Life Sciences Ltd. 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 such Form 10-Q), irrespective of any general incorporation language contained in such filing.

SIGNATURES

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

WAVE LIFE SCIENCES LTD.

Date: May 3, 2023

By: /s/ Paul B. Bolno, M.D., MBA

Paul B. Bolno, M.D., MBA
President and Chief Executive Officer
(Principal Executive Officer)

Date: May 3, 2023

By: /s/ Kyle Moran

Kyle Moran
Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)

Exhibit 31.1

CERTIFICATIONS UNDER SECTION 302

I, Paul B. Bolno, M.D., MBA, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Wave Life Sciences Ltd.;
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.

Dated: May 3, 2023

By: /s/ Paul B. Bolno, M.D., MBA
Paul B. Bolno, M.D., MBA
President and Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATIONS UNDER SECTION 302

I, Kyle Moran, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Wave Life Sciences Ltd.;

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.

Dated: May 3, 2023

By: /s/ Kyle Moran
Kyle Moran
Chief Financial Officer
(Principal Financial Officer)

Exhibit 32

CERTIFICATIONS UNDER SECTION 906

Pursuant to section 906 of the Sarbanes-Oxley Act of 2002 (subsections (a) and (b) of section 1350, chapter 63 of title 18, United States Code), each of the undersigned officers of Wave Life Sciences Ltd. (the "Company"), does hereby certify, to such officer's knowledge, that:

The Quarterly Report for the quarter ended March 31, 2023 (the "Form 10-Q") of the Company fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, and the information contained in the Form 10-Q fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: May 3, 2023

/s/ Paul B. Bolno, M.D., MBA

Paul B. Bolno, M.D., MBA
President and Chief Executive Officer
(Principal Executive Officer)

Dated: May 3, 2023

/s/ Kyle Moran

Kyle Moran
Chief Financial Officer
(Principal Financial Officer)