# UNITED STATES
# SECURITIES AND EXCHANGE COMMISSION

**Washington, DC 20549**

# Form 10-Q

**(Mark One)**

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

**For the Quarterly Period Ended June 30, 2026**

**OR**

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

**For the transition period from _____ to _____**

**Commission file number 000-19125**

# Ionis Pharmaceuticals, Inc.

(Exact name of Registrant as specified in its charter)

| **Delaware** | **33-0336973** |
|---|---|
| (State or other jurisdiction of incorporation or organization) | (IRS Employer Identification No.) |
| **2855 Gazelle Court, Carlsbad, California** | **92010** |
| (Address of Principal Executive Offices) | (Zip Code) |

**760-931-9200**

(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 |
|---|---|---|
| Common Stock, $.001 Par Value | "IONS" | The Nasdaq Stock Market LLC |

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted and posted 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, 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 ☐<br>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 12(b)-2 of the Securities Exchange Act of 1934). Yes ☐ No ☒

The number of shares of voting common stock outstanding as of July 23, 2026 was 166,184,322.

**IONIS PHARMACEUTICALS, INC.**
**FORM 10-Q**
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**TRADEMARKS**

"Ionis," the Ionis logo, and other trademarks or service marks of Ionis Pharmaceuticals, Inc. appearing in this report are the property of Ionis Pharmaceuticals, Inc. "Akcea," the Akcea logo, and other trademarks or service marks of Akcea Therapeutics, Inc. appearing in this report are the property of Akcea Therapeutics, Inc., Ionis' wholly owned subsidiary. This report contains additional trade names, trademarks and service marks of others, which are the property of their respective owners. Solely for convenience, trademarks and trade names referred to in this report may appear without the ® or TM symbols.

**PART I — FINANCIAL INFORMATION**

**ITEM 1. FINANCIAL STATEMENTS**

**IONIS PHARMACEUTICALS, INC.**
**CONDENSED CONSOLIDATED BALANCE SHEETS**
**(in thousands, except share data)**

| | June 30, 2026 | December 31, 2025 |
|---|---|---|
| | (unaudited) | |
| **ASSETS** | | |
| Current assets: | | |
| Cash and cash equivalents | $ 350,065 | $ 372,260 |
| Short-term investments | 1,704,520 | 2,305,176 |
| Contracts receivable | 58,845 | 66,059 |
| Inventories | 50,833 | 10,048 |
| Other current assets | 327,011 | 237,092 |
| Total current assets | 2,491,274 | 2,990,635 |
| Property, plant and equipment, net | 155,131 | 123,048 |
| Right-of-use assets | 231,560 | 238,549 |
| Deposits and other assets | 116,536 | 171,604 |
| Total assets | $ 2,994,501 | $ 3,523,836 |
| | | |
| **LIABILITIES AND STOCKHOLDERS' EQUITY** | | |
| Current liabilities: | | |
| Accounts payable | $ 47,704 | $ 28,082 |
| Accrued compensation | 50,293 | 116,236 |
| Accrued liabilities | 115,778 | 106,089 |
| Income taxes payable | 2,877 | 2,713 |
| 0 percent convertible senior notes due April 2026, net | - | 431,948 |
| Current portion of deferred contract revenue | 73,837 | 73,761 |
| Other current liabilities | 25,149 | 22,738 |
| Total current liabilities | 315,638 | 781,567 |
| Long-term deferred contract revenue | 63,030 | 92,001 |
| 0 percent convertible senior notes due 2030, net | 753,356 | 751,495 |
| 1.75 percent convertible senior notes due 2028, net | 569,255 | 567,830 |
| Liability related to sale of future royalties, net | 562,574 | 551,353 |
| Long-term lease liabilities | 262,476 | 262,383 |
| Long-term obligations | 28,435 | 28,118 |
| Total liabilities | 2,554,764 | 3,034,747 |
| Stockholders' equity: | | |
| Common stock, $0.001 par value; 300,000,000 shares authorized, 165,636,792 and 163,304,875 shares issued and outstanding at June 30, 2026 and December 31, 2025, respectively | 166 | 163 |
| Additional paid-in capital | 3,311,837 | 3,145,402 |
| Accumulated other comprehensive loss | (33,897) | (25,281) |
| Accumulated deficit | (2,838,369) | (2,631,195) |
| Total stockholders' equity | 439,737 | 489,089 |
| Total liabilities and stockholders' equity | $ 2,994,501 | $ 3,523,836 |

See accompanying notes.

**IONIS PHARMACEUTICALS, INC.**
**CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS**
**(in thousands, except per share amounts)**
**(Unaudited)**

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Revenue: | | | | |
| Commercial revenue: | | | | |
| Product sales, net | $ 31,139 | $ 19,273 | $ 74,094 | $ 25,561 |
| Royalty revenue | 75,958 | 69,952 | 134,282 | 134,117 |
| Other commercial revenue | 11,526 | 13,531 | 18,058 | 19,246 |
| Total commercial revenue | 118,623 | 102,756 | 226,434 | 178,924 |
| Research and development revenue: | | | | |
| Collaborative agreement revenue | 133,137 | 336,921 | 253,797 | 381,951 |
| WAINUA joint development revenue | 16,189 | 12,372 | 33,811 | 22,785 |
| Total research and development revenue | 149,326 | 349,293 | 287,608 | 404,736 |
| Total revenue | 267,949 | 452,049 | 514,042 | 583,660 |
| Expenses: | | | | |
| Cost of sales | 2,739 | 4,151 | 5,721 | 5,614 |
| Research, development and patent | 217,107 | 217,460 | 427,280 | 418,219 |
| Selling, general and administrative | 150,396 | 90,622 | 300,755 | 166,872 |
| Total operating expenses | 370,242 | 312,233 | 733,756 | 590,705 |
| Income (loss) from operations | (102,293) | 139,816 | (219,714) | (7,045) |
| Other income (expense): | | | | |
| Investment income | 20,230 | 24,687 | 45,713 | 49,354 |
| Interest expense | (4,618) | (4,114) | (9,778) | (8,223) |
| Interest expense related to sale of future royalties | (17,506) | (18,648) | (34,843) | (37,470) |
| Gain (loss) on investments, net | (10,182) | (18,312) | 12,401 | (20,476) |
| Other income, net | 987 | 102 | 529 | 569 |
| Income (loss) before income tax benefit (expense) | (113,382) | 123,531 | (205,692) | (23,291) |
| Income tax benefit (expense) | (1,264) | 20 | (1,482) | (96) |
| Net income (loss) | $ (114,646) | $ 123,551 | $ (207,174) | $ (23,387) |
| Basic net income (loss) per share | $ (0.69) | $ 0.78 | $ (1.25) | $ (0.15) |
| Diluted net income (loss) per share | $ (0.69) | $ 0.70 | $ (1.25) | $ (0.15) |
| Shares used in computing basic net income (loss) per share | 165,419 | 159,137 | 165,148 | 158,937 |
| Shares used in computing diluted net income (loss) per share | 165,419 | 182,331 | 165,148 | 158,937 |

See accompanying notes.

**IONIS PHARMACEUTICALS, INC.**
**CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)**
**(in thousands)**
**(Unaudited)**

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | **2026** | **2025** | **2026** | **2025** |
| Net income (loss) | $ (114,646) | $ 123,551 | $ (207,174) | $ (23,387) |
| Unrealized gains (losses) on debt securities, net of tax | (2,824) | 367 | (8,428) | 1,997 |
| Currency translation adjustment | (50) | 595 | (188) | 827 |
| Comprehensive income (loss) | $ (117,520) | $ 124,513 | $ (215,790) | $ (20,563) |

See accompanying notes.

**IONIS PHARMACEUTICALS, INC.**
**CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY**
**(in thousands)**
**(Unaudited)**

| Description | Common Stock Shares | Common Stock Amount | Additional Paid in Capital | Accumulated Other Comprehensive Loss | Accumulated Deficit | Total Stockholders' Equity |
|---|---|---|---|---|---|---|
| **Balance at March 31, 2025** | 159,041 | $ 159 | $ 2,901,262 | $ (28,949) | $ (2,396,746) | $ 475,726 |
| Net income | - | - | - | - | 123,551 | 123,551 |
| Change in unrealized gains, net of tax | - | - | - | 367 | - | 367 |
| Foreign currency translation | - | - | - | 595 | - | 595 |
| Issuance of common stock in connection with employee stock plans, net | 156 | - | 1,286 | - | - | 1,286 |
| Stock-based compensation expense | - | - | 30,199 | - | - | 30,199 |
| **Balance at June 30, 2025** | 159,197 | $ 159 | $ 2,932,747 | $ (27,987) | $ (2,273,195) | $ 631,724 |
| | | | | | | |
| **Balance at March 31, 2026** | 165,902 | $ 166 | $ 3,245,994 | $ (31,023) | $ (2,723,723) | $ 491,414 |
| Net loss | - | - | - | - | (114,646) | (114,646) |
| Change in unrealized losses, net of tax | - | - | - | (2,824) | - | (2,824) |
| Foreign currency translation | - | - | - | (50) | - | (50) |
| Issuance of common stock in connection with employee stock plans, net | 568 | - | 20,258 | - | - | 20,258 |
| Stock-based compensation expense | - | - | 45,595 | - | - | 45,595 |
| Shares issued to settle conversion obligation of 0 percent convertible senior notes due 2026, net | 1,798 | (2) | (13) | - | - | (15) |
| Retirement of shares received from the exercise of bond hedges related to 0 percent convertible senior notes due 2026 | (2,631) | 2 | 3 | - | - | 5 |
| **Balance at June 30, 2026** | 165,637 | $ 166 | $ 3,311,837 | $ (33,897) | $ (2,838,369) | $ 439,737 |

See accompanying notes.

**IONIS PHARMACEUTICALS, INC.**
**CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY**
**(in thousands)**
**(Unaudited)**

| Description | Common Stock | | Additional Paid in Capital | Accumulated Other Comprehensive Loss | Accumulated Deficit | Total Stockholders' Equity |
|---|---|---|---|---|---|---|
| | Shares | Amount | | | | |
| **Balance at December 31, 2024** | 157,909 | $ 158 | $ 2,868,812 | $ (30,811) | $ (2,249,808) | $ 588,351 |
| Net loss | - | - | - | - | (23,387) | (23,387) |
| Change in unrealized gains, net of tax | - | - | - | 1,997 | - | 1,997 |
| Foreign currency translation | - | - | - | 827 | - | 827 |
| Issuance of common stock in connection with employee stock plans, net | 1,288 | 1 | 3,527 | - | - | 3,528 |
| Stock-based compensation expense | - | - | 60,408 | - | - | 60,408 |
| **Balance at June 30, 2025** | 159,197 | $ 159 | $ 2,932,747 | $ (27,987) | $ (2,273,195) | $ 631,724 |
| | | | | | | |
| **Balance at December 31, 2025** | 163,305 | $ 163 | $ 3,145,402 | $ (25,281) | $ (2,631,195) | $ 489,089 |
| Net loss | - | - | - | - | (207,174) | (207,174) |
| Change in unrealized losses, net of tax | - | - | - | (8,428) | - | (8,428) |
| Foreign currency translation | - | - | - | (188) | - | (188) |
| Issuance of common stock in connection with employee stock plans, net | 3,165 | 3 | 77,557 | - | - | 77,560 |
| Stock-based compensation expense | - | - | 88,888 | - | - | 88,888 |
| Shares issued to settle conversion obligation of 0 percent convertible senior notes due 2026, net | 1,798 | (2) | (13) | - | - | (15) |
| Retirement of shares received from the exercise of bond hedges related to 0 percent convertible senior notes due 2026 | (2,631) | 2 | 3 | - | - | 5 |
| **Balance at June 30, 2026** | 165,637 | $ 166 | $ 3,311,837 | $ (33,897) | $ (2,838,369) | $ 439,737 |

See accompanying notes.

**IONIS PHARMACEUTICALS, INC.**
**CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS**
**(in thousands)**
**(Unaudited)**

| | Six Months Ended June 30, | |
|---|---|---|
| | **2026** | **2025** |
| **Operating activities:** | | |
| Net loss | $ (207,174) | $ (23,387) |
| Adjustments to reconcile net loss to net cash used in operating activities: | | |
| Depreciation | 6,734 | 4,494 |
| Amortization of right-of-use operating lease assets | 6,990 | 5,177 |
| Amortization of other assets | 1,361 | 1,180 |
| Amortization of discount on investments, net | (9,533) | (12,978) |
| Amortization of debt issuance costs | 4,150 | 3,288 |
| Non-cash royalty revenue related to sale of royalties | (22,387) | (24,894) |
| Non-cash interest related to sale of future royalties | 34,538 | 37,165 |
| Stock-based compensation expense | 88,870 | 59,408 |
| Loss (gain) on investments, net | (12,401) | 20,471 |
| Non-cash losses related to other assets | 481 | 297 |
| Changes in operating assets and liabilities: | | |
| Contracts receivable | 7,214 | 39,608 |
| Inventories | (24,626) | (12,465) |
| Other current and long-term assets | (38,265) | (22,536) |
| Accounts payable | 18,583 | (20,309) |
| Income taxes | 164 | 47 |
| Accrued compensation | (65,943) | (23,050) |
| Accrued liabilities and other liabilities | 12,851 | 3,535 |
| Deferred contract revenue | (28,895) | (34,488) |
| Net cash provided by (used in) operating activities | (227,288) | 563 |
| | | |
| **Investing activities:** | | |
| Purchases of short-term investments | (513,005) | (802,657) |
| Proceeds from sale of short-term investments | 1,114,805 | 880,545 |
| Purchases of property, plant and equipment | (37,843) | (24,882) |
| Acquisition of licenses and other assets, net | (3,640) | (2,615) |
| Net cash provided by investing activities | 560,317 | 50,391 |
| | | |
| **Financing activities:** | | |
| Proceeds from issuance of common stock through equity plans, net | 77,560 | 3,528 |
| Repayment of 0 percent convertible senior notes due 2026 | (432,511) | - |
| Principal payments on mortgage debt | (85) | (82) |
| Net cash provided by (used in) financing activities | (355,036) | 3,446 |
| | | |
| Effects of exchange rates on cash | (188) | 827 |
| | | |
| Net increase (decrease) in cash and cash equivalents | (22,195) | 55,227 |
| Cash and cash equivalents at beginning of period | 372,260 | 242,077 |
| Cash and cash equivalents at end of period | $ 350,065 | $ 297,304 |
| | | |
| **Supplemental disclosures of cash flow information:** | | |
| Interest paid | $ 5,212 | $ 5,214 |
| Income taxes paid (refunds received), net | $ 1,200 | $ (383) |
| | | |
| **Supplemental disclosures of non-cash investing and financing activities:** | | |
| Right-of-use assets obtained in exchange for lease obligations | $ - | $ 7,253 |
| Amounts accrued for capital and patent expenditures | $ 1,042 | $ 145 |

See accompanying notes.

**IONIS PHARMACEUTICALS, INC.**
**NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS**
**June 30, 2026**
**(Unaudited)**

## 1. Organization and Basis of Presentation

### Organization and Business Activity

We incorporated in California on January 10, 1989. In conjunction with our initial public offering, we reorganized as a Delaware corporation in April 1991. We are a fully integrated commercial-stage biotechnology company and a leader in the discovery and development of RNA-targeted therapeutics.

### Basis of Presentation

We prepared the unaudited interim condensed consolidated financial statements for the three and six months ended June 30, 2026 and 2025 on the same basis as the audited financial statements for the year ended December 31, 2025. We included all normal recurring adjustments in the financial statements, which we considered necessary for a fair presentation of our financial position at such dates and our operating results and cash flows for those periods. Our operating results for the interim periods may not be indicative of what our operating results will be for the entire year. For more complete financial information, these financial statements, and notes thereto, should be read in conjunction with the audited financial statements for the year ended December 31, 2025 included in our Annual Report on Form 10-K filed with the Securities and Exchange Commission, or SEC.

In our condensed consolidated financial statements, we included the accounts of Ionis Pharmaceuticals, Inc. and the consolidated results of its wholly owned subsidiaries (“we”, “us” or “our”).

We operate as a single segment, Ionis operations, because our chief operating decision maker, or CODM, reviews operating results on an aggregate basis and manages our operations as a single operating segment. Refer to Note 13, *Segment Information*, for further details on our segment information.

### Use of Estimates

We prepare our condensed consolidated financial statements in conformity with accounting principles generally accepted in the United States, or U.S., that require us to make estimates and assumptions that affect the amounts reported in our condensed consolidated financial statements and accompanying notes. Actual results could differ from our estimates.

## 2. Significant Accounting Policies

Our significant accounting policies have not changed substantially from those included in our Annual Report on Form 10-K for the year ended December 31, 2025.

### Recent Accounting Standards

In July 2025, the FASB issued ASU 2025-05, which amended the guidance in ASC 326 to simplify the estimation of credit losses on accounts receivable and contract assets from revenue transactions. The amended guidance allows companies to elect a practical expedient to assume that conditions as of the balance sheet date will remain unchanged for the remaining life of the asset when estimating the expected credit losses of the asset. This update is effective for annual periods beginning after December 15, 2025 and interim periods within those annual periods. Companies that elect the practical expedient are required to apply the amendments prospectively. We adopted this update in the first quarter of 2026 on a prospective basis and elected the practical expedient. The updated guidance did not have a material impact on our condensed consolidated financial statements.

In September 2025, the FASB issued ASU 2025-06, which amended and simplified the existing guidance for software costs. The amended guidance removes references to software development stages and allows companies to begin capitalizing software costs when management has authorized and committed to funding the software project and it is probable that the project will be completed with the software performing the intended function. This update is effective for annual periods beginning after December 15, 2027 and interim periods within those annual periods. Early adoption of this guidance is permitted at the beginning of an annual reporting period. The guidance may be applied on a prospective or retrospective basis. We early adopted this update in the first quarter of 2026 on a prospective basis. The updated guidance did not have a material impact on our condensed consolidated financial statements.

We do not expect any recently issued accounting standards other than the standards mentioned above and those included in our Annual Report on Form 10-K for the year ended December 31, 2025 to have a material impact to our financial results.

## 3. Supplemental Financial Data

### Inventories

Our inventories consisted of the following (in thousands):

| | June 30, 2026 | December 31, 2025 |
|---|---|---|
| Raw materials | $ 789 | $ 1,039 |
| Work in process | 49,465 | 24,051 |
| Finished goods | 579 | 1,096 |
| Total | $ 50,833 | $ 26,186 |
| Reported as: | | |
| Inventories | $ 50,833 | $ 10,048 |
| Deposits and other assets | - | 16,138 |
| Total | $ 50,833 | $ 26,186 |

We classify inventories as non-current assets when we expect the inventories to remain on hand beyond one year. We include non-current inventories in deposits and other assets in our condensed consolidated balance sheets. As a result of the FDA approval of TRYNGOLZA for the treatment of severe hypertriglyceridemia, or sHTG, in June 2026, we expect to utilize inventories on hand as of June 30, 2026 within one year. The amounts reported as deposits and other assets as of December 31, 2025 consisted of work in process inventory.

### Accrued Liabilities

Our accrued liabilities consisted of the following (in thousands):

| | June 30, 2026 | December 31, 2025 |
|---|---|---|
| Clinical expenses | $ 54,949 | $ 53,659 |
| In-licensing expenses | 9,345 | 8,588 |
| Commercial expenses, including gross-to-net product accruals | 29,341 | 15,556 |
| Other miscellaneous expenses | 22,143 | 28,286 |
| Total accrued liabilities | $ 115,778 | $ 106,089 |

## 4. Revenues

During the three and six months ended June 30, 2026 and 2025, our revenues consisted of the following (in thousands):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Revenue: | | | | |
| Commercial revenue: | | | | |
| Product sales, net: | | | | |
| TRYNGOLZA sales, net | $ 4,574 | $ 19,273 | $ 31,674 | $ 25,561 |
| DAWNZERA sales, net | 26,565 | - | 42,420 | - |
| Total product sales, net | 31,139 | 19,273 | 74,094 | 25,561 |
| Royalty revenue: | | | | |
| SPINRAZA royalties | 53,486 | 54,337 | 97,196 | 102,347 |
| WAINUA royalties | 16,436 | 10,415 | 27,145 | 19,787 |
| Other royalties | 6,036 | 5,200 | 9,941 | 11,983 |
| Total royalty revenue | 75,958 | 69,952 | 134,282 | 134,117 |
| Other commercial revenue | 11,526 | 13,531 | 18,058 | 19,246 |
| Total commercial revenue | 118,623 | 102,756 | 226,434 | 178,924 |
| Research and development revenue: | | | | |
| Collaborative agreement revenue | 133,137 | 336,921 | 253,797 | 381,951 |
| WAINUA joint development revenue | 16,189 | 12,372 | 33,811 | 22,785 |
| Total research and development revenue | 149,326 | 349,293 | 287,608 | 404,736 |
| Total revenue | $ 267,949 | $ 452,049 | $ 514,042 | $ 583,660 |

**Revenue Sources**

The following are sources of revenue and when we typically recognize revenue.

*Commercial Revenue*

In June 2026, the U.S. Food and Drug Administration, or FDA, approved TRYNGOLZA for the treatment of sHTG. Following the approval, we launched TRYNGOLZA for the treatment of sHTG and began earning revenue from TRYNGOLZA sales for the sHTG indication. TRYNGOLZA is also approved in the U.S. for the treatment of familial chylomicronemia syndrome, or FCS. In April 2026, we lowered the Wholesale Acquisition Cost, or WAC, of TRYNGOLZA to address the sHTG population prior to receiving FDA approval. This allowed us to proactively align with annual payer contracting cycles for 2027 and accelerate access following the approval.

In August 2025, the FDA approved DAWNZERA for prophylaxis to prevent attacks of hereditary angioedema, or HAE, in adult and pediatric patients 12 years of age and older. Following the approval, we launched DAWNZERA and began earning revenue from DAWNZERA sales.

We earn royalty payments primarily on net sales of SPINRAZA, WAINUA and QALSODY. We include QALSODY royalties within other royalties in the table above.

We earn commercial revenue from TEGSEDI and WAYLIVRA sales under our distribution agreements with Swedish Orphan Biovitrum AB, or Sobi. In addition, we receive royalties from PTC Therapeutics International Limited, or PTC, for TEGSEDI and WAYLIVRA sales. Refer to Part IV, Item 15, Note 4, *Collaborative Arrangements and Licensing Agreements*, of our audited financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2025 for details on our commercialization partnerships with Sobi and PTC.

Under our distribution agreements with Sobi, we concluded that our performance obligation is to provide services to Sobi over the term of the agreement, which includes supplying finished goods inventory to Sobi. We are also responsible for maintaining the marketing authorization for TEGSEDI and WAYLIVRA in major markets and for leading the global commercial strategy for each medicine. We view this performance obligation as a series of distinct activities that are substantially the same. We recognize as revenue the price Sobi pays us for the inventory when we deliver the finished goods inventory to Sobi. We also recognize distribution fee revenue based on Sobi's net sales of TEGSEDI and WAYLIVRA. Under our agreements with Sobi, Sobi does not generally have a right of return.

*Research and development revenue under collaboration agreements*

We enter into collaboration agreements to license and sell our technology on an exclusive or non-exclusive basis. Our collaboration agreements typically contain multiple elements, or performance obligations, including technology licenses or options to obtain technology licenses, R&D services and manufacturing services.

For R&D services that we recognize over time, we measure our progress using an input method. The input methods we use are based on the effort we expend or costs we incur toward the satisfaction of our performance obligation. We estimate the amount of effort we expend, including the time we estimate it will take us to complete the activities, or costs we incur in a given period, relative to the estimated total effort or costs to satisfy the performance obligation. This results in a percentage that we multiply by the transaction price to determine the amount of revenue we recognize each period. This approach requires us to make numerous estimates and use judgement. If our estimates or judgements change over the course of the collaboration, they may affect the timing and amount of revenue that we recognize in the current and future periods.

*Upfront payments:* When we enter into a collaboration agreement and receive an upfront payment, we record the entire upfront payment as deferred revenue if our only performance obligation is for R&D services we will provide in the future. We amortize the upfront payment into revenue as we perform the R&D services. If part or all of the upfront payment is a license fee, we recognize as revenue the portion related to the license when we deliver the license to our partner because our partner has full use of the license and we do not have any additional performance obligations related to the license after delivery.

*Milestone payments:* We include variable consideration in the transaction price when it is probable. We typically include milestone payments for R&D services in the transaction price when they are achieved. We include these milestone payments when they are achieved because there is considerable uncertainty in the research and development processes that trigger these payments. Similarly, we include regulatory milestone payments in the transaction price once the medicine is approved by the applicable regulatory agency. We will recognize sales-based milestone payments in the period in which we achieve the milestone under the sales-based royalty exception allowed under accounting rules.

We recognize milestone payments that relate to an ongoing performance obligation over our period of performance. For example, when we achieve a milestone payment from a partner for advancing a clinical study under a collaboration agreement, we add the milestone payment to the transaction price if the milestone relates to an ongoing R&D services performance obligation and recognize revenue related to the milestone payment over our estimated period of performance. If we have partially completed our performance obligation, we record a cumulative-effect adjustment in the period we add the milestone payment to the transaction price.

Conversely, we recognize in full those milestone payments that we earn based on our partners' activities when our partner achieves the milestone event and we do not have a remaining performance obligation.

*License fees:* We recognize as revenue the total amount we determine to be the relative stand-alone selling price of a license when we deliver the license to our partner because our partner has full use of the license and we do not have any additional performance obligations related to the license after delivery.

*WAINUA (Eplontersen) Collaboration with AstraZeneca*

In 2021, we entered into a collaboration agreement with AstraZeneca to develop and commercialize WAINUA for the treatment of transthyretin amyloidosis, or ATTR, with the parties sharing responsibility for development, and AstraZeneca having responsibility for commercializing WAINUA. Under the terms of the agreement, we received a $200 million upfront payment in 2021.

At inception of the agreement, we evaluated our WAINUA collaboration under ASC Topic 808, *Collaborative Arrangements*, or ASC 808, and identified four material components: (i) the license we granted to AstraZeneca in 2021, (ii) the shared development activities that we and AstraZeneca were to perform, (iii) the shared commercialization activities that we and AstraZeneca were to perform and (iv) the shared medical affairs activities that we and AstraZeneca were to perform.

We determined that we had a vendor-customer relationship within the scope of ASC Topic 606, *Revenue from Contracts with Customers*, or ASC 606, for the license we granted to AstraZeneca and as a result we had one performance obligation. For our sole performance obligation, we determined the transaction price was the $200 million upfront payment we received. We recognized the upfront payment in full in 2021 because we did not have any remaining performance obligations after we delivered the license to AstraZeneca.

We also concluded that the shared development, commercialization and medical affairs activities are within the scope of ASC 808 because we and AstraZeneca are active participants exposed to the risks and benefits of the activities under the collaboration and therefore do not have a vendor-customer relationship. From inception through December 31, 2025, AstraZeneca was responsible for 55 percent of the costs associated with the ongoing global Phase 3 development program. During the six months ended June 30, 2026, AstraZeneca was responsible for 75 percent of costs for development activities intended solely to support U.S. regulatory approvals and 87.5 percent of costs for development activities intended to support global regulatory approvals. Because we are leading the Phase 3 development program, we made an accounting policy election to recognize as non-customer revenue the cost-share funding from AstraZeneca, net of our share of AstraZeneca's development expenses, in the same period we incur the related development expenses. As AstraZeneca is responsible for the majority of the commercial and medical affairs costs in the U.S. and all costs associated with bringing WAINUA to market outside the U.S., we made an accounting policy election to recognize cost-share funding we receive from AstraZeneca related to commercial and medical affairs activities as reductions of our selling, general and administrative, or SG&A, expense and R&D expense, respectively.

## 5. Collaborative Arrangements and Licensing Agreements

Below, we have included our Biogen, GSK, Ono, Otsuka, Recordati and Roche collaborations, which were the only collaborations that had either substantive changes or were new from those included in Part IV, Item 15, Note 4, *Collaborative Arrangements and Licensing Agreements*, of our audited financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2025.

**Biogen**

We have multiple collaborations with Biogen focused on using antisense technology to advance the treatment of neurological disorders, including our 2017 spinal muscular atrophy, or SMA, collaboration and 2018 neurology collaboration.

In 2017, we entered into a collaboration agreement with Biogen to identify new antisense medicines for the treatment of SMA. In 2021, Biogen exercised its option to license salanersen, a drug we discovered under this collaboration.

In the second quarter of 2026, we earned a $45 million milestone payment when Biogen initiated a Phase 3 trial of salanersen for SMA under this collaboration. We recognized this milestone payment as R&D revenue in full in the second quarter of 2026 because we did not have any remaining performance obligations related to the milestone payment. We will achieve the next payment of $55 million if Biogen achieves approval in a major market, which includes the U.S., Japan, the United Kingdom, Germany, France, Italy and Spain. From inception through June 30, 2026, we have received $130 million in payments under this collaboration.

Under our 2018 neurology collaboration, Biogen gained exclusive rights to the use of our antisense technology to develop therapies for certain neurological diseases and the option to license certain medicines resulting from this collaboration. If Biogen exercises its option to license a medicine, it will assume global development, regulatory and commercialization responsibilities and costs for that medicine.

In the second quarter of 2026, we earned a $15 million license fee payment when Biogen exercised its option to license an investigational candidate for the treatment of amyotrophic lateral sclerosis, or ALS, under this collaboration. We recognized this license fee payment as R&D revenue in full in the second quarter of 2026 because we did not have any remaining performance obligations related to this payment after we delivered the license to Biogen. We will achieve the next payment of $7.5 million if Biogen advances a medicine under this collaboration. From inception through June 30, 2026, we have received approximately $1.1 billion in payments under this collaboration, including payments to purchase our stock.

During the three and six months ended June 30, 2026 and 2025, we earned the following revenue from our relationship with Biogen (in thousands, except percentage amounts):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Revenue from our relationship with Biogen | $ 133,866 | $ 71,942 | $ 195,552 | $ 137,059 |
| Percentage of total revenue | 50% | 16% | 38% | 23% |

Our condensed consolidated balance sheets at June 30, 2026 and December 31, 2025 included deferred revenue of $120.1 million and $151.2 million, respectively, from our relationship with Biogen.

**GSK**

In 2010, we entered into a collaboration with GSK using our antisense drug discovery platform to discover and develop new medicines against targets for serious and rare diseases, including infectious diseases. Under our collaboration, GSK is developing bepirovirsen for the treatment of chronic hepatitis B, or CHB, infection. In 2019, following positive Phase 2 results, GSK licensed our CHB program. GSK is responsible for all global development, regulatory and commercialization activities and costs for the CHB program.

In the second quarter of 2026, we amended our CHB collaboration agreement with GSK, resulting in increased milestone payments that we are eligible to receive under this collaboration and amended royalty terms that exclude net sales in China, Hong Kong and Macau. Under the amended agreement, we are eligible to receive more than $510 million, which is comprised of a $25 million license fee, up to $46.5 million in development milestone payments, up to $320 million in regulatory milestone payments and up to $120 million in sales milestone payments if GSK successfully develops and commercializes bepirovirsen. In addition, we are eligible to receive tiered royalties ranging from 10 to 12 percent on net sales of bepirovirsen worldwide, excluding China, Hong Kong and Macau. The amendments to the agreement did not change existing performance obligations or result in new performance obligations. Therefore, we did not record any adjustments to previously recognized revenue.

In the first quarter of 2026, we earned a $15 million milestone payment when the Japanese Ministry of Health, Labour and Welfare, or MHLW, accepted for review a New Drug Application, or NDA, filing for bepirovirsen. In addition, we earned a $15 million milestone payment when the European Medicines Agency, or EMA, accepted for review a Marketing Authorization Application, or MAA, filing for bepirovirsen. We recognized these milestone payments as R&D revenue in full in the first quarter of 2026 because we did not have any remaining performance obligations related to the milestone payments. We will achieve the next payment of $35 million if bepirovirsen is approved in a major country other than China. From inception through June 30, 2026, we have received more than $135 million in an upfront payment and other payments related to the CHB program.

During the three and six months ended June 30, 2026 and 2025, we earned the following revenue from our relationship with GSK (in thousands, except percentage amounts):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Revenue from our relationship with GSK | $ - | $ - | $ 30,000 | $ - |
| Percentage of total revenue | -% | -% | 6% | -% |

We did not have any deferred revenue from our relationship with GSK at June 30, 2026 and December 31, 2025.

**Ono**

In March 2025, we entered into an agreement with Ono Pharmaceutical Co., Ltd., or Ono, to develop and commercialize sapablursen, an investigational RNA-targeted medicine for the potential treatment of polycythemia vera, or PV, a rare and potentially life-threatening hematologic disease. We are responsible for completing the Phase 2 IMPRSSION study of sapablursen, including the ongoing extension period. Ono is solely responsible for subsequent development, regulatory filings and commercialization of sapablursen.

In the second quarter of 2026, we earned a $20 million milestone payment when Ono initiated a pivotal clinical trial for sapablursen under this collaboration. We recognized this milestone payment as R&D revenue in full in the second quarter of 2026 because we did not have any remaining performance obligations related to the milestone payment. We will achieve the next payment of $15 million if the FDA accepts a New Drug Application, or NDA, filing for sapablursen in the U.S. From inception through June 30, 2026, we have received more than $305 million in payments from Ono.

During the three and six months ended June 30, 2026 and 2025, we earned the following revenue from our relationship with Ono (in thousands, except percentage amounts):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Revenue from our relationship with Ono | $ 20,902 | $ 280,000 | $ 23,805 | $ 280,000 |
| Percentage of total revenue | 8% | 62% | 5% | 48% |

We did not have any deferred revenue from our relationship with Ono at June 30, 2026. Our consolidated balance sheet at December 31, 2025 included deferred revenue of $2.9 million from our relationship with Ono.

**Otsuka**

In 2023, we entered into an agreement with Otsuka Pharmaceutical Co., Ltd., or Otsuka, to commercialize DAWNZERA in Europe. In the second quarter of 2024, we expanded the agreement to include commercialization rights for DAWNZERA in the Asia-Pacific region. We are responsible for the ongoing development of DAWNZERA. We retained the rights to commercialize DAWNZERA in the U.S. and in the rest of the world, assuming regulatory approval. In November 2024, we entered into an agreement with Otsuka to commercialize ulefnersen, an investigational medicine for the treatment of ALS, caused by mutations in the *FUS* gene, worldwide. We are responsible for the ongoing development of ulefnersen.

In the first quarter of 2026, we achieved a $15 million milestone payment when the European Commission approved DAWNZERA in the EU. We recognized this milestone payment as R&D revenue in full in the first quarter of 2026 because we did not have any remaining performance obligations related to the milestone payment. We will achieve the next payment of $20 million if Otsuka receives reimbursement approval in three of the five major European countries, which include the United Kingdom, France, Germany, Italy and Spain. From inception through June 30, 2026, we have received more than $125 million in payments from Otsuka.

During the three and six months ended June 30, 2026 and 2025, we earned the following revenue from our relationship with Otsuka (in thousands, except percentage amounts):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Revenue from our relationship with Otsuka | $ 9,387 | $ 4,924 | $ 29,318 | $ 11,452 |
| Percentage of total revenue | 4% | 1% | 6% | 2% |

Our condensed consolidated balance sheets at June 30, 2026 and December 31, 2025 included deferred revenue of $2.5 million and $4.3 million, respectively, from our relationship with Otsuka.

**Recordati**

In June 2026, we entered into an agreement with Recordati AG., or Recordati, to commercialize zilganersen for the treatment of Alexander disease, or AxD, in countries outside of the U.S. We are responsible for the ongoing development of zilganersen globally. We retained the rights to commercialize zilganersen in the U.S., assuming regulatory approval. Recordati is responsible for regulatory filings and commercialization outside the U.S., including country-specific support for early access pathways based on local regulations and access dynamics.

Over the term of this collaboration, we are eligible to receive up to $75 million, which is comprised of a $30 million upfront payment, up to $15 million in regulatory milestone payments and up to $30 million in sales milestone payments. In addition, we are eligible to receive tiered royalties of up to the mid-20 percent range on net sales. We are also eligible to receive reimbursements for clinical development costs that we incur outside the U.S. after March 2028. We received the $30 million upfront payment in July 2026. We will achieve the next payment of up to $10 million if zilganersen is approved in a country outside of the U.S.

At inception, we identified two performance obligations under this agreement, comprised of our license of zilganersen to Recordati and R&D services for zilganersen. We determined the transaction price to be the $30 million upfront payment. We allocated the transaction price based on the estimated stand-alone selling price of each performance obligation as follows:

- $21.0 million for the license of zilganersen; and
- $9.0 million for the R&D services for zilganersen.

We recognized $21.0 million of R&D revenue for the license of zilganersen in the second quarter of 2026 because we completed the performance obligation when we delivered the license to Recordati. We are recognizing revenue for our R&D services performance obligation relative to our total effort expected to satisfy our performance obligation. We currently estimate we will satisfy our performance obligation in the second quarter of 2031. In addition, we will recognize reimbursements for clinical development costs as R&D revenue in the period that we incur the costs.

During the three and six months ended June 30, 2026 and 2025, we earned the following revenue from our relationship with Recordati (in thousands, except percentage amounts):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Revenue from our relationship with Recordati | $ 21,080 | $ - | $ 21,080 | $ - |
| Percentage of total revenue | 8% | -% | 4% | -% |

Our condensed consolidated balance sheet at June 30, 2026 included deferred revenue of $8.9 million from our relationship with Recordati.

**Roche**

We have two collaborations with Hoffmann-La Roche Inc. and F. Hoffmann-La Roche Ltd, collectively Roche: one to develop sefaxersen for the treatment of immunoglobulin A, or IgA, nephropathy, or IgAN, and one to develop RNA-targeted programs for Alzheimer’s disease, or AD, and Huntington’s disease, or HD.

In the first quarter of 2026, we earned a $50 million milestone payment when Roche initiated a Phase 1 trial for an investigational medicine for the treatment of AD. We recognized this milestone payment as R&D revenue in full in the first quarter of 2026 because we did not have any remaining performance obligations related to the milestone payment. We will achieve the next payment of $10 million if Roche initiates a Phase 2 trial for an investigational medicine for the treatment of AD under our collaboration for RNA-targeted programs for AD and HD. From inception through June 30, 2026, we have received more than $405 million in payments from our Roche collaborations.

During the three and six months ended June 30, 2026 and 2025, we earned the following revenue from our relationship with Roche (in thousands, except percentage amounts):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Revenue from our relationship with Roche | $ - | $ 2,403 | $ 50,000 | $ 4,368 |
| Percentage of total revenue | -% | 1% | 10% | 1% |

We did not have any deferred revenue from our relationship with Roche at June 30, 2026 and December 31, 2025.

## 6. Basic and Diluted Net Income (Loss) Per Share

### Basic net income (loss) per share

We calculated our basic net income (loss) per share for the three and six months ended June 30, 2026 and 2025 by dividing our net income (loss) by our weighted-average number of common shares outstanding during the period.

### Diluted net income (loss) per share

For the three and six months ended June 30, 2026 and the six months ended June 30, 2025, we incurred a net loss; therefore, we did not include dilutive common equivalent shares in the computation of diluted net loss per share because the effect would have been anti-dilutive. Common stock from the following would have had an anti-dilutive effect on net loss per share:

- 1.75 percent convertible senior notes due 2028, or 1.75% Notes due 2028;
- 0 percent convertible senior notes due 2026, or 0% Notes due 2026;
- Note hedges related to the 0% Notes due 2026;
- Warrants related to the 0% Notes due 2026;
- Dilutive stock options;
- Unvested restricted stock units, or RSUs;
- Unvested performance restricted stock units, or PRSUs; and
- Employee Stock Purchase Plan, or ESPP.

For the three and six months ended June 30, 2026, common stock underlying the 0 percent convertible senior notes due 2030, or 0% Notes due 2030, would also have had an anti-dilutive effect on net loss per share.

For the three months ended June 30, 2025, we recorded net income. As a result, we computed diluted net income per share using the weighted-average number of common shares and dilutive common equivalent shares outstanding during the period. We calculated our diluted net income per share as follows (in thousands, except per share amounts):

| Three Months Ended June 30, 2025 | Income (Numerator) | Shares (Denominator) | Amount Per Share |
|---|---|---|---|
| Net income | $ 123,551 | 159,137 | $ 0.78 |
| Effect of dilutive securities: | | | |
| Shares issuable upon exercise of stock options | - | 21 | |
| Shares issuable upon restricted stock award issuance | - | 1,449 | |
| Shares issuable related to our Employee Stock Purchase Plan | - | 86 | |
| Shares issuable related to 1.75 percent convertible senior notes due 2028 | 3,215 | 10,702 | |
| Shares issuable related to 0 percent convertible senior notes due 2026 | 792 | 10,936 | |
| Diluted net income | $ 127,558 | 182,331 | $ 0.70 |

## 7. Investments

The following table summarizes the contract maturity of the available-for-sale securities we held as of June 30, 2026:

| | |
|---|---|
| One year or less | 66% |
| After one year but within two years | 27% |
| After two years but within three and a half years | 7% |
| Total | 100% |

As illustrated above, at June 30, 2026, 93 percent of our available-for-sale securities had a maturity of less than two years.

All of our available-for-sale debt securities are available to us for use in our current operations. As a result, we categorize all of these securities as current assets even though the stated maturity of some individual securities may be one year or more beyond the balance sheet date.

We invest in debt securities with strong credit ratings and an investment grade rating at or above A-1, P-1 or F-1 by Standard & Poor's, Moody's or Fitch, respectively.

At June 30, 2026, we had an equity ownership interest of less than 20 percent in four private companies and four public companies with which we conduct business.

The following is a summary of our investments (in thousands):

| June 30, 2026 | Amortized Cost | Gross Unrealized Gains | Gross Unrealized Losses | Estimated Fair Value |
|---|---|---|---|---|
| Available-for-sale debt securities: | | | | |
| Corporate debt securities (1) | $ 638,688 | $ 311 | $ (474) | $ 638,525 |
| Debt securities issued by U.S. government agencies | 26,439 | 26 | (20) | 26,445 |
| Debt securities issued by the U.S. Treasury (1) | 467,565 | 88 | (604) | 467,049 |
| Debt securities issued by states of the U.S. and political subdivisions of the states | 5,025 | - | (3) | 5,022 |
| Total debt securities with a maturity of one year or less | 1,137,717 | 425 | (1,101) | 1,137,041 |
| Corporate debt securities | 349,545 | 87 | (1,692) | 347,940 |
| Debt securities issued by U.S. government agencies | 119,701 | 4 | (878) | 118,827 |
| Debt securities issued by the U.S. Treasury | 181,168 | - | (1,340) | 179,828 |
| Debt securities issued by states of the U.S. and political subdivisions of the states | 731 | - | (1) | 730 |
| Total debt securities with a maturity of more than one year | 651,145 | 91 | (3,911) | 647,325 |
| Total available-for-sale debt securities | $ 1,788,862 | $ 516 | $ (5,012) | $ 1,784,366 |
| Equity securities: | | | | |
| Publicly traded equity securities included in other current assets (2) | $ 11,897 | $ 45,670 | $ (9,799) | $ 47,768 |
| Privately held equity securities included in deposits and other assets (3) | 10,000 | 9,816 | - | 19,816 |
| Total equity securities | 21,897 | 55,486 | (9,799) | 67,584 |
| Total available-for-sale debt and equity securities | $ 1,810,759 | $ 56,002 | $ (14,811) | $ 1,851,950 |

| December 31, 2025 | Amortized Cost | Gross Unrealized Gains | Gross Unrealized Losses | Estimated Fair Value |
|---|---|---|---|---|
| Available-for-sale debt securities: | | | | |
| Corporate debt securities (1) | $ 746,814 | $ 991 | $ (27) | $ 747,778 |
| Debt securities issued by U.S. government agencies | 55,768 | 92 | (5) | 55,855 |
| Debt securities issued by the U.S. Treasury (1) | 769,034 | 843 | (13) | 769,864 |
| Debt securities issued by states of the U.S. and political subdivisions of the states | 5,709 | 11 | - | 5,720 |
| Total debt securities with a maturity of one year or less | 1,577,325 | 1,937 | (45) | 1,579,217 |
| Corporate debt securities | 435,350 | 1,586 | (106) | 436,830 |
| Debt securities issued by U.S. government agencies | 92,770 | 100 | (94) | 92,776 |
| Debt securities issued by the U.S. Treasury | 242,288 | 595 | (1) | 242,882 |
| Other municipal debt securities | 1,219 | 4 | - | 1,223 |
| Total debt securities with a maturity of more than one year | 771,627 | 2,285 | (201) | 773,711 |
| Total available-for-sale debt securities | $ 2,348,952 | $ 4,222 | $ (246) | $ 2,352,928 |
| Equity securities: | | | | |
| Publicly traded equity securities included in other current assets (2) | $ 11,897 | $ 35 | $ (8,920) | $ 3,012 |
| Privately held equity securities included in deposits and other assets (3) (2) | 4,905 | 54,395 | (7,091) | 52,209 |
| Total equity securities | 16,802 | 54,430 | (16,011) | 55,221 |
| Total available-for-sale debt and equity securities | $ 2,365,754 | $ 58,652 | $ (16,257) | $ 2,408,149 |

(1) Includes investments classified as cash equivalents in our condensed consolidated balance sheets.

(2) Our publicly traded equity securities are included in other current assets. We recognize publicly traded equity securities at fair value. In the first quarter of 2026, one of our privately held investees became a publicly traded entity after completing an initial public offering. As a result, we recorded a $23.4 million unrealized gain in our condensed consolidated statements of operations in the first quarter of 2026, which reflected the difference between the carrying value of this investment as of December 31, 2025 and its fair value of $55.8 million as of March 31, 2026. In the second quarter of 2026, we recorded an unrealized loss of $10.2 million, which reflected the difference between the carrying value of this investment as of March 31, 2026 and its fair value of $45.7 million as of June 30, 2026. This investment is subject to a 12-month contractual sale restriction that ends in January 2027. In the six months ended June 30, 2026, we recorded a $0.9 million net unrealized loss in our condensed consolidated statements of operations related to changes in the fair value of our other investments in publicly traded companies.

(3) Our privately held equity securities are included in deposits and other assets. We recognize our privately held equity securities at cost minus impairments, plus or minus changes resulting from observable price changes in orderly transactions for the identical or similar investment of the same issuer, which are Level 3 inputs. In the six months ended June 30, 2026, there were no changes to the carrying value of our privately held equity securities.

The following is a summary of our investments we consider to be temporarily impaired at June 30, 2026 (in thousands, except for number of investments):

| | Number of Investments | Less than 12 Months of Temporary Impairment | | More than 12 Months of Temporary Impairment | | Total Temporary Impairment | |
|---|---|---|---|---|---|---|---|
| | | Estimated Fair Value | Unrealized Losses | Estimated Fair Value | Unrealized Losses | Estimated Fair Value | Unrealized Losses |
| Corporate debt securities | 303 | $ 659,038 | $ (2,154) | $ 3,984 | $ (12) | $ 663,022 | $ (2,166) |
| Debt securities issued by U.S. government agencies | 62 | 125,253 | (885) | 2,866 | (13) | 128,119 | (898) |
| Debt securities issued by the U.S. Treasury | 75 | 510,400 | (1,944) | - | - | 510,400 | (1,944) |
| Debt securities issued by states of the U.S. and political subdivisions of the states | 8 | 5,002 | (4) | - | - | 5,002 | (4) |
| Total temporarily impaired debt securities | 448 | $ 1,299,693 | $ (4,987) | $ 6,850 | $ (25) | $ 1,306,543 | $ (5,012) |

We believe that the decline in value of these securities is temporary and is primarily related to the change in market interest rates since purchase rather than underlying credit deterioration for any of the issuers. We believe it is more likely than not that we will be able to hold our debt securities with declines in value to maturity. Therefore, we intend to hold these securities to maturity and anticipate full recovery of our debt securities' amortized cost basis at maturity.

## 8. Fair Value Measurements

The following tables present the major security types we held at June 30, 2026 and December 31, 2025 that we regularly measure and carry at fair value. The following tables segregate each security type by the level within the fair value hierarchy of the valuation techniques we utilized to determine the respective security's fair value (in thousands):

| | At June 30, 2026 | Quoted Prices in Active Markets (Level 1) | Significant Other Observable Inputs (Level 2) |
|---|---|---|---|
| Cash equivalents (1) | $ 155,741 | $ 155,741 | $ - |
| Corporate debt securities (2) | 986,465 | - | 986,465 |
| Debt securities issued by U.S. government agencies (3) | 145,272 | - | 145,272 |
| Debt securities issued by the U.S. Treasury (4) | 646,877 | 646,877 | - |
| Debt securities issued by states of the U.S. and political subdivisions of the states (3) | 5,752 | - | 5,752 |
| Publicly traded equity securities included in other current assets (5) | 47,768 | 47,768 | - |
| Total | $ 1,987,875 | $ 850,386 | $ 1,137,489 |

| | At December 31, 2025 | Quoted Prices in Active Markets (Level 1) | Significant Other Observable Inputs (Level 2) |
|---|---|---|---|
| Cash equivalents (1) | $ 213,579 | $ 213,579 | $ - |
| Corporate debt securities (6) | 1,184,608 | - | 1,184,608 |
| Debt securities issued by U.S. government agencies (3) | 148,631 | - | 148,631 |
| Debt securities issued by the U.S. Treasury (3) | 1,012,746 | 1,012,746 | - |
| Debt securities issued by states of the U.S. and political subdivisions of the states (3) | 6,943 | - | 6,943 |
| Publicly traded equity securities included in other current assets (5) | 3,012 | 3,012 | - |
| Total | $ 2,569,519 | $ 1,229,337 | $ 1,340,182 |

The following footnotes reference lines in our condensed consolidated balance sheets:

(1) Included in cash and cash equivalents.

(2) $57.6 million was included in cash and cash equivalents, with the difference included in short-term investments.

(3) Included in short-term investments.

(4) $21.0 million was included in cash and cash equivalents, with the difference included in short-term investments.

(5) Included in other current assets.

(6) $47.8 million was included in cash and cash equivalents, with the difference included in short-term investments.

**Convertible Notes**

Our 0% Notes due 2030 and 1.75% Notes due 2028 had a fair value of $828.3 million and $893.1 million at June 30, 2026, respectively. Our 0% Notes due 2030, 1.75% Notes due 2028 and 0% Notes due 2026 had a fair value of $830.3 million, $918.1 million and $594.6 million at December 31, 2025, respectively. We determine the fair value of our notes based on quoted market prices for these notes, which are Level 2 measurements because the notes do not trade regularly.

## 9. Stock-based Compensation Expense

The following table summarizes stock-based compensation expense for the three and six months ended June 30, 2026 and 2025 (in thousands):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Cost of sales | $ 176 | $ 610 | $ 323 | $ 710 |
| Research, development and patent expense | 25,098 | 19,542 | 49,804 | 39,840 |
| Selling, general and administrative expense | 20,321 | 9,538 | 38,743 | 18,858 |
| Stock-based compensation expense, net of amounts capitalized | 45,595 | 29,690 | 88,870 | 59,408 |
| Capitalized stock-based compensation expense | - | 509 | 18 | 1,000 |
| Total stock-based compensation expense | $ 45,595 | $ 30,199 | $ 88,888 | $ 60,408 |

As of June 30, 2026, total unrecognized estimated stock-based compensation expense related to non-vested stock options, RSUs and PRSUs was $58.4 million, $166.6 million and $23.9 million, respectively. Our actual expenses will likely differ from these estimates because we will adjust our unrecognized stock-based compensation expense for future forfeitures, including any PRSUs that do not vest. We expect to recognize the cost of stock-based compensation expense related to our non-vested stock options, RSUs and PRSUs over a weighted average amortization period of 1.3 years, 1.6 years and 1.6 years, respectively.

**Stock Options:**

The weighted-average grant date fair value of stock options granted to employees for the six months ended June 30, 2026 and 2025 was $38.07 and $16.51 per share, respectively.

In the second quarter of 2026, two new members were appointed to the Board of Directors following the retirement of two Board members. In June 2026, we issued stock options to the two new Board members. The weighted-average grant date fair value of stock options granted to non-employee members of the Board of Directors for the six months ended June 30, 2026 was $39.04 per share. There were no stock options granted to non-employee members of the Board of Directors for the six months ended June 30, 2025 because no new members were appointed during the period.

**RSUs:**

The weighted-average grant date fair value of RSUs granted to employees for the six months ended June 30, 2026 and 2025 was $77.19 and $32.97 per share, respectively.

**PRSUs:**

Under the terms of the PRSUs we granted in 2026 and 2025, the PRSUs may vest at the end of the three-year performance period based on our relative total shareholder return, or TSR, as compared to a peer group of companies and as measured at the end of the performance period. Under the terms of the grants, no number of PRSUs is guaranteed to vest and the actual number of PRSUs that will vest at the end of each performance period may be anywhere from zero to 200 percent of the target number depending on our relative TSR.

The weighted-average grant date fair value of PRSUs we granted to our executive officers for the six months ended June 30, 2026 and 2025 was $115.05 and $48.81 per share, respectively.

**Black-Scholes Assumptions:**

For the six months ended June 30, 2026 and 2025, we used the following weighted-average assumptions in our Black-Scholes calculations:

*Employee Stock Options:*

| | Six Months Ended June 30, | |
|---|---|---|
| | **2026** | **2025** |
| Risk-free interest rate | 3.9% | 4.5% |
| Dividend yield | 0.0% | 0.0% |
| Volatility | 43.1% | 42.0% |
| Expected life | 6.3 years | 6.3 years |

*Board of Directors Stock Options:*

| | Six Months Ended June 30, 2026 |
|---|---|
| Risk-free interest rate | 4.4% |
| Dividend yield | 0.0% |
| Volatility | 42.4% |
| Expected life | 7.3 years |

*ESPP:*

| | Six Months Ended June 30, | |
|---|---|---|
| | 2026 | 2025 |
| Risk-free interest rate | 3.6% | 4.3% |
| Dividend yield | 0.0% | 0.0% |
| Volatility | 51.7% | 41.3% |
| Expected life | 6 months | 6 months |

**10. Liability Related to Sale of Future Royalties**

In 2023, we entered into a royalty purchase agreement with Royalty Pharma Investments, or Royalty Pharma, to monetize a portion of our future SPINRAZA and pelacarsen royalties we are entitled to under our arrangements with Biogen and Novartis, respectively. As a result, we received an upfront payment of $500 million and we are eligible to receive up to $625 million in additional milestone payments. Under the terms of the agreement, Royalty Pharma will receive 25 percent of our SPINRAZA royalty payments from 2023 through 2027, increasing to 45 percent of royalty payments in 2028, on up to $1.5 billion in annual sales. In addition, Royalty Pharma will receive 25 percent of any future royalty payments on pelacarsen, our medicine in development to treat patients with elevated lipoprotein(a)-driven cardiovascular disease. Royalty Pharma's royalty interest in SPINRAZA will revert to us after total SPINRAZA royalty payments to Royalty Pharma reach either $475 million or $550 million, depending on the timing and occurrence of FDA approval of pelacarsen.

We recorded the upfront payment of $500 million as a liability related to the sale of future royalties, net of transaction costs of $10.4 million, which we are amortizing over the estimated life of the arrangement using the effective interest rate method. We recognize royalty revenue in the period in which the counterparty sells the related product and recognizes the related revenue. We record royalty payments made to Royalty Pharma as a reduction of the liability.

We determine the effective interest rate used to record interest expense under this agreement based on an estimate of future royalty payments to Royalty Pharma. As of June 30, 2026 and 2025, the estimated effective interest rate under the agreement was 12.0 percent and 12.7 percent, respectively.

The following table sets forth information on our liability related to sale of future royalties (in thousands):

| | | |
|---|---|---|
| Liability related to sale of future royalties, net as of December 31, 2025 | $ | 563,042 |
| Royalty payments to Royalty Pharma | | (22,387) |
| Interest expense related to sale of future royalties | | 34,538 |
| Amortization of issuance costs related to sale of future royalties | | 305 |
| Liability related to sale of future royalties, net as of June 30, 2026 | $ | 575,498 |
| Less: Current portion (1) | | (12,924) |
| Liability related to sale of future royalties, net as of June 30, 2026 – Non-current | $ | 562,574 |

(1) Included in other current liabilities in our condensed consolidated balance sheet.

There are numerous factors, most of which are not within our control, that could materially impact the amount and timing of royalty payments from Biogen and Novartis, and result in changes to our estimate of future royalty payments to Royalty Pharma. Such factors include, but are not limited to, the commercial sales of SPINRAZA, the regulatory approval and commercial sales of pelacarsen, competing products or other significant events.

## 11. Convertible Debt

### 0 Percent Convertible Senior Notes due 2030

In November 2025, we completed a $770.0 million offering of our 0% Notes due 2030.

At June 30, 2026, we had the following 0% Notes due 2030 outstanding (in millions except interest rate and price per share data):

| | 0% Notes due 2030 |
|---|---|
| Outstanding principal balance | $ 770.0 |
| Unamortized debt issuance costs | $ 16.6 |
| Maturity date | December 2030 |
| Interest rate | 0% |
| Effective interest rate | 0.5% |
| Conversion price per share | $ 98.10 |
| Total shares of common stock subject to conversion | 7.8 |

### 1.75 Percent Convertible Senior Notes due 2028

In 2023, we completed a $575.0 million offering of our 1.75% Notes due 2028.

At June 30, 2026, we had the following 1.75% Notes due 2028 outstanding (in millions except interest rate and price per share data):

| | 1.75% Notes due 2028 |
|---|---|
| Outstanding principal balance | $ 575.0 |
| Unamortized debt issuance costs | $ 5.7 |
| Maturity date | June 2028 |
| Interest rate | 1.75% |
| Effective interest rate | 2.3% |
| Conversion price per share | $ 53.73 |
| Total shares of common stock subject to conversion | 10.7 |

### 0 Percent Convertible Senior Notes due 2026 and Call Spread

In April 2026, we paid the remaining principal balance of our 0% Notes due 2026 with $432.5 million of cash at maturity. In addition, we settled the conversion obligation in excess of principal by issuing 1.8 million shares of common stock to the holders of the 0% Notes due 2026 who exercised their conversion option.

In conjunction with the 2021 offering, we entered into a call spread transaction, which was comprised of purchasing note hedges and selling warrants, to minimize the impact of potential economic dilution upon conversion of our 0% Notes due 2026 by increasing the effective conversion price on these notes. We increased our effective conversion price to $76.39 with the same number of underlying shares as our 0% Notes due 2026. Our note hedges were exercisable upon conversion of the 0% Notes due 2026. In April 2026, we exercised the note hedges upon maturity of these notes. As a result, we received 2.6 million shares of common stock, which we retired upon receipt. The warrants began to expire in July 2026 and will fully expire in September 2026.

Upon the execution of the call spread transaction in 2021, we recorded the amount we paid for the note hedges and the amount we received for the warrants in additional paid-in capital in our condensed consolidated balance sheets. Refer to Part IV, Item 15, Note 1, *Organization and Significant Accounting Policies*, of our audited financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2025 for our Call Spread accounting policy. We reassess our ability to continue to classify the warrants in shareholders' equity at each reporting period.

**Other Terms of Convertible Senior Notes**

The 0% Notes due 2030 and 1.75% Notes due 2028 are convertible under certain conditions, at the option of the note holders. We can settle conversions of the notes, at our election, in cash, shares of our common stock or a combination of both. We may not redeem the notes prior to maturity, and we do not have to provide a sinking fund for them. Holders of the notes may require us to purchase some or all of their notes upon the occurrence of certain fundamental changes, as set forth in the indentures governing the notes, at a purchase price equal to 100 percent of the principal amount of the notes to be purchased, plus any accrued and unpaid interest. The 0% Notes due 2026 were subject to similar terms.

## 12. Legal Proceedings

From time to time, we are involved in legal proceedings arising in the ordinary course of our business. Periodically, we evaluate the status of each legal matter and assess our potential financial exposure. If we consider the potential loss from any legal proceeding to be probable and we can reasonably estimate the amount, we accrue a liability for the estimated loss. The outcome of any proceeding is not determinable in advance. Therefore, we are required to use significant judgment to determine the probability of a loss and whether the amount of the loss is reasonably estimable. Our assessment of a potential liability and the amount of accruals we recorded are based only on the information available to us at the time. As additional information becomes available, we reassess the potential liability related to the legal proceeding and may revise our estimates.

On September 11, 2025, we sued Arrowhead Pharmaceuticals, Inc., in the Central District of California asserting that Arrowhead's announced intention to commercialize plozasiran in November 2025 would infringe our patent US9,593,333. Arrowhead is now commercializing plozasiran and the lawsuit is ongoing. Arrowhead has filed its Answer to our Complaint and Counterclaims asserting that our patent US9,593,333 is invalid or not infringed by use of plozasiran.

On June 1, 2026, Biogen received notice that Somerset Therapeutics, LLC had filed an Abbreviated New Drug Application, or ANDA, seeking approval to commercialize a generic version of SPINRAZA intrathecal injection, 12 mg/5 ml. The ANDA alleged that certain patents that cover SPINRAZA and its use are invalid or would not be infringed by Somerset. On June 22, 2026, Biogen, Cold Springs Harbor Laboratory and Ionis filed a lawsuit together in the District Court of Delaware asserting patent infringement. This lawsuit is ongoing.

## 13. Segment Information

We operate as a single operating segment, Ionis operations, focused on the research, development and commercialization of our RNA-targeted medicines to bring better futures to people with serious diseases. The CODM, our Chief Executive Officer, manages our company, reviews operating results, assesses performance and allocates resources on an aggregate basis using consolidated net income or loss as the key measure of segment profit or loss. As such, results of our operations are reported on a consolidated basis for purposes of management and segment reporting.

Ionis operations derives its revenues from commercial and R&D revenue sources. Refer to Note 4, *Revenues*, for further details on our sources of revenue.

The following table sets forth information on segment profit or loss, including significant segment expenses (in thousands):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Revenue | $ 267,949 | $ 452,049 | $ 514,042 | $ 583,660 |
| | | | | |
| Less: | | | | |
| Cost of sales | 2,563 | 3,541 | 5,398 | 4,904 |
| Drug discovery | 29,120 | 30,255 | 57,677 | 57,244 |
| Drug development | 103,958 | 117,689 | 208,140 | 230,635 |
| Medical affairs | 11,318 | 7,826 | 21,307 | 13,468 |
| Manufacturing and development chemistry | 20,639 | 21,545 | 40,947 | 35,826 |
| R&D support | 26,974 | 20,607 | 49,405 | 41,159 |
| Selling, general and administrative | 130,075 | 81,081 | 262,012 | 148,061 |
| Other segment items (1) | 57,948 | 45,954 | 76,330 | 75,750 |
| Consolidated net income (loss) | $ (114,646) | $ 123,551 | $ (207,174) | $ (23,387) |

(1) Other segment items include stock-based compensation expense, investment income, interest expense, gain or loss on investments, other income or expense and income tax expense or benefit.

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

*In this Report on Form 10-Q, unless the context requires otherwise, "Ionis," the "Company," "we," "our," and "us," means Ionis Pharmaceuticals, Inc. and its subsidiaries.*

### Forward-Looking Statements

**In addition to historical information contained in this Report on Form 10-Q, the Report includes forward-looking statements regarding our business and the therapeutic and commercial potential of our commercial medicines, additional medicines in development, technologies and our expectations regarding development and regulatory milestones. Any statement describing our goals, expectations, financial or other projections, intentions or beliefs is a forward-looking statement and should be considered an at-risk statement. Such statements are subject to certain risks and uncertainties and particularly those inherent in the process of discovering, developing and commercializing medicines that are safe and effective for use as human therapeutics, and in the endeavor of building a business around such medicines. Our forward-looking statements also involve assumptions that, if they never materialize or prove correct, could cause our results to differ materially from those expressed or implied by such forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those discussed in this report and described in additional detail in our annual report on Form 10-K for the year ended December 31, 2025, which is on file with the U.S. Securities and Exchange Commission and is available from us, and those identified within Part II Item 1A, *Risk Factors*, of this Report. Although our forward-looking statements reflect the good faith judgment of our management, these statements are based only on facts and factors currently known by us. Except as required by law, we undertake no obligation to update any forward-looking statements for any reason. As a result, you are cautioned not to rely on these forward-looking statements.**

### Overview

For three decades, we have invented medicines that bring better futures to people with serious diseases. As a pioneer in RNA-targeted medicines with a deep understanding of disease biology and an industry-leading drug discovery technology, we are driven to deliver innovative, life-changing advances for patients.

With multiple independent commercial launches now underway, we have transitioned into a fully integrated commercial-stage biotechnology company. We currently have seven marketed medicines to treat serious diseases: TRYNGOLZA (olezarsen), DAWNZERA (donidalorsen), WAINUA (eplontersen), SPINRAZA (nusinersen), QALSODY (tofersen), TEGSEDI (inotersen) and WAYLIVRA (volanesorsen). Following approval by the U.S. Food and Drug Administration, or FDA, in June 2026, we independently launched TRYNGOLZA for the treatment of severe hypertriglyceridemia, or sHTG. In addition, we are on track to independently launch zilganersen for Alexander disease, or AxD, in 2026, assuming regulatory approval. We also have a rich innovative pipeline across our focus areas of neurology, cardiometabolic diseases and select areas of high patient needs. We currently have two wholly owned medicines and eight partnered medicines in Phase 3 development, including obudanersen for Angelman syndrome, or AS, which has completed enrollment of the Phase 3 study. We also have additional medicines in early and mid-stage development.

Our multiple sources of revenue and solid financial foundation enable our continued investments to support ongoing and planned launches and to advance our wholly owned medicines in development. Our key recent achievements, combined with our independent and partnered product launches anticipated by the end of 2027, position us well to help millions of patients with serious diseases and deliver increasing product and royalty revenue.

*Our Marketed Medicines*

TRYNGOLZA is a once monthly, self-administered LIgand-Conjugated Antisense, or LICA, medicine approved in the United States, or U.S., as an adjunct to diet to reduce triglycerides and the risk of acute pancreatitis in adults with sHTG and as an adjunct to diet to reduce triglycerides in adults with familial chylomicronemia syndrome, or FCS. TRYNGOLZA is also approved in the European Union, or EU, Canada and the United Kingdom, or UK, as an adjunct to diet in adult patients for the treatment of genetically confirmed FCS. TRYNGOLZA is the first and only treatment approved by the FDA that significantly and substantially reduces triglyceride levels in adults with sHTG and provides a clinically meaningful reduction in acute pancreatitis, or AP, events. TRYNGOLZA is the first medicine we are commercializing independently in the U.S. Sobi has exclusive rights to commercialize TRYNGOLZA in countries outside of the U.S., Canada and China.

DAWNZERA is an RNA-targeted medicine approved in the U.S. for prophylaxis to prevent attacks of hereditary angioedema, or HAE, in adult and pediatric patients 12 years of age and older. DAWNZERA is also approved in the EU and UK for the routine prevention of recurrent attacks of HAE in the same age group. DAWNZERA 80mg is self-administered via subcutaneous autoinjector once every four or eight weeks. DAWNZERA is the first and only FDA-approved RNA-targeted prophylactic therapy for HAE. DAWNZERA has the potential to offer durable efficacy, a favorable safety and tolerability profile, and the longest available dosing interval. DAWNZERA is the second medicine we are commercializing independently in the U.S. We licensed commercialization rights for DAWNZERA in Europe and the Asia-Pacific region to Otsuka Pharmaceutical Co., Ltd., or Otsuka.

SPINRAZA is an antisense medicine for the treatment of patients with spinal muscular atrophy, or SMA, a progressive, debilitating and often fatal genetic disease. Higher dose SPINRAZA was approved and launched in the U.S. and EU for the treatment of SMA. Higher dose SPINRAZA is also approved in Japan. Our partner, Biogen, is responsible for commercializing SPINRAZA worldwide.

WAINUA (WAINZUA in Europe) is a once monthly, self-administered subcutaneous LICA medicine that is approved in numerous countries, including the U.S., EU, UK, Canada and China, for the treatment of adults with polyneuropathy of hereditary transthyretin-mediated amyloidosis, or ATTRv-PN, a debilitating, progressive, and fatal disease. In January 2024, we and AstraZeneca launched WAINUA in the U.S. for the treatment of adults with ATTRv-PN. The launch of WAINUA is underway in numerous countries, including the countries in the EU, following the approval by the European Commission, or EC, in March 2025. AstraZeneca is our commercialization partner for WAINUA.

QALSODY is an antisense medicine that received accelerated approval from the FDA in April 2023 and marketing authorization under exceptional circumstances from the European Medicines Agency, or EMA, in May 2024 for the treatment of adult patients with superoxide dismutase 1 amyotrophic lateral sclerosis, or SOD1-ALS, a rare, neurodegenerative disorder that causes progressive loss of motor neurons leading to death. QALSODY was the first treatment approved to target a genetic cause of ALS. Our partner, Biogen, is responsible for commercializing QALSODY worldwide. Biogen is also evaluating QALSODY as a potential treatment for presymptomatic SOD1-ALS patients in the ongoing ATLAS study. QALSODY was granted Orphan Drug designation by the FDA and EMA.

TEGSEDI is a once weekly, self-administered subcutaneous medicine approved in Europe and Brazil for the treatment of patients with ATTRv-PN. We currently sell TEGSEDI in Europe through our distribution agreement with Swedish Orphan Biovitrum AB, or Sobi. In Latin America, PTC Therapeutics International Limited, or PTC, is commercializing TEGSEDI in Brazil and is pursuing access in additional Latin American countries through its exclusive license agreement with us.

WAYLIVRA is a once weekly, self-administered, subcutaneous medicine approved in Europe and Brazil as an adjunct to diet in adult patients with genetically confirmed FCS and at high risk for pancreatitis. We sell WAYLIVRA in Europe through our distribution agreement with Sobi. In Latin America, PTC is commercializing WAYLIVRA in Brazil for two indications, FCS and familial partial lipodystrophy, or FPL, and is pursuing access in additional Latin American countries through its exclusive license agreement with us.

*Our Innovative Late-Stage Pipeline of Ionis-Owned Investigational Medicines*

Zilganersen is our investigational medicine for AxD. The FDA has granted Priority Review of zilganersen, with a Prescription Drug User Fee Act, or PDUFA, action date of September 22, 2026. The regulatory submission was based on the positive results from the Phase 3 portion of the pivotal study in children and adults with AxD. These results were presented at the Child Neurology Society Annual Meeting in October 2025 and the American Academy of Neurology Annual Meeting in April 2026. We established an expanded access program in the U.S. for eligible patients aged two and older living with AxD. Zilganersen has received Fast Track and Rare Pediatric Disease designations from the FDA and received Orphan Drug designation from both the FDA and the EMA. We licensed commercialization rights for zilganersen in countries outside of the U.S. to Recordati.

Obudanersen is our medicine in development for AS. In July 2026, we completed enrollment of the Phase 3 study, REVEAL, which we designed to evaluate the efficacy and safety of obudanersen. In addition, we are continuing to conduct the open label Phase 1/2 study, HALOS, of obudanersen in patients with AS designed to assess the safety, tolerability and activity of multiple ascending doses of obudanersen administered intrathecally. In 2025, we presented positive 12- and 18-month long-term extension data from the HALOS study which supports continued development. The FDA and EMA granted Orphan Drug designation to obudanersen. Additionally, the FDA granted Breakthrough Therapy, Fast Track and Rare Pediatric designations to obudanersen.

*Our Innovative Late-Stage Pipeline of Partnered Investigational Medicines*

Bepirovirsen is our medicine in development for chronic hepatitis B, or CHB. GSK is developing bepirovirsen. The FDA has granted Priority Review of bepirovirsen, with a PDUFA action date of October 26, 2026. In May 2026, GSK presented positive Phase 3 data for bepirovirsen at the 2026 European Association for the Study of the Liver, or EASL, Congress. Bepirovirsen is also under regulatory review in the EU, China and Japan, with additional submissions planned. The FDA, Center for Drug Evaluation, or CDE, of National Medical Products Administration, or NMPA, of China and Japanese Ministry of Health, Labour and Welfare, or MHLW, granted bepirovirsen Fast Track designation, Breakthrough Therapy designation and SENKU (formerly known as SAKIGAKE) designation, respectively, for the treatment of patients with CHB.

Eplontersen is our medicine in development to treat patients with transthyretin amyloidosis cardiomyopathy, or ATTR-CM. In July 2026, we and AstraZeneca announced that the CARDIO-TTRansform trial for eplontersen in patients with ATTR-CM missed the primary efficacy endpoint of the composite outcome of cardiovascular, or CV, mortality and recurrent CV clinical events up to Week 140 compared with placebo. In this contemporary patient population treated with standard of care, including a majority on a stabilizer, adding eplontersen did not provide a statistically significant benefit. We and AstraZeneca are continuing to analyze the full data set, and results will be shared with the scientific community at the European Society of Cardiology, or ESC, Congress in August 2026.

Pelacarsen is our medicine in development to treat patients with elevated lipoprotein(a)-driven cardiovascular disease, or Lp(a)-driven CVD. Novartis is developing pelacarsen, including conducting the ongoing Phase 3 Lp(a) HORIZON cardiovascular outcome study in patients with elevated Lp(a)-driven CVD, which achieved full enrollment in July 2022 with more than 8,000 patients. The study design and baseline characteristics of the Phase 3 Lp(a) HORIZON study were published in the *American Heart Journal* in April 2025. The FDA granted Fast Track designation and the Center for Drug Evaluation of China National Medical Products Administration granted Breakthrough Therapy designation to pelacarsen for the treatment of patients with elevated Lp(a) and established CVD.

Salanersen is our medicine in development for SMA. In the second quarter of 2026, Biogen advanced salanersen into Phase 3 development in patients with SMA and the FDA granted Breakthrough Therapy designation to salanersen based on positive interim Phase 1 results. Salanersen has also received Orphan Drug designation for the treatment of SMA.

Sapablursen is our medicine in development for polycythemia vera, or PV. In the second quarter of 2026, Ono advanced sapablursen into Phase 3 development in patients with PV. Sapablursen has received FDA Fast Track, Orphan Drug and Breakthrough Therapy designations for the treatment of PV.

Sefaxersen is our medicine in development for immunoglobulin A, or IgA, nephropathy, or IgAN. In the second quarter of 2023, Roche advanced sefaxersen into Phase 3 development in patients with IgAN based on interim Phase 2 data.

Tofersen is our medicine in development for presymptomatic SOD1-ALS. Biogen is evaluating tofersen for treatment of presymptomatic individuals who have a *SOD1* genetic mutation.

Ulefnersen is our medicine in development for amyotrophic lateral sclerosis, or ALS, with mutations in the fused in sarcoma gene, or FUS. We are currently conducting a Phase 3 FUSION study of ulefnersen in juvenile and adult patients with FUS-ALS. We licensed global commercialization rights for ulefnersen to Otsuka. The FDA and EMA granted Orphan Drug designation to ulefnersen. The FDA also granted Fast Track designation to ulefnersen.

**Critical Accounting Estimates**

We prepare our condensed consolidated financial statements in conformity with accounting principles generally accepted in the U.S. As such, we make certain estimates, judgments and assumptions that we believe are reasonable, based upon the information available to us. These judgments involve making estimates about the effect of matters that are inherently uncertain and may significantly impact our quarterly or annual results of operations and financial condition. Each quarter, our senior management reviews the development, selection and disclosure of such estimates with the audit committee of our board of directors. The following are our significant accounting estimates, which we believe are the most critical to aid in fully understanding and evaluating our reported financial results:

- Assessing the propriety of revenue recognition and associated deferred revenue;
- Determining the appropriate cost estimates for unbilled preclinical studies and clinical development activities; and
- Assessing the appropriate estimate of anticipated future royalty payments under our royalty purchase agreement

There have been no material changes to our critical accounting estimates from the information provided in Item 7, *Management's Discussion and Analysis of Financial Condition and Results of Operations*, included in our Annual Report on Form 10-K for the year ended December 31, 2025.

**Results of Operations**

The following is a summary of our financial results (in millions):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Total revenue | $ 267.9 | $ 452.0 | $ 514.0 | $ 583.7 |
| Total operating expenses | $ 370.2 | $ 312.2 | $ 733.8 | $ 590.7 |
| Income (loss) from operations | $ (102.3) | $ 139.8 | $ (219.7) | $ (7.0) |
| Net income (loss) | $ (114.6) | $ 123.6 | $ (207.2) | $ (23.4) |

**Revenue**

Total revenue for the three and six months ended June 30, 2026 was $267.9 million and $514.0 million, respectively, compared to $452.0 million and $583.7 million for the same periods in 2025, respectively, and was comprised of the following (in millions):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Revenue: | | | | |
| Commercial revenue: | | | | |
| Product sales, net: | | | | |
| TRYNGOLZA sales, net | $ 4.6 | $ 19.3 | $ 31.7 | $ 25.6 |
| DAWNZERA sales, net | 26.5 | - | 42.4 | - |
| Total product sales, net | 31.1 | 19.3 | 74.1 | 25.6 |
| Royalty revenue: | | | | |
| SPINRAZA royalties | 53.5 | 54.3 | 97.2 | 102.3 |
| WAINUA royalties | 16.4 | 10.4 | 27.1 | 19.8 |
| Other royalties | 6.1 | 5.3 | 10.0 | 12.0 |
| Total royalty revenue | 76.0 | 70.0 | 134.3 | 134.1 |
| Other commercial revenue | 11.5 | 13.5 | 18.0 | 19.2 |
| Total commercial revenue | 118.6 | 102.8 | 226.4 | 178.9 |
| Research and development revenue: | | | | |
| Collaborative agreement revenue | 133.1 | 336.8 | 253.8 | 382.0 |
| WAINUA joint development revenue | 16.2 | 12.4 | 33.8 | 22.8 |
| Total research and development revenue | 149.3 | 349.2 | 287.6 | 404.8 |
| Total revenue | $ 267.9 | $ 452.0 | $ 514.0 | $ 583.7 |

Commercial revenue for the three months and six months ended June 30, 2026 increased 15% and 27%, respectively, compared to the same periods in 2025. This increase was primarily driven by DAWNZERA product sales.

Research and development, or R&D, revenue for the three and six months ended June 30, 2026 decreased compared to the same periods in 2025 due to the $280 million upfront payment we earned for the global license of sapablursen to Ono Pharmaceutical Co., Ltd. in the second quarter of 2025, which was partially offset by partner payments we achieved in the first half of 2026. We recognized approximately $100 million and $180 million of R&D revenue in the three and six months ended June 30, 2026, respectively, from license fees and milestone payments from multiple partnerships.

***WAINUA (Eplontersen) Collaboration with AstraZeneca***

Our financial results for the three and six months ended June 30, 2026 and 2025 reflected the cost-sharing provisions related to our collaboration with AstraZeneca to develop and commercialize WAINUA for the treatment of ATTR. From inception through December 31, 2025, AstraZeneca was responsible for 55 percent of the costs associated with the ongoing global Phase 3 development program. During the six months ended June 30, 2026, AstraZeneca was responsible for 75 percent of costs for development activities intended solely to support U.S. regulatory approvals and 87.5 percent of costs for development activities intended to support global regulatory approvals. Because we are leading and conducting the Phase 3 development program, we are recognizing as R&D revenue the percentage of cost-share funding AstraZeneca is responsible for, net of our share of AstraZeneca's development expenses, in the same period we incur the related development expenses.

As AstraZeneca was responsible for the majority of the medical affairs and commercial costs in the U.S. and all costs associated with bringing WAINUA to market outside the U.S. during the three and six months ended June 30, 2026 and 2025, we recognized cost-share funding we received from AstraZeneca related to these activities as a reduction of our medical affairs and commercialization expenses, which we classify as R&D and selling, general and administrative, or SG&A expenses, respectively.

The following table sets forth information on revenue and expenses under this collaboration (in millions):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| WAINUA joint development revenue | $ 16.2 | $ 12.4 | $ 33.8 | $ 22.8 |
| Research and development expenses related to Phase 3 development of WAINUA | 19.0 | 24.7 | 39.6 | 46.3 |
| Medical affairs expenses for WAINUA | 2.4 | 2.3 | 4.6 | 3.9 |
| Commercialization expenses for WAINUA | 8.4 | 6.8 | 16.3 | 14.5 |

**Operating Expenses**

The following table sets forth information on operating expenses (in millions):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Operating expenses, excluding non-cash compensation expense related to equity awards | $ 324.6 | $ 282.5 | $ 644.9 | $ 531.3 |
| Non-cash compensation expense related to equity awards | 45.6 | 29.7 | 88.9 | 59.4 |
| Total operating expenses | $ 370.2 | $ 312.2 | $ 733.8 | $ 590.7 |

Operating expenses, excluding non-cash compensation expense related to equity awards, for the three months and six months ended June 30, 2026 increased compared to the same periods in 2025. SG&A expenses increased as anticipated year over year primarily due to investments related to the commercialization efforts for TRYNGOLZA and DAWNZERA and launch preparations for zilganersen in AxD. We expect our operating expenses, excluding non-cash compensation expense related to equity awards, to continue to increase during the remainder of 2026 as we advance our commercialization activities.

Non-cash compensation expense related to equity awards for the three and six months ended June 30, 2026 increased compared to the same periods in 2025 due to a higher stock price on the grant date of annual equity awards in 2026 compared to 2025 and increased headcount. We employed 1,480 people as of June 30, 2026 compared to 1,166 people as of June 30, 2025. We believe non-cash compensation expense related to equity awards is not indicative of our operating results or cash flows from our operations.

***Cost of Sales***

Our cost of sales is comprised of costs related to our commercial revenue, which consisted of manufacturing costs, transportation and freight, indirect overhead costs associated with the manufacturing and distribution of TRYNGOLZA, DAWNZERA, TEGSEDI and WAYLIVRA and associated period costs.

Cost of sales for newly launched products, such as TRYNGOLZA and DAWNZERA, does not include the full cost of manufacturing until we manufacture and sell additional inventory after exhausting pre-launch inventory, which we previously recorded as R&D expense.

The following table sets forth information on cost of sales (in millions):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Cost of sales, excluding non-cash compensation expense related to equity awards | $ 2.5 | $ 3.6 | $ 5.4 | $ 4.9 |
| Non-cash compensation expense related to equity awards | 0.2 | 0.6 | 0.3 | 0.7 |
| Total cost of sales | $ 2.7 | $ 4.2 | $ 5.7 | $ 5.6 |

***Research, Development and Patent Expenses***

Our research, development and patent expenses consist of expenses for drug discovery, drug development, medical affairs, manufacturing and development chemistry and R&D support expenses.

The following table sets forth information on research, development and patent expenses (in millions):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Research, development and patent expenses, excluding non-cash compensation expense related to equity awards | $ 192.0 | $ 198.0 | $ 377.5 | $ 378.4 |
| Non-cash compensation expense related to equity awards | 25.1 | 19.5 | 49.8 | 39.8 |
| Total research, development and patent expenses | $ 217.1 | $ 217.5 | $ 427.3 | $ 418.2 |

Drug Discovery

We use our proprietary technologies to generate information about the function of genes and to determine the value of genes as drug discovery targets. We use this information to direct our own drug discovery research, and that of our partners. Drug discovery is also the function that is responsible for advancing our core technology. This function is also responsible for making investments in complementary technologies to expand the reach of our technologies.

The following table sets forth information on drug discovery expenses (in millions):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Drug discovery expenses, excluding non-cash compensation expense related to equity awards | $ 29.1 | $ 30.3 | $ 57.7 | $ 57.3 |
| Non-cash compensation expense related to equity awards | 4.9 | 3.6 | 10.0 | 7.7 |
| Total drug discovery expenses | $ 34.0 | $ 33.9 | $ 67.7 | $ 65.0 |

Drug discovery expenses, excluding non-cash compensation expense related to equity awards, were essentially flat in the three and six months ended June 30, 2026 compared to the same periods in 2025.

Drug Development

The following table sets forth drug development expenses, including expenses for our marketed medicines and those in Phase 3 development for which we have incurred significant costs (in millions):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Eplontersen | $ 14.6 | $ 24.3 | $ 33.9 | $ 45.4 |
| Donidalorsen | 2.6 | 3.0 | 5.4 | 8.1 |
| Olezarsen | 14.6 | 18.2 | 27.1 | 43.1 |
| Zilganersen | 2.0 | 2.3 | 4.7 | 7.5 |
| Obudanersen | 11.1 | 11.7 | 19.5 | 17.5 |
| Ulefnersen | 2.8 | 2.2 | 5.5 | 5.2 |
| Other development projects | 21.3 | 19.3 | 44.0 | 35.7 |
| Development overhead expenses | 35.0 | 36.8 | 68.1 | 68.2 |
| Total drug development expenses, excluding non-cash compensation expense related to equity awards | 104.0 | 117.8 | 208.2 | 230.7 |
| Non-cash compensation expense related to equity awards | 12.0 | 8.7 | 23.4 | 16.9 |
| Total drug development expenses | $ 116.0 | $ 126.5 | $ 231.6 | $ 247.6 |

Our development expenses, excluding non-cash compensation expense related to equity awards, decreased for the three and six months ended June 30, 2026 compared to the same periods in 2025 as several late-stage studies ended. We expect our development expenses will continue to stabilize as several late-stage studies end and we reallocate resources toward earlier stage programs.

We may conduct multiple clinical trials on a drug candidate, including multiple clinical trials for the various indications we may be studying. Furthermore, as we obtain results from trials, we may elect to discontinue clinical trials for certain drug candidates in certain indications in order to focus our resources on more promising drug candidates or indications. Our Phase 1 and Phase 2 programs are clinical research programs that fuel our Phase 3 pipeline. When our medicines are in Phase 1 or Phase 2 clinical trials, they are in a dynamic state in which we may adjust the development strategy for each medicine. Although we may characterize a medicine as “in Phase 1” or “in Phase 2,” it does not mean that we are conducting a single, well-defined study with dedicated resources. Instead, we allocate our internal resources on a shared basis across numerous medicines based on each medicine’s particular needs at that time. This means we are constantly shifting resources among medicines. Therefore, what we spend on each medicine during a particular period is usually a function of what is required to keep the medicines progressing in clinical development, not what medicines we think are most important. For example, the number of people required to start a new study is large, the number of people required to keep a study going is modest and the number of people required to finish a study is large. However, such fluctuations are not indicative of a shift in our emphasis from one medicine to another and cannot be used to accurately predict future costs for each medicine. Because we always have numerous medicines in preclinical and varying stages of clinical research, the fluctuations in expenses from medicine to medicine, in large part, offset one another. If we partner a medicine, it may affect the size of a trial, its timing, its total cost and the timing of the related costs.

Medical Affairs

Our medical affairs function is responsible for funding and coordinating investigator-sponsored trials, communicating scientific and clinical information to healthcare providers, medical professionals and patients, and managing publications.

The following table sets forth information on medical affairs expenses (in millions):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Medical affairs expenses, excluding non-cash compensation expense related to equity awards | $ 11.3 | $ 7.8 | $ 21.3 | $ 13.4 |
| Non-cash compensation expense related to equity awards | 2.3 | 1.3 | 4.6 | 2.8 |
| Total medical affairs expenses | $ 13.6 | $ 9.1 | $ 25.9 | $ 16.2 |

Medical affairs expenses, excluding non-cash compensation expense related to equity awards, increased in the three and six months ended June 30, 2026 compared to the same periods in 2025 as we continued advancing our late-stage pipeline.

Manufacturing and Development Chemistry

Expenditures in our manufacturing and development chemistry function consist primarily of personnel costs, specialized chemicals for oligonucleotide manufacturing, validation batches to support regulatory approvals, laboratory supplies and outside services. Our manufacturing and development chemistry function is responsible for providing drug supplies to drug development and our collaboration partners. Our manufacturing procedures include testing to satisfy good laboratory and good manufacturing practice requirements.

The following table sets forth information on manufacturing and development chemistry expenses (in millions):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Manufacturing and development chemistry expenses, excluding non-cash compensation expense related to equity awards | $ 20.6 | $ 21.5 | $ 40.9 | $ 35.8 |
| Non-cash compensation expense related to equity awards | 2.9 | 1.6 | 6.0 | 3.7 |
| Total manufacturing and development chemistry expenses | $ 23.5 | $ 23.1 | $ 46.9 | $ 39.5 |

The period over period fluctuations in manufacturing and development chemistry expenses, excluding non-cash compensation expense related to equity awards, were due to the timing of manufacturing performed by our contract manufacturing organizations for drug product and active pharmaceutical ingredients related to several late-stage programs.

R&D Support

In our research, development and patent expenses, we include support costs such as rent, repair and maintenance for buildings and equipment, utilities, depreciation of laboratory equipment and facilities, amortization of our intellectual property, information technology costs, procurement costs and waste disposal costs. We call these costs R&D support expenses.

The following table sets forth information on R&D support expenses (in millions):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Occupancy | $ 10.2 | $ 6.5 | $ 19.8 | $ 13.8 |
| Personnel costs | 8.0 | 7.4 | 16.4 | 14.2 |
| Patent expenses | 2.2 | 0.9 | 3.1 | 1.5 |
| Computer software and licenses | 0.4 | 3.2 | 0.9 | 6.4 |
| Insurance | 0.6 | 0.7 | 0.7 | 1.7 |
| Taxes | 0.9 | 1.1 | 2.5 | 2.5 |
| Other | 4.7 | 0.8 | 6.0 | 1.1 |
| Total R&D support expenses, excluding non-cash compensation expense related to equity awards | 27.0 | 20.6 | 49.4 | 41.2 |
| Non-cash compensation expense related to equity awards | 3.0 | 4.3 | 5.8 | 8.7 |
| Total R&D support expenses | $ 30.0 | $ 24.9 | $ 55.2 | $ 49.9 |

R&D support expenses, excluding non-cash compensation expense related to equity awards, increased in the three and six months ended June 30, 2026 compared to the same periods in 2025 primarily due to increased occupancy and personnel costs.

***Selling, General and Administrative Expenses***

SG&A expenses include personnel, information technology systems and outside costs associated with the commercialization and pre-commercialization activities for our medicines and costs to support our company, our employees and our stockholders including, legal, human resources, investor relations and finance. Additionally, we include in SG&A expenses such costs as rent, repair and maintenance of buildings and equipment, depreciation and utilities costs that we need to support the corporate functions listed above. We also include fees we owe under our in-licensing agreements related to SPINRAZA and QALSODY and cost sharing payments associated with co-commercialization activities under our WAINUA collaboration with AstraZeneca.

The following table sets forth information on SG&A expenses (in millions):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Selling, general and administrative expenses, excluding non-cash compensation expense related to equity awards | $ 130.1 | $ 81.0 | $ 262.1 | $ 148.0 |
| Non-cash compensation expense related to equity awards | 20.3 | 9.6 | 38.7 | 18.9 |
| Total selling, general and administrative expenses | $ 150.4 | $ 90.6 | $ 300.8 | $ 166.9 |

SG&A expenses, excluding non-cash compensation expense related to equity awards, increased in the three and six months ended June 30, 2026 compared to the same periods in 2025 primarily due to investments related to commercialization efforts for TRYNGOLZA and DAWNZERA as well as launch preparation activities for zilganersen in AxD. We expect SG&A expenses to increase as we continue to invest in our independent commercial launches.

***Investment Income***

The following table sets forth information on investment income (in millions):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Investment income | $ 20.2 | $ 24.7 | $ 45.7 | $ 49.4 |

Investment income for the three and six months ended June 30, 2026 decreased compared to the same periods in 2025 due to a decrease in our cash balance during the three months ended June 30, 2026 compared to the same period in 2025. Our cash balance decreased due to the repayment upon maturity of our 0% Notes due 2026 in April 2026.

***Interest Expense***

The following table sets forth information on interest expense (in millions):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Convertible notes: | | | | |
| Non-cash amortization of debt issuance costs | $ 1.6 | $ 1.5 | $ 3.8 | $ 3.0 |
| Interest expense payable in cash | 2.5 | 2.5 | 5.0 | 5.1 |
| Interest on mortgage for manufacturing facility | 0.1 | 0.1 | 0.2 | 0.1 |
| Other | 0.4 | - | 0.8 | - |
| Total interest expense | $ 4.6 | $ 4.1 | $ 9.8 | $ 8.2 |

***Interest Expense Related to Sale of Future Royalties***

We recorded $17.5 million and $34.8 million of interest expense related to the sale of future royalties in the three and six months ended June 30, 2026, respectively, compared to $18.6 million and $37.5 million in the same periods in 2025, respectively. These amounts are related to the Royalty Pharma Investments, or Royalty Pharma, transaction, in which we sold a minority interest in our future SPINRAZA and pelacarsen royalties to Royalty Pharma for a $500 million upfront payment and $625 million of potential future payments. Refer to Part I, Item 1, Note 10, *Liability Related to Sale of Future Royalties*, in the Notes to Condensed Consolidated Financial Statements for further details.

***Gain (Loss) on Investments***

The following table sets forth information on gain (loss) on investments, net (in millions):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Gain (loss) on investments, net | $ (10.2) | $ (18.3) | $ 12.4 | $ (20.5) |

The period over period fluctuations in gain (loss) on investments were primarily due to changes in the fair value of investments in publicly traded biotechnology companies.

***Net Income (Loss) and Net Income (Loss) per Share***

The following table sets forth information on net income (loss) and net income (loss) per share (in millions, except per share amounts):

| | Three Months Ended June 30, | | Six Months Ended June 30, | |
|---|---|---|---|---|
| | 2026 | 2025 | 2026 | 2025 |
| Net income (loss) | $ (114.6) | $ 123.6 | $ (207.2) | $ (23.4) |
| Basic net income (loss) per share | $ (0.69) | $ 0.78 | $ (1.25) | $ (0.15) |
| Diluted net income (loss) per share | $ (0.69) | $ 0.70 | $ (1.25) | $ (0.15) |

The period-over-period fluctuations in our net income (loss) were driven by factors discussed in the sections above.

**Liquidity and Capital Resources**

We have financed our operations primarily from research and development collaborative agreements. We also financed our operations from commercial revenue from SPINRAZA, WAINUA and QALSODY royalties and TEGSEDI and WAYLIVRA commercial revenue. In addition, we began earning commercial revenue from TRYNGOLZA product sales in late December 2024 and DAWNZERA product sales in late August 2025. From our inception through June 30, 2026, we have earned approximately $9.4 billion in revenue. We have also financed our operations through the sale of our equity securities, the issuance of long-term debt and the sale of future royalties. From the time we were founded through June 30, 2026, we have raised net proceeds of approximately $2.9 billion from the sale of our equity securities. Additionally, from our inception through June 30, 2026, we have borrowed approximately $3.5 billion under long-term debt arrangements and received proceeds of $0.5 billion from the sale of future royalties to finance a portion of our operations.

From December 31, 2025 to June 30, 2026, our working capital and our long-term obligations did not change significantly. In April 2026, we paid the remaining principal balance of our 0% Notes due 2026 upon maturity. Refer to Part I, Item 1, Note 11, *Convertible Debt*, in the Notes to Condensed Consolidated Financial Statements for further details.

The following table summarizes our contractual obligations, excluding our liability related to the sale of future royalties, as of June 30, 2026. The table provides a breakdown of when obligations become due.

| **Contractual Obligations** | **Payments Due by Period (in millions)** | | |
|---|---|---|---|
| **(selected balances described below)** | **Total** | **Less than 1 year** | **More than 1 year** |
| 0% Notes due 2030 (principal payable) | $ 770.0 | $ - | $ 770.0 |
| 1.75% Notes due 2028 (principal and interest payable) | 595.2 | 10.1 | 585.1 |
| Operating leases | 467.3 | 36.3 | 431.0 |
| Building mortgage payments (principal and interest payable) | 8.8 | 0.5 | 8.3 |
| Other obligations (principal and interest payable) | 0.6 | 0.1 | 0.5 |
| Total | $ 1,841.9 | $ 47.0 | $ 1,794.9 |

Our contractual obligations consist primarily of our convertible debt. In addition, we also have a facility mortgage, facility leases, equipment financing arrangements and other obligations. We believe our cash, cash equivalents and short-term investments, as well as plans for cash in the future, will be sufficient to fund our planned operations and these obligations. We have not entered into, nor do we currently have, any off-balance sheet arrangements (as defined under SEC rules).

***Convertible Debt and Call Spread***

Refer to Part I, Item 1, Note 11, *Convertible Debt*, in the Notes to Condensed Consolidated Financial Statements for the significant terms of each convertible debt instrument.

***Operating Facilities***

Refer to Part IV, Item 15, Note 7 of our audited financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2025 for further details on our operating facilities.

***Operating Leases***

Refer to Part IV, Item 15, Note 7 of our audited financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2025 for further details on our operating leases.

***Liability Related to Sale of Future Royalties***

Refer to Part I, Item 1, Note 10, *Liability Related to Sale of Future Royalties,* in the Notes to Condensed Consolidated Financial Statements for further details on our royalty purchase agreement with Royalty Pharma.

***Other Obligations***

In addition to contractual obligations, we had outstanding purchase orders as of June 30, 2026 for the purchase of services, capital equipment and materials as part of our normal course of business.

We may enter into additional collaborations with partners which could provide for additional revenue to us and we may incur additional cash expenditures related to our obligations under any of the new agreements we may enter into. We currently intend to use our cash, cash equivalents and short-term investments to finance our activities. However, we may also pursue other financing alternatives, like issuing additional shares of our common stock, issuing debt instruments, refinancing our existing debt, securing lines of credit or executing royalty monetization agreements. Whether we use our existing capital resources or choose to obtain financing will depend on various factors, including the future success of our business, the prevailing interest rate environment and the condition of financial markets generally.

## ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are exposed to changes in interest rates primarily from our investments in certain short-term investments. We primarily invest our excess cash in highly liquid short-term investments of the U.S. Treasury and reputable financial institutions, corporations, and U.S. government agencies with strong credit ratings. We typically hold our investments for the duration of the term of the respective instrument. We do not utilize derivative financial instruments, derivative commodity instruments or other market risk sensitive instruments, positions or transactions to manage exposure to interest rate changes. Accordingly, we believe that, while the securities we hold are subject to changes in the financial standing of the issuer of such securities, we are not subject to any material risks arising from changes in interest rates, foreign currency exchange rates, commodity prices, equity prices or other market changes that affect market risk sensitive instruments.

We are also exposed to changes in foreign currency exchange rates as we have foreign subsidiaries with functional currencies other than the U.S. dollar. We translate our subsidiaries' functional currencies into our reporting currency, the U.S. dollar. As a result, our financial position, results of operations and cash flows can be affected by market fluctuations in the foreign currencies to U.S. dollar exchange rate, which are difficult to predict. A hypothetical 10 percent change in foreign exchange rates during any of the periods presented would not have had a material impact on our condensed consolidated financial statements.

## ITEM 4. CONTROLS AND PROCEDURES

We maintain disclosure controls and procedures that are designed to ensure that information we are required to disclose in our Exchange Act reports is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure. We design and evaluate our disclosure controls and procedures recognizing that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance and not absolute assurance of achieving the desired control objectives.

In January 2026, we deployed a new global enterprise resource planning, or ERP, system for the company. We designed the ERP system to accurately maintain our financial records, support operational functionality and provide information to our management teams related to business operations. We have updated our internal control over financial reporting, where applicable, to accommodate related changes in our financial management processes resulting from this implementation. Except for changes in controls related to the new ERP system, there were no other changes to our internal control over financial reporting during six months ended June 30, 2026 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

As of our most recently completed fiscal year and as of the end of the period covered by this Quarterly Report on Form 10-Q, we carried out an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended, under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer. Based on our evaluation, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were effective as of June 30, 2026. There have been no significant changes in our internal controls or in other factors that could significantly affect internal controls subsequent to June 30, 2026, except as mentioned above.

We also performed an evaluation of any changes in our internal controls over financial reporting that occurred during our last fiscal quarter and that have materially affected, or are reasonably likely to materially affect, our internal controls over financial reporting. We conducted this evaluation under the supervision of and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer. That evaluation did not identify any changes in our internal controls over financial reporting that occurred during our latest fiscal quarter and that have materially affected, or are reasonably likely to materially affect, our internal controls over financial reporting.

## PART II — OTHER INFORMATION

### ITEM 1. LEGAL PROCEEDINGS

For details of legal proceedings, refer to Part I, Item 1, Note 12, *Legal Proceedings*, in the Notes to Condensed Consolidated Financial Statements.

### ITEM 1A. RISK FACTORS

*Investing in our securities involves a high degree of risk. You should carefully consider the following information about the risks described below, together with the other information contained in this report and in our other public filings in evaluating our business. If any of the following risks actually occur, our business could be materially harmed, and our financial condition and results of operations could be materially and adversely affected. As a result, the trading price of our securities could decline, and you might lose all or part of your investment. We have marked with an asterisk those risk factors that reflect substantive changes from the risk factors included in our Annual Report on Form 10-K for the year ended December 31, 2025.*

**Summary of Risk Factors**

There are a number of risks related to our business and our securities. Some of the principal risks related to our business include the following:

- Our ability to generate substantial revenue from the sale of our medicines;
- The availability of adequate coverage and payment rates for our medicines;
- Our and our partners' ability to compete effectively;
- Our ability to successfully manufacture our medicines;
- Our ability to successfully develop and obtain marketing approvals for our medicines;
- Our ability to secure and maintain effective corporate partnerships;
- Our ability to sustain cash flows and achieve consistent profitability;
- Our ability to protect our intellectual property;
- Our ability to maintain the effectiveness of our personnel;
- The impacts of health epidemics, climate change, war and other events;
- Our dependence upon our own and third-party data, information technology systems and infrastructure; and
- The other factors set forth below.

**Risks Related to the Commercialization of our Medicines**

**We have limited experience as a company in commercializing medicines and we will have to continue to invest significant resources to develop our capabilities. If we are unable to establish or maintain an effective commercialization infrastructure, or enter into agreements with third parties to commercialize our medicines, we may not be able to successfully commercialize our medicines.**

We have historically relied on third parties to commercialize our marketed medicines and have limited experience as a company in commercializing medicines. We currently have two independently launched medicines, TRYNGOLZA and DAWNZERA, and we expect to independently launch additional medicines in the near future. Any failure to effectively commercialize our medicines, including our failure to allocate resources to our commercial launches efficiently or timely, could adversely impact the revenue we generate from our medicines. If the commercialization of our independently launched medicines and future sales of such are less successful than anticipated by us or our investors or securities analysts, our stock price could decline and our business may be harmed.

We will have to continue to invest significant financial and management resources to build and maintain the infrastructure required to successfully commercialize our medicines. We will need to establish and maintain effective sales teams for each of our independently launched medicines and there are significant risks involved in managing a sales organization, including our ability to hire, retain and incentivize qualified individuals, generate sufficient sales leads, provide adequate training to sales and marketing personnel, and effectively manage a geographically dispersed sales and marketing team. We must also continue to scale-up existing internal support functions to aid our commercialization efforts, which will need to work effectively in coordination with new commercial functional areas. Any failure to establish or maintain an effective commercialization infrastructure, including our sales, marketing, market access, distribution, and related capabilities, scale-up our existing support functions, or effectively integrate new functional areas, could adversely affect our ability to successfully commercialize our medicines.

If we choose to rely on third parties to assist us in commercializing our medicines, we may not be able to enter into collaborations or hire consultants or external service providers on acceptable financial terms, or at all. In addition, if we continue to engage third parties to assist us in the commercialization of our medicines, our product revenues and profitability may be lower than if we commercialized such medicines ourselves.

The proximity of our current and planned independent launches could increase the likelihood that the risks set forth above will occur.

**If the market does not adopt our medicines, including our commercial medicines and our medicines in development, we are not likely to generate substantial revenues or become consistently profitable.**

Even if our medicines are authorized for marketing, our success will depend upon the medical community, patients and third-party payers considering our medicines medically useful, cost-effective, safe and convenient. Even when the FDA or foreign regulatory authorities authorize our or our partners' medicines for commercialization, doctors may not prescribe our medicines to treat patients. Furthermore, we and our partners may not successfully commercialize additional medicines.

Additionally, in many of the markets where we or our partners may sell our medicines in the future, if we or our partners cannot agree with the government or other third-party payers regarding the price we can charge for our medicines, we may not be able to sell our medicines in that market. Similarly, cost control initiatives by governments or third-party payers could decrease the price received for our medicines or increase patient coinsurance to a level that makes our medicines, including our commercial medicines and our medicines in development, economically unviable. If the pricing of any of our medicines decreases for any reason, it will reduce our revenue for such medicine. For example, Biogen has in the past disclosed that SPINRAZA revenue decreased in part due to lower pricing in the U.S. and certain rest-of-world markets.

The degree of market adoption of our medicines, including our commercial medicines and our medicines in development, depends upon several factors, including the:

- receipt and scope of marketing authorizations;
- establishment and demonstration in the medical and patient community of the efficacy and safety of our medicines, public perception regarding our medicines and their potential advantages over competing products;
- cost and effectiveness of our medicines compared to other available therapies;
- patient convenience of the dosing regimen for our medicines; and
- reimbursement policies of government and third-party payers.

Based on the profile of our medicines, physicians, patients, patient advocates, payers or the medical community in general may not adopt any of the medicines that we or our partners may develop. For example, the product label for WAYLIVRA in the EU requires regular blood monitoring, which has negatively affected our ability to attract and retain patients for this medicine.

**If government or other third-party payers fail to provide adequate coverage and payment rates for our medicines, including our commercial medicines and our medicines in development, or if healthcare reform measures increase our costs, decrease our sales, or negatively impact reimbursement for our products, our revenue will be limited.**

In both domestic and foreign markets, sales of our current and future products will depend in part upon the availability of coverage and reimbursement from third-party payers. The majority of patients in the U.S. who would fit within our target patient populations for our medicines have their healthcare supported by a combination of Medicare coverage, other government health programs such as Medicaid, managed care providers, private health insurers and other organizations. Coverage decisions may depend upon clinical and economic standards that disfavor new medicines when more established or lower cost therapeutic alternatives are already available or subsequently become available. Assuming coverage is approved, the resulting reimbursement payment rates might not be enough to make our medicines affordable. Even if favorable coverage status and adequate reimbursement rates are attained, less favorable coverage policies and reimbursement rates may be implemented in the future. Accordingly, our commercial medicines and our medicines in development will face competition from other therapies and medicines for limited financial resources. Furthermore, we or our partners may need to conduct post-marketing studies to demonstrate the cost-effectiveness of any future products to satisfy third-party payers. These studies might require us to commit a significant amount of management time and financial and other resources. In addition, third-party payers may never consider our future products as cost-effective and adequate third-party coverage and reimbursement might not be available to enable us to maintain price levels sufficient to realize an appropriate return on investment in product development.

Third-party payers, whether foreign or domestic, or governmental or commercial, are developing increasingly sophisticated methods of controlling healthcare costs. In addition, in the U.S., no uniform policy of coverage and reimbursement for medicines exists among third-party payers. Therefore, coverage and reimbursement for medicines can differ significantly from payer to payer.

Further, we believe that future coverage, reimbursement and pricing will likely be subject to increased restrictions both in the U.S. and in international markets. In the U.S., recent health reform measures have resulted in reductions in Medicare and other healthcare funding, and there have been several recent U.S. Congressional inquiries, legislation and executive orders designed to, among other things, reduce drug prices, increase competition (including by enhancing support for generic and biosimilar drugs), lower out-of-pocket drug costs for patients, curtail spread pricing practices by pharmacy benefit managers, and foster scientific innovation to promote better health care and improved health. For example, the Affordable Care Act substantially changed the way healthcare is financed by both governmental and private insurers and continues to significantly impact the U.S. pharmaceutical industry. Since its enactment, there have been amendments and judicial, Congressional and executive branch challenges to certain aspects of the Affordable Care Act, as well as efforts to repeal or replace certain aspects of the Affordable Care Act. We expect that additional U.S. federal healthcare reform measures will be adopted in the future, any of which could limit the amounts that the U.S. federal government will pay for healthcare products and services, which could result in reduced demand or revenue for our commercial medicines and our medicines in development.

In addition, the Inflation Reduction Act of 2022, or the IRA, includes key actions aimed at reducing the costs of prescription drugs and allows the U.S. Department of Health and Human Services, or HHS, to negotiate the price of certain single-source drugs covered under Medicare and establish a price cap on such drugs. The IRA, among other things, (1) directed HHS to negotiate the price of certain single-source drugs and biologics that have been on the market for at least seven years covered under Medicare, or the Medicare Drug Price Negotiation Program, and (2) imposed rebates under Medicare Part B and Medicare Part D to penalize price increases that outpace inflation. Each year, up to 20 products will be selected by HHS for the Medicare Drug Price Negotiation Program. Products subject to the Medicare Drug Price Negotiation Program are expected to experience a significant reduction in reimbursement from the Medicare program on a per unit basis.

The current U.S. Presidential administration is pursuing policies to reduce regulations and expenditures across government agencies, including at the FDA, HHS, Centers for Medicare & Medicaid Services, or CMS, and other related agencies, with a particular focus on most favored nation pricing equal to or lower than those paid in other developed nations. These actions, presently directed by executive orders or memoranda from the Office of Management and Budget, may propose additional policy changes that create uncertainty for our business. For example, in furtherance of the administration's drug pricing initiatives, in late 2025, CMS issued proposed rules that, if finalized, would implement new mandatory and voluntary payment models to implement a most favored nation rebate model. These models are referred to as the GLOBE Model, GUARD Model and GENEROUS Model. At this time, it remains unclear whether the proposed models will be finalized and, if so, whether any changes will be made prior to their implementation. These and other recent actions and policies may significantly reduce U.S. drug prices, potentially impacting manufacturers' global pricing strategies and profitability, while increasing their operational costs and compliance risks.

Any reduction in reimbursement from Medicare and other government programs may result in a similar reduction in payments from private payers. Our future product sales may be subject to additional discounts from list price in the form of rebates and discounts provided to covered entities under the Public Health Service Act 340B drug pricing program. Changes to the 340B program or to Medicare or Medicaid programs at the federal or state level, including outcomes of ongoing litigation in our industry, may impact our product prices and rebate liability.

At the state level, legislatures have increasingly passed legislation and implemented regulations designed to control pharmaceutical and biological product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, designed to encourage importation from other countries and bulk purchasing. Third-party coverage and reimbursement for medicines may not be available or adequate in either the U.S. or international markets, which would negatively affect the potential commercial success of our products, our revenue and our profits.

**If we or our partners fail to compete effectively, our medicines, including our commercial medicines and our medicines in development, will not generate significant revenues.***

The biotechnology and pharmaceutical industries are highly competitive and subject to significant and rapid technological change. Our competitors engage in drug discovery throughout the world, are numerous, and include, among others, major pharmaceutical companies and specialized biopharmaceutical firms. In addition, other companies are engaged in developing RNA-targeted technology. Our competitors may, among other things, relative to our medicines or medicines in development:

- develop safer or more effective products;
- develop less costly products;
- receive more favorable reimbursement coverage;
- implement more effective approaches to sales and marketing;
- develop products that are more convenient to use than our medicines;
- have access to increased manufacturing capacity;
- obtain regulatory approval for products more quickly; or
- establish superior intellectual property positions.

These competitive advantages could make our medicines, including our commercial medicines and our medicines in development, obsolete or non-competitive.

Many of our competitors have substantially greater financial, technical and human resources than we do. In addition, many of these competitors have significantly greater experience than we do in conducting preclinical testing and human clinical studies of new pharmaceutical products, in obtaining FDA and other regulatory authorizations of such products and in commercializing such products.

There are several pharmaceutical and biotechnology companies engaged in the development or commercialization in certain geographic markets of products against targets that are also targets of products in our development pipeline or of medicines we are commercializing. For example:

- TRYNGOLZA faces competition in FCS from a commercial competitor and, in sHTG, could face competition from commercial competitors in the future;
- DAWNZERA faces competition from several commercial competitors, including an oral product, and could face competition from additional commercial competitors in the future;
- WAINUA faces competition from numerous competitors, including an oral product in markets outside the U.S.;
- SPINRAZA faces competition from both a gene therapy product and an oral product for the treatment of SMA. Biogen has in the past disclosed that SPINRAZA revenue decreased due to a reduction in demand as a result of increased competition and that future sales of SPINRAZA may be adversely affected by competing products;
- QALSODY could face competition from a commercial competitor in the future; and
- Obudanersen, if approved, could face competition from commercial competitors in the future, including oral products.

For details regarding medicines that compete or may compete directly with our marketed medicines and late-stage medicines, refer to the section titled, *Competition*, in Part I, Item 1, *Business*, in our Annual Report on Form 10-K for the year ended December 31, 2025.

Certain of our partners are pursuing other technologies or developing other medicines either on their own or in collaboration with others, including our competitors, to treat some of the same diseases that our own programs target. Competition may negatively impact a partner's focus on and commitment to our medicines and, as a result, could delay or otherwise negatively affect the commercialization of our partnered medicines. Additionally, companies that are developing medicines that target the same patient populations as our medicines in development may compete with us to enroll participants in the clinical trials for such medicines, which could make it more difficult for us to complete enrollment for these clinical trials.

**Our medicines could be subject to regulatory limitations following approval.**

Following approval of a medicine, we and our partners must comply with comprehensive government regulations regarding the manufacture, marketing and distribution of medicines. The FDA and foreign regulatory bodies have the authority to impose significant restrictions on an approved medicine through the product label. We or our partners may not obtain the labeling claims necessary or desirable to successfully commercialize our medicines, including our commercial medicines and our medicines in development.

Promotional communications regarding prescription medicines must be consistent with the information in the product's approved labeling. Additionally, prescription medicines may be promoted only for the approved indication(s) in accordance with the approved label. The FDA and other regulatory authorities actively enforce the laws and regulations prohibiting the promotion of off-label uses, and a company that is found to have improperly promoted off-label uses may be subject to significant liability.

In addition, when approved, the FDA or a foreign regulatory authority may condition approval on the performance of post-approval clinical studies or patient monitoring, which could be time-consuming and expensive. For example, in connection with the conditional marketing approval for WAYLIVRA in the EU, we are required to conduct a post-authorization safety study to evaluate the safety of WAYLIVRA on thrombocytopenia and bleeding in FCS patients taking WAYLIVRA. If the results of such post-marketing studies are not satisfactory, the FDA, EC or foreign regulatory authorities may withdraw the marketing authorization or may condition continued marketing on commitments from us or our partners that may be expensive and time-consuming to fulfill.

If we or others identify side effects after any of our medicines are on the market, or if manufacturing problems occur subsequent to regulatory approval, or if we, our contract manufacturing organizations, or our partners fail to comply with regulatory requirements, we or our partners may, among other things, lose regulatory approval and be forced to withdraw products from the market, need to conduct additional clinical studies, incur restrictions on the marketing, distribution or manufacturing of the product, and/or change the labeling of our medicines.

**We depend on our collaborations with Biogen for the development and commercialization of SPINRAZA and QALSODY.**

We have entered into separate collaborative arrangements with Biogen to develop and commercialize SPINRAZA and QALSODY. We entered into these collaborations primarily to:

- fund our development activities for SPINRAZA and QALSODY;
- seek and obtain regulatory approvals for SPINRAZA and QALSODY; and
- successfully commercialize SPINRAZA and QALSODY.

We are relying on Biogen to obtain additional regulatory approvals for SPINRAZA and QALSODY, generate additional clinical data for SPINRAZA and QALSODY, manufacture SPINRAZA and QALSODY, and successfully commercialize SPINRAZA and QALSODY. In general, we cannot control the amount and timing of resources that Biogen devotes to our collaborations. If Biogen fails to further develop SPINRAZA or QALSODY, obtain additional regulatory approvals for SPINRAZA or QALSODY, manufacture SPINRAZA or QALSODY, or successfully commercialize SPINRAZA or QALSODY, revenues for SPINRAZA or QALSODY would be negatively affected.

In addition, our collaborations with Biogen may not continue for various reasons. Biogen can terminate our collaborations at any time. If Biogen stops developing or commercializing SPINRAZA or QALSODY, we would have to seek or spend additional funding, and SPINRAZA's or QALSODY's commercialization may be harmed.

**We depend on our collaboration with AstraZeneca for the development and commercialization of WAINUA.***

In December 2021, we entered into a collaborative agreement with AstraZeneca under which we granted AstraZeneca exclusive worldwide rights to develop and commercialize WAINUA, with the parties sharing responsibility and costs for development and U.S. commercialization activities, and AstraZeneca assuming sole responsibility for commercialization outside the U.S. We exercised our opt-out right under the agreement and the opt-out process set forth in the agreement is underway. In general, we cannot control the amount and timing of resources that AstraZeneca devotes to our collaboration. In addition, we do not have control over whether AstraZeneca elects to terminate the collaborative arrangement. If AstraZeneca fails to further develop or successfully commercialize WAINUA for any reason, our revenues for WAINUA would be negatively affected.

**If we are not successful in expanding our manufacturing capabilities or cannot manufacture our medicines or contract with a third party to manufacture our medicines at costs that allow us to charge competitive prices to buyers, we cannot market our products profitably.***

To successfully commercialize any of our medicines, we need to optimize and manage large-scale commercial manufacturing capabilities either on a standalone basis or through a third-party manufacturer. As our drug development and commercial pipeline increases and matures, we will have a greater need for clinical trial and commercial manufacturing capacity. We also must ensure that we have the manufacturing capabilities in place to support advances in our drug development activities, such as new chemistries. While we believe our current capabilities and those we obtain through third-party manufacturers support our manufacturing needs now, it will be important to expand our manufacturing infrastructure in the future, which will likely require substantial expenditures. If we are not successful in executing this expansion, or if the demand for any of our commercial medicines exceeds our expectations, it could limit our ability to meet our manufacturing requirements and commercial objectives in the future.

In addition, we have limited experience manufacturing pharmaceutical products of the chemical class represented by our medicines, called oligonucleotides, on a commercial scale for the systemic administration of a medicine. There are a small number of suppliers for certain capital equipment and raw materials that we use to manufacture our medicines, and some of these suppliers will need to increase their scale of production to meet our projected needs for commercial manufacturing. If a supplier chooses to devote more resources to other products, especially products with higher manufacturing capacity needs, that could impact such supplier's capability to deliver our requirements timely. Further, we must continue to improve our manufacturing processes to allow us to reduce our drug costs. We or our partners may not be able to manufacture our medicines at a cost or in quantities necessary to make commercially successful products.

Manufacturers, including us, must adhere to the FDA's cGMP regulations and similar regulations in foreign countries, which the applicable regulatory authorities enforce through facilities inspection programs. We, our partners and our contract manufacturers may not comply or maintain compliance with cGMP, or similar foreign regulations. Non-compliance could significantly delay or prevent receipt of marketing authorizations for our medicines, including authorizations for our commercial medicines and our medicines in development, or could result in enforcement action after authorization that might limit the commercial success of our medicines.

We rely on third-party manufacturers to supply the drug substance and drug product for TRYNGOLZA, DAWNZERA and WAINUA and drug product for WAYLIVRA. The operations of our suppliers, many of which are located outside of the United States, are subject to additional risks that are beyond our control. For example, tariffs on the raw materials, components, or equipment used to manufacture our products, or on our drug substance or finished products, will increase our manufacturing costs. On April 2, 2026, President Trump issued a proclamation that imposes tariffs of up to 100% on imported patented pharmaceutical products and active pharmaceutical ingredients, with specified exceptions. We are evaluating the potential impacts on our business related to the imposition of such tariffs but believe any impacts will be limited and manageable. In addition, merger and acquisition activity within the commercial manufacturing space could reduce the availability of resources from our third-party manufacturers. Delays or disruption to our own or third-party commercial manufacturing capabilities for any reason could limit the commercial success of our medicines.

## Risks Related to the Development and Regulatory Approval of our Medicines

**If we or our partners fail to obtain regulatory approval for our medicines and additional approvals for our commercial medicines, we or our partners cannot sell them in the applicable markets.**

We cannot guarantee that any of our medicines will be considered safe and effective or will be approved for commercialization. In addition, it is possible that our commercial medicines may not be approved in additional markets or for additional indications. We and our partners must conduct time-consuming, extensive and costly clinical studies to demonstrate the safety and efficacy of each of our medicines before they can be approved or receive additional approvals for sale. We and our partners must conduct these studies in compliance with FDA regulations and with comparable regulations in other countries.

We and our partners may not obtain necessary regulatory approvals on a timely basis, if at all, for our medicines. It is possible that regulatory authorities will not approve our medicines for marketing or our commercial medicines in additional markets or for additional indications. If the FDA or another regulatory authority believes that we or our partners have not sufficiently demonstrated the safety or efficacy of any of our medicines, including our commercial medicines or our medicines in development, the authority will not approve such medicine or will require additional studies, which could be time-consuming and expensive and delay or harm commercialization of the medicine. For example, in August 2018 we received a complete response letter from the FDA regarding the new drug application for WAYLIVRA in which the FDA determined that the safety concerns identified with WAYLIVRA in our clinical development program outweighed the expected benefits of triglyceride lowering in patients with FCS. We also received a Notice of Non-Compliance Withdrawal Letter, or Non-W, from Health Canada for WAYLIVRA in November 2018.

The FDA or other comparable foreign regulatory authorities can delay, limit or deny approval of a medicine for many reasons, including:

- such authorities may disagree with the design or implementation of our clinical studies;
- we or our partners may be unable to satisfactorily demonstrate that a medicine is safe and effective for any indication;
- such authorities may not accept clinical data from studies conducted at clinical facilities that have deficient clinical practices or that are in countries where the standard of care is potentially different from that in the U.S.;
- we or our partners may be unable to demonstrate that our medicine's clinical and other benefits outweigh its safety risks to support approval;
- such authorities may disagree with the interpretation of data from preclinical or clinical studies;
- such authorities may find deficiencies in the manufacturing processes or facilities of third-party manufacturers who manufacture clinical and commercial supplies for our medicines; and
- the approval policies or regulations of such authorities or their prior guidance to us or our partners during clinical development may significantly change in a manner rendering our clinical data insufficient for approval.

Failure to receive marketing authorization for our medicines in development, or failure to receive additional marketing authorizations for our commercial medicines, or delays in these authorizations, could prevent or delay commercial introduction of the medicine, and, as a result, could negatively impact our ability to generate revenue from product sales.

**If the results of clinical testing indicate that any of our medicines are not suitable for commercial use, we may need to abandon one or more of our drug development programs.**

Drug discovery and drug development have inherent risks and the historical failure rate for drugs is high. Antisense medicines are a relatively new approach to therapeutics. If we cannot demonstrate that our medicines are safe and effective for human use in the intended indication(s), we may need to abandon one or more of our drug development programs.

**Even if our medicines are successful in preclinical and human clinical studies, the medicines may not be successful in late-stage clinical studies. Similarly, topline, preliminary or interim data we release for any of our clinical studies may not be indicative of full or final results from such study.***

Successful results in preclinical or initial human clinical studies, including the Phase 2 results for some of our medicines in development, may not predict the results of subsequent clinical studies. If any of our medicines in Phase 3 clinical studies do not show sufficient safety and efficacy in patients with the targeted indication, or if such studies are discontinued for any other reason, it could negatively impact our development and commercialization goals for these medicines and our stock price could decline. In addition, we may release topline, preliminary or interim data for any of our clinical studies. The interim, topline or preliminary results we report may differ from future results of the same studies, or different conclusions or considerations may qualify such results, once additional data have been received and fully evaluated. As a result, such data should be viewed with caution until the final data are available.

In the past, we have invested in clinical studies of medicines that have not met the primary clinical endpoints in their Phase 3 studies or have been discontinued for other reasons. For example, in July 2026, we and AstraZeneca announced that the CARDIO-TTRansform Phase 3 trial for eplontersen in patients with ATTR-CM did not meet the primary efficacy endpoint of the composite outcome of cardiovascular, or CV, mortality and recurrent CV clinical events up to Week 140 compared with placebo. In October 2021, Biogen reported that QALSODY did not meet the primary clinical endpoint in the Phase 3 VALOR study; however, trends favoring QALSODY were seen across multiple secondary and exploratory measures of disease activity and clinical function. In addition, in March 2021, Roche decided to discontinue dosing in the Phase 3 GENERATION HD1 study of tominersen in patients with manifest Huntington's disease based on the results of a pre-planned review of data from the Phase 3 study conducted by an unblinded Independent Data Monitoring Committee. Similar results could occur in clinical studies for our other medicines.

There are a number of factors that could cause a clinical study to fail or be delayed, including:

- the clinical study may produce negative or inconclusive results;
- regulators may require that we hold, suspend or terminate clinical research for noncompliance with regulatory requirements;
- we, our partners, the FDA or foreign regulatory authorities could suspend or terminate a clinical study due to adverse side effects of a medicine on subjects or lack of efficacy in the trial;
- we or our partners may decide, or regulators may require us, to conduct additional preclinical testing or clinical studies;
- enrollment in our clinical studies may be slower than we anticipate;
- we or our partners, including our independent clinical investigators, contract research organizations and other third-party service providers on which we rely, may not identify, recruit or train suitable clinical investigators at a sufficient number of study sites or timely enroll a sufficient number of study subjects in the clinical study;
- the institutional review board for a prospective site might withhold or delay its approval for the study;
- people who enroll in the clinical study may later drop out due to adverse events, a perception they are not benefiting from participating in the study, fatigue with the clinical study process or personal issues;
- a clinical study site may deviate from the protocol for the study;
- the cost of our clinical studies may be greater than we anticipate;
- our partners may decide not to exercise any existing options to license and conduct additional clinical studies for our medicines; and
- the supply or quality of our medicines or other materials necessary to conduct our clinical studies may be insufficient, inadequate or delayed.

Further, the FDA or other regulatory authorities could request, among other things, additional information or commitments before we can start or continue a clinical study, protocol amendments, increased safety monitoring, additional product labeling information, and post-approval commitments. This happened in connection with the conditional marketing approval for WAYLIVRA in the EU, as the European Commission is requiring us to conduct a post-authorization safety study to evaluate the safety of WAYLIVRA on thrombocytopenia and bleeding in FCS patients taking WAYLIVRA. In addition, under accelerated approval, the FDA is requiring completion of the ongoing Phase 3 trial for QALSODY to confirm the clinical benefit of QALSODY.

Moreover, our commercial medicines are chemically similar to each other. As a result, a safety observation we encounter with one of our medicines could have, or be perceived by a regulatory authority to have, an impact on a different medicine we are developing. This could cause the FDA or other regulators to ask questions or take actions that could harm or delay our ability to develop and commercialize our medicines or increase our costs. Any failure or delay in our clinical studies could reduce the commercial potential or viability of our medicines.

**We depend on third parties to conduct clinical studies for our medicines and any failure of those parties to fulfill their obligations could adversely affect our development and commercialization plans.***

We depend on independent clinical investigators, contract research organizations and other third-party service providers to conduct our clinical studies for our medicines and expect to continue to do so in the future. For example, we use clinical research organizations, such as Icon Clinical Research Limited, Medpace, Inc., Parexel International Corporation, Syneos Health, Inc. and Thermo Fisher Scientific Inc. for the clinical studies for our medicines, including obudanersen, ulefnersen and zilganersen. We rely heavily on these parties for successful execution of our clinical studies, but do not control many aspects of their activities. For example, the investigators are not our employees, but we are responsible for ensuring that such investigators conduct each of our clinical studies in accordance with the general investigational plan and approved protocols for the study. Third parties may not complete activities on schedule or may not conduct our clinical studies in accordance with regulatory requirements or our stated protocols. For example, some of our key vendors have in the past experienced labor shortages, which impacted their ability to perform services for us for certain of our clinical trials. Subsequent failures of these third parties to carry out their obligations, or a termination of our relationship with such third parties, could delay or prevent the development, marketing authorization and commercialization of our medicines.

In addition, while we do not have any clinical trial sites in Russia, Ukraine, Gaza or Iran, we do have a limited number of clinical trial sites in Israel, Turkey and Cyprus that may be materially impacted by the war between Russia and Ukraine and the armed conflict between the United States/Israel and Iran and surrounding areas, or collectively, conflicts in Eastern Europe and the Middle East, and could result in difficulties enrolling or completing our clinical trials in such areas on schedule.

**Since corporate partnering is part of our strategy to fund the advancement and commercialization of some of our development programs, if any of our collaborative partners fail to fund our collaborative programs, or if we cannot obtain additional partners, we may have to delay or stop progress on those drug development programs.***

To date, corporate partnering has played a significant role in our strategy to fund our development programs and to add key development resources. While we are now commercializing some of our medicines independently, we still plan to continue to rely on additional collaborative arrangements to develop and commercialize some of our unpartnered medicines. However, we may not be able to negotiate favorable collaborative arrangements for these drug programs. If we cannot continue to secure additional collaborative partners, our revenues could decrease and the development of our medicines could suffer.

Our corporate partners are developing and funding many of the medicines in our development pipeline. For example, we are relying on:

- AstraZeneca for the development and funding of WAINUA;
- Novartis for development and funding of pelacarsen;
- GSK for development and funding of bepirovirsen;
- Roche for development and funding of sefaxersen; and
- Otsuka for development and funding of ulefnersen.

If any of these pharmaceutical companies stops developing and funding these medicines, our business could suffer and we may not have, or be willing to dedicate, the resources available to develop these medicines on our own. Our collaborators can terminate their relationships with us under certain circumstances, many of which are outside of our control. For example, in 2025, Novartis decided to return the clinical development program for a follow on to pelacarsen, and in 2022, Pfizer and Bayer decided to discontinue the clinical development programs for vupanorsen and fesomersen, respectively.

**Even with funding from corporate partners, if our partners do not effectively perform their obligations under our agreements with them, it would delay or stop the progress of our drug development and commercial programs.**

In addition to receiving funding, we enter into collaborative arrangements with third parties to:

- conduct clinical studies;
- seek and obtain marketing authorizations; and
- manufacture and commercialize our medicines.

Once we have secured a collaborative arrangement to further develop and commercialize one of our drug development programs, such as our collaborations with AstraZeneca, Biogen, GSK, Novartis, Otsuka and Roche, these collaborations may not continue or result in commercialized medicines, or may not progress as quickly as we anticipated.

For example, a collaborator such as AstraZeneca, Biogen, GSK, Novartis, Otsuka or Roche, could determine that it is in its financial interest to:

- pursue alternative technologies or develop alternative products that may be competitive with the medicine that is part of the collaboration with us;
- pursue higher-priority programs or change the focus of its own development programs; or
- devote fewer resources to our medicines than it does to its own medicines.

If any of these occur, it could affect our partner's commitment to the collaboration with us and could delay or otherwise negatively affect the commercialization of our medicines, including DAWNZERA, QALSODY, SPINRAZA, WAINUA, bepirovirsen, sefaxersen, pelacarsen and ulefnersen.

**We may not be able to benefit from designations for our medicines from regulatory authorities that are intended to confer benefits such as financial incentives or an accelerated regulatory pathway.***

In the U.S., under the Orphan Drug Act, the FDA may designate a medicine as an Orphan Drug if it is intended to treat a rare disease or condition affecting fewer than 200,000 individuals in the U.S. Orphan Drug designation does not convey any advantage in, or shorten the duration of, the regulatory review and approval process, but it can provide financial incentives, such as tax advantages and user-fee waivers, as well as longer regulatory exclusivity periods. The FDA has granted Orphan Drug designation to TRYNGOLZA for the treatment of patients with FCS, to WAINUA for the treatment of patients with ATTR, to obudanersen for the treatment of patients with Angelman syndrome, to salanersen for the treatment of patients with SMA, to sapablursen for the treatment of patients with PV, to ulefnersen for the treatment of patients with FUS-ALS, and to some of our earlier stage medicines. The FDA and EMA have granted Orphan Drug designation to DAWNZERA for the treatment of patients with HAE, to WAYLIVRA for the treatment of patients with FCS, and to some of our earlier stage medicines. In addition, the EMA has granted Orphan Drug designation to WAYLIVRA for the treatment of patients with FPL. Even if approval is obtained for a medicine that has been designated as an Orphan Drug, we may lose Orphan Drug exclusivity if the FDA or EMA determines that the request for designation was materially defective or if we cannot assure sufficient quantity of the applicable medicine to meet the needs of patients with the rare disease or condition, or if a competitor is able to gain approval for the same or a substantially similar medicine in a safer or more effective form or that makes a major contribution to patient care. If we lose Orphan Drug exclusivity on any of our medicines, we may face increased competition and lose market share for such medicine.

We may also seek rare pediatric disease designation for some of our medicines. The FDA defines "rare pediatric disease" as a serious or life-threatening disease in which the serious or life-threatening manifestations primarily affect individuals aged from birth to 18 years or is a rare disease or condition within the meaning of the Orphan Drug Act. Designation of a medicine as a medicine for a rare pediatric disease does not guarantee that a marketing application for such medicine will meet the eligibility criteria for a rare pediatric disease priority review voucher, or PRV, at the time the application is approved. Under the Federal Food, Drug and Cosmetic Act, we will need to request a rare pediatric disease PRV in our original marketing application for any potential medicine for which we have received rare pediatric disease designation. The FDA may determine that a marketing application for any such medicine, if approved, does not meet the eligibility criteria for a PRV. Under the current statutory sunset provisions, the PRV program will sunset after September 30, 2029, and the FDA may not award PRVs under this program after such date.

## Risks Associated with our Businesses as a Whole

### *Risks related to our financial condition*

**If we fail to obtain timely funding, we may need to curtail or abandon some of our programs.**

Many of our medicines are undergoing clinical studies or are in the early stages of research and development. Most of our programs will require significant additional research, development, manufacturing, preclinical and clinical testing, marketing authorizations, preclinical activities and commitment of significant additional resources prior to their successful commercialization. In addition, as we commercialize more medicines on our own, we will need to invest significant financial resources to continue developing the infrastructure required to successfully commercialize our medicines, including building and maintaining new support functions, scaling up existing internal support functions and expanding our manufacturing capabilities. All of these activities will require significant cash. As of June 30, 2026, we had cash, cash equivalents and short-term investments equal to $2.1 billion. If we or our partners do not meet our goals to successfully commercialize our medicines, including our commercial medicines, or to license certain medicines and proprietary technologies, we will need additional funding in the future. Our future capital requirements will depend on many factors such as:

- successful commercialization of our commercial medicines;
- the profile and launch timing of our medicines in development;
- changes in existing collaborative relationships and our ability to establish and maintain additional collaborative arrangements;
- continued scientific progress in our research, drug discovery and development programs;
- the size of our programs and progress with preclinical and clinical studies;
- the time and costs involved in obtaining marketing authorizations;
- competing technological and market developments, including the introduction by others of new therapies that address our markets; and
- our manufacturing requirements and capacity to fulfill such requirements.

If we need additional funds, we may need to raise them through public or private financing. Additional financing may not be available on acceptable terms or at all. If we raise additional funds by issuing equity securities, the shares of existing stockholders will be diluted and the price, as well as the price of our other securities, may decline. For example, in September 2024, we completed an underwritten public offering of 11,500,000 shares of our common stock for total net proceeds, after deducting underwriting discounts and commissions and other offering expenses payable by us, of approximately $489.1 million. If adequate funds are not available or not available on acceptable terms, we may have to cut back on one or more of our research, drug discovery or development programs, or commercial operations. Alternatively, we may obtain funds through arrangements with collaborative partners or others, which could require us to give up rights to certain of our technologies or medicines.

**We have incurred losses, and our business will suffer if we fail to consistently achieve profitability in the future.**

Because drug discovery and development require substantial lead-time and money prior to commercialization, our expenses have generally exceeded our revenue since we were founded in January 1989. As of June 30, 2026, we had an accumulated deficit of approximately $2.8 billion and stockholders' equity of approximately $0.4 billion. Most of our income has historically come from collaborative arrangements, including commercial revenue from royalties and R&D revenue, with additional income from research grants and the sale or licensing of our patents, as well as interest income. We will need to continue investing significant financial resources to commercialize medicines on our own, and we expect our future revenue to be driven primarily by commercial sales. If we do not earn substantial revenue from commercial sales, we may incur additional operating losses in the future, which could restrict our ability to successfully develop additional medicines or sustain future profitability.

**We may not be entitled to obtain additional milestone payments under our royalty monetization agreement with Royalty Pharma.**

In January 2023, we entered into a Royalty Purchase Agreement with Royalty Pharma Investments. In addition to the $500 million we received at closing, this agreement makes available to us up to an additional $625 million in milestone payments. However, these additional milestone payments are subject to satisfaction of certain conditions related to the regulatory approval or commercial sales of pelacarsen, in certain cases by specific deadlines. Should we not satisfy such conditions by the applicable deadlines, or if we fail to meet our obligations or default under this agreement, the actual amount of additional payments to us could be substantially less than the maximum amounts available thereunder.

***Risks related to our intellectual property***

**If we cannot protect our patent rights or our other proprietary rights, others may compete more effectively against us.***

Our success depends to a significant degree upon whether we can continue to develop, secure and maintain intellectual property rights to proprietary products and services. However, we may not receive issued patents on any of our pending patent applications in the U.S. or in other countries and we may not be able to obtain, maintain or enforce our patents and other intellectual property rights, any of which could impact our ability to compete effectively. In addition, the scope of any of our issued patents may not be sufficiently broad to provide us with a competitive advantage. Furthermore, other parties may successfully challenge, invalidate or circumvent our issued patents or patents licensed to us so that our patent rights do not create an effective competitive barrier or revenue source. For example, on June 22, 2026, Biogen, Cold Spring Harbor Laboratory, and Ionis filed a patent infringement lawsuit in the District Court of Delaware following notice that Somerset Therapeutics, LLC had filed an Abbreviated New Drug Application, or ANDA, seeking approval to commercialize a generic version of SPINRAZA and alleging that certain patents covering SPINRAZA and its use are invalid or would not be infringed. If Somerset Therapeutics obtains a favorable ruling in such lawsuit, our revenues from SPINRAZA could be materially adversely affected.

We cannot be certain that the U.S. Patent and Trademark Office, or U.S. PTO, and courts in the U.S. or the patent offices and courts in foreign countries will consider the claims in our patents and applications covering our commercial medicines, or any of our medicines in development, as patentable. Method-of-use patents protect the use of a product for the specified method. This type of patent does not prevent a competitor from making and marketing a product that is identical to our product for an indication that is outside the scope of the patented method. Moreover, even if competitors do not actively promote their product for our targeted indications, physicians may prescribe these products off-label. Although off-label prescriptions may infringe or contribute to the infringement of method-of-use patents, the practice is common and such infringement is difficult to prevent, even through legal action.

If we or any licensor partner loses or cannot obtain patent protection for our commercial medicines or any of our medicines in development, it could have a material adverse impact on our business.

**Intellectual property litigation could be expensive and prevent us from pursuing our programs.***

From time to time, we have to defend our intellectual property rights. If we are involved in an intellectual property dispute, we may need to litigate to defend our rights or assert them against others. Disputes can involve arbitration, litigation or proceedings declared by the U.S. PTO or the International Trade Commission or foreign patent authorities. Even if resolved in our favor, litigation or other legal proceedings relating to intellectual property claims may cause us to incur significant expenses and could distract our technical and management personnel from their normal responsibilities. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments and if securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our common stock. For example, in September 2025, we filed a claim against Arrowhead Pharmaceuticals, Inc., or Arrowhead, for patent infringement over Arrowhead's commercialization of plozasiran, and Arrowhead filed a counterclaim against us seeking to invalidate that same patent. We are also a party to ongoing litigation involving a third party seeking regulatory approval to commercialize a generic version of SPINRAZA in the U.S. as described above. For details regarding these proceedings, refer to Part II, Item 1, *Legal Proceedings*.

If a third party claims that our medicines or technology infringe its patents or other intellectual property rights, we may have to discontinue an important product or product line, alter our products and processes, pay license fees or cease certain activities. We may not be able to obtain a license to needed intellectual property on favorable terms, if at all. There are many patents issued or applied for in the biotechnology industry, and we may not be aware of patents or patent applications held by others that relate to our business. This is especially true since patent applications in the U.S. are filed confidentially for the first 18 months. Moreover, the validity and breadth of biotechnology patents involve complex legal and factual questions for which important legal issues remain.

***Risks related to product liability***

**We are exposed to potential product liability claims, and insurance against these claims may not be available to us at a reasonable rate in the future or at all.**

Our business exposes us to potential product liability risks that are inherent in the testing, manufacturing, marketing and sale of therapeutic products, including potential product liability claims related to our commercial medicines and our medicines in development. We have clinical study insurance coverage and commercial product liability insurance coverage. However, this insurance coverage may not be adequate to cover claims against us, or be available to us at an acceptable cost, if at all. Regardless of their merit or eventual outcome, product liability claims may result in decreased demand for our medicines, injury to our reputation, withdrawal of clinical study volunteers and loss of revenues. Thus, whether or not we are insured, a product liability claim or product recall may result in losses that could be material.

***Risks related to our personnel***

**The loss of key personnel, or the inability to attract and retain highly skilled personnel, could make it more difficult to run our business and reduce our likelihood of success.**

We are dependent on the principal members of our management, scientific and commercial staff. We do not have employment agreements with any of our employees that would prevent them from leaving us. The loss of our key management, scientific or commercial employees might slow the achievement of important research and development or commercial goals. It is also critical to our success that we recruit and retain qualified scientific personnel to perform research and development work and that we recruit and retain qualified marketing, sales, market access, distribution, and related personnel to commercialize our medicines. We may not be able to attract and retain skilled and experienced personnel on acceptable terms because of intense competition for experienced personnel among many pharmaceutical and health care companies, universities and non-profit research institutions. In addition, failure to succeed in clinical studies or in commercializing our medicines may make it more challenging to recruit and retain qualified personnel.

***Risks related to health epidemics, climate change and other events***

**Our business may be adversely affected by health epidemics, climate change, extreme weather events, fires, earthquakes, war, civil or political unrest, terrorism or disruptions of the U.S. government.**

Our business could be adversely affected by health epidemics in regions where we or our partners are commercializing our medicines, have concentrations of clinical trial sites or other business operations, and could cause disruption in the operations of third-party manufacturers and contract research organizations upon whom we rely. For example, enrollment in some of our clinical trials was delayed due to the COVID-19 pandemic.

In recent years, extreme weather events and changing weather patterns have become more common. As a result, we are potentially exposed to varying natural disaster or extreme weather risks such as fires, hurricanes, tornadoes, droughts, floods, or other events that may result from the impact of climate change on the environment, any of which could impact our business and manufacturing operations. The potential impacts of climate change may also include increased operating costs associated with additional regulatory requirements and investments in reducing energy, water use and greenhouse gas emissions. In addition, we currently manufacture most of our research and clinical supplies in a manufacturing facility located in Carlsbad, California, and various regions within California have experienced numerous catastrophic wildfires. We manufacture the finished drug product for TRYNGOLZA, DAWNZERA and WAYLIVRA at third-party contract manufacturers. Biogen manufactures the finished drug product for SPINRAZA and QALSODY and AstraZeneca is responsible for WAINUA's commercial drug supply. The facilities and the equipment we, our partners and our contract manufacturers use to research, develop and manufacture our medicines would be costly to replace and could require substantial lead time to repair or replace.

Our facilities or those of our partners or contract manufacturers may be harmed by natural disasters or other events outside our control, such as earthquakes, war, civil or political unrest, deliberate acts of sabotage, terrorism or industrial accidents such as fire and explosion, whether due to human or equipment error, and if such facilities are affected by a disaster or other event, our development and commercialization efforts would be delayed. Although we possess property damage and business interruption insurance coverage, this insurance may not be sufficient to cover all of our potential losses and may not continue to be available to us on acceptable terms, or at all.

In addition, our development and commercialization activities could be harmed or delayed by staffing shortages or a shutdown or other significant disruption of the U.S. government, including the FDA or the U.S. PTO.

***Risks related to personal information, cybersecurity, social media and artificial intelligence***

**We are dependent on data as well as information technology systems and infrastructure, which exposes us to data protection risks.**

We are dependent upon our own and third-party data as well as information technology systems and infrastructure, including mobile technologies, to operate our business. The personal information we process subjects us to stringent and evolving U.S. and foreign laws, rules and regulations, contractual obligations, industry standards and other obligations related to data privacy and security. Our obligations (including in relation to personal information) require us to maintain certain practices, including those in relation to cross-border transfers of data. The multitude and complexity of our information technology systems and infrastructure (including those of third parties with whom we work) make them vulnerable to a variety of evolving threats that may result in systems or data interruption, corruption, destruction, disruption of data integrity, malicious intrusion, or random attacks or other compromise (such as due to malfunctions, software vulnerabilities, natural disasters, telecommunications failures, malicious actors and personnel error). Data privacy or security incidents or breaches pose a risk that sensitive data, including our intellectual property, trade secrets or personal information of our employees, patients, customers or other business partners may be exposed to unauthorized persons. Cyber-attacks are increasing in their frequency, sophistication and intensity, particularly as companies (including us) continue to leverage remote work structures. In addition, the number and frequency of cybersecurity events globally may be heightened during times of geopolitical tension or instability between countries, including, for example, the ongoing conflicts in Eastern Europe and the Middle East, as well as related political or economic responses and counter-responses by various global actors.

Cybersecurity related events could include the deployment or use of harmful malware or malicious code, denial-of-service attacks, credential stuffing attacks, credential harvesting attacks, social engineering attacks (including deep fakes and phishing attacks), ransomware and other means to affect, as applicable, the confidentiality, privacy, security, integrity or availability of our data as well as information systems and infrastructure (including that of third parties with whom we work). Our current, past and prospective business partners face similar risks and any security breaches of their systems (or those of third parties upon which they rely) could adversely affect our security posture. A security breach or a violation of obligations related to privacy or cybersecurity (including perceived breaches or violations) could result in any of the following, any of which could disrupt our business and result in increased costs or loss of revenue:

- harm our reputation;
- delay progress on the development of our medicines;
- compel us to comply with applicable security or data breach notification obligations (including laws);
- result in the diversion of monetary funds and other company resources;
- subject us to financial or other penalties, regulatory investigations or actions, including mandatory and costly corrective actions, and otherwise subject us to litigation or other liabilities; and
- require us to verify the correctness of database contents.

Risk mitigation strategies such as liability limitations in our contracts and insurance coverage may prove inadequate if there is a security breach or privacy violation. We do not maintain cyber insurance. While we have invested, and continue to invest, in the protection of our data and information technology systems and infrastructure as well as our compliance with relevant privacy and cybersecurity obligations, our efforts may not be successful. Non-compliance with relevant data protection obligations or a failure to secure our data, information technology systems or infrastructure could adversely affect our business and operations and result in the loss of critical or sensitive information, which could result in financial, legal, business or reputational harm to us.

**The increasing use of social media platforms presents new risks and challenges.**

Social media is increasingly being used to communicate about our medicines and the diseases our therapies are designed to treat. Social media practices in the biopharmaceutical industry continue to evolve and regulations relating to such use are not always clear and create uncertainty and risk of noncompliance with regulations applicable to our business. Despite our efforts to provide guidelines and training to our employees regarding social media use and monitor social media communications, there is risk that the unauthorized use of social media by our employees to communicate about our products or business, or any inadvertent disclosure of material, nonpublic information through these means, may result in violations of applicable laws and regulations, which may result in significant legal and financial exposure and reputational damages that could have a material adverse impact on our business. Furthermore, negative posts or comments about us or our medicines on social media could seriously damage our reputation, brand image and goodwill. If any of these events were to occur or we otherwise fail to comply with applicable regulations, we could incur liability, face restrictive regulatory actions or incur other harm to our business.

**We use artificial intelligence in certain aspects of our business, and challenges with properly managing its use could adversely affect our business.**

We incorporate artificial intelligence, or AI, solutions into certain aspects of our business, and applications of AI may become important in our operations over time. Our competitors or other third parties may incorporate AI into their businesses more quickly or more successfully than us, which could impair our ability to compete effectively and adversely affect our results of operations.

There are also significant risks involved in developing and deploying AI, and there can be no assurance that the usage of AI will enhance our medicines or the discovery or development of our product candidates or be beneficial to our business, including our efficiency or profitability. It is also uncertain how various laws will apply to content generated by AI. Various government authorities have proposed or enacted laws governing the development and use of AI technologies. We are subject to the risks of new or enhanced governmental or regulatory scrutiny, litigation, or other legal liability, ethical concerns, negative consumer perceptions as to automation and AI, or other complications that could adversely affect our business, reputation, or financial results.

***Risks related to our securities and the global credit markets***

**If we do not progress in our programs as anticipated, the price of our securities could decrease.**

For planning purposes, we estimate and may disclose the timing of a variety of clinical, regulatory and other milestones, such as when we anticipate a certain medicine will enter clinical trials, when we anticipate disclosing clinical data, when we anticipate completing a clinical study, when we anticipate filing an application for, or obtaining, marketing authorization, or when we or our partners plan to commercially launch a medicine. We base our estimates on present facts and a variety of assumptions, many of which are outside of our control. If we do not achieve milestones in accordance with our or our investors' or securities analysts' expectations, including milestones related to our commercial medicines and medicines in development, the price of our securities could decrease. In addition, our share price may be dependent upon the valuations and recommendations of the analysts who cover our business. If our results do not meet these analysts' forecasts, the expectations of our investors or the financial guidance we provide to investors in any period, the market price of our common stock could decline. Our ability to meet analysts' forecasts, investors' expectations and our financial guidance is substantially dependent on our ability to maintain or increase sales of our commercial medicines, both partnered and unpartnered.

**If the price of our securities continues to be highly volatile, this could make it harder to liquidate your investment and could increase your risk of suffering a loss.**

The market price of our common stock, like that of the securities of many other biopharmaceutical companies, has been and is likely to continue to be highly volatile. These fluctuations in our common stock price may significantly affect the trading price of our securities. During the 12 months preceding June 30, 2026, the closing market price of our common stock ranged from $86.50 to $39.94 per share. Many factors can affect the market price of our securities, including, for example, fluctuations in our operating results, financing transactions, announcements related to collaborations, clinical study results, technological innovations or new products being developed by us or our competitors, the commercial success of our approved medicines, governmental regulation, marketing authorizations, changes in payers' reimbursement policies, developments in patent or other proprietary rights and public concern regarding the safety of our medicines.

Broad market factors may materially harm the market price of our common stock irrespective of our operating performance. For example, events such as recent tariffs announcements and the ongoing conflicts in Eastern Europe and the Middle East have caused disruptions of global financial markets and resulted in increased volatility in the trading price of our common stock. In addition, industry factors may materially harm the market price of our common stock. Nasdaq, and the market for biotechnology companies in particular, have historically experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of the particular companies affected. The trading prices and valuations of these stocks, and of ours, may not be predictable. A loss of investor confidence in the market for biotechnology or pharmaceutical stocks or the stocks of other companies that investors perceive to be similar to us, the opportunities in the biotechnology and pharmaceutical market or the stock market in general, could depress our stock price regardless of our business, prospects, financial conditions or results of operations.

**Negative conditions in the global economy, credit markets and financial services and other industries may adversely affect our business, financial condition or stock price.***

The global economy, credit and financial markets have experienced extreme volatility and disruptions recently, including as a result of tariffs announcements and the ongoing conflicts in Eastern Europe and the Middle East. These disruptions can result in severely diminished liquidity and credit availability, declines in consumer confidence, declines in economic growth, increases in unemployment rates, increases in inflation rates, disruptions of the global supply chain and energy markets and uncertainty about economic stability. Any such volatility and disruptions may have adverse consequences on us or the third parties on whom we rely. There can be no assurance that further deterioration in the global economy, credit and financial markets and confidence in economic conditions will not occur. If the current equity and credit markets deteriorate, it may make any necessary debt or equity financing more difficult, more costly and more dilutive. Failure to secure any necessary financing in a timely manner and on favorable terms could have a material adverse effect on our operations, growth plans, financial performance or stock price. In addition, our insurance carriers and insurance policies covering all aspects of our business may become financially unstable or may not be sufficient to cover any or all of our losses and may not continue to be available to us on acceptable terms, or at all.

A variety of risks associated with operating our business and marketing our medicines internationally could adversely affect our business. In addition to our U.S. operations, we are commercializing WAYLIVRA in the EU, Latin America and certain Caribbean countries. We face risks associated with our international operations, including possible unfavorable regulatory, pricing and reimbursement, political, tax and labor conditions, which could harm our business. Because we have international operations, we are subject to numerous risks associated with international business activities, including:

- compliance with differing or unexpected regulatory requirements for our medicines and foreign employees;
- complexities associated with managing multiple payer reimbursement regimes, government payers or patient self-pay systems;
- difficulties in staffing and managing foreign operations;
- in certain circumstances, increased dependence on the commercialization efforts and regulatory compliance of third-party distributors or strategic partners;
- foreign government taxes, regulations and permit requirements;
- U.S. and foreign government tariffs, trade and export restrictions, price and exchange controls and other regulatory requirements;
- U.S. restrictions on the use of certain foreign biotech equipment and service providers, such as those set forth in the BIOSECURE Act;
- anti-corruption laws, including the Foreign Corrupt Practices Act, or the FCPA, and its equivalent in foreign jurisdictions;
- economic weakness, including inflation, natural disasters, war, acts of terrorism, political instability or public health issues or health epidemics, in particular foreign countries or globally;
- fluctuations in currency exchange rates, which could result in increased operating expenses and reduced revenue, and other obligations related to doing business in another country;
- the potential for a local seller, faced with higher local prices, importing medicines from an international market with lower prices rather than buying such medicines locally, which is referred to as parallel importation;
- compliance with tax, employment, privacy, immigration and labor laws, regulations and restrictions for employees living or traveling abroad;
- workforce uncertainty in countries where labor unrest is more common than in the U.S.; and
- changes in diplomatic and trade relationships.

Our business activities outside of the U.S. are subject to the FCPA and similar anti-bribery or anti-corruption laws, regulations or rules of other countries in which we operate, including the United Kingdom's Bribery Act 2010. In many other countries, the healthcare providers who prescribe pharmaceuticals are employed by their government, and the purchasers of pharmaceuticals are government entities; therefore, any dealings with these prescribers and purchasers may be subject to regulation under the FCPA. There is no certainty that all employees and third-party business partners (including our contract research organizations, contract manufacturing organizations, distributors, wholesalers, agents, contractors and other partners) will comply with anti-bribery laws. Importantly, we do not control the actions of manufacturers and other third-party agents, although we may be liable for their actions. Violation of these laws may result in civil or criminal sanctions, which could include monetary fines, criminal penalties, and disgorgement of past profits, which could have an adverse impact on our business and financial condition.

**Provisions in our certificate of incorporation, bylaws and convertible notes documents and Delaware law may prevent stockholders from receiving a premium for their shares.***

Our certificate of incorporation provides for classified terms for the members of our board of directors. Our certificate also includes a provision that requires at least 66 2/3 percent of our voting stockholders to approve a merger or certain other business transactions with, or proposed by, any holder of 15 percent or more of our voting stock, except in cases where certain directors approve the transaction or certain minimum price criteria and other procedural requirements are met.

Our certificate of incorporation also requires that any action required or permitted to be taken by our stockholders must be taken at a duly called annual or special meeting of stockholders and may not be taken by written consent. In addition, only our board of directors, chairperson of the board or chief executive officer can call special meetings of our stockholders. We have in the past, and may in the future, implement a stockholders' rights plan, also called a poison pill, which could make it uneconomical for a third party to acquire our company on a hostile basis. In addition, our board of directors has the authority to fix the rights and preferences of, and issue shares of preferred stock, which may have the effect of delaying or preventing a change in control of our company without action by our stockholders.

The provisions of our convertible senior notes could make it more difficult or more expensive for a third party to acquire us. Upon the occurrence of certain transactions constituting a fundamental change, holders of the notes will have the right, at their option, to require us to repurchase all of their notes or a portion of their notes, which may discourage certain types of transactions in which our stockholders might otherwise receive a premium for their shares over the then-current market prices. As of June 30, 2026, we had two outstanding convertible senior notes, our 0% Notes due 2030, which mature in December 2030, and our 1.75% Notes due 2028, which mature in June 2028.

Additionally, in connection with the issuance of our 0% Notes due 2026, we entered into certain call spread transactions consisting of convertible note hedges, which were exercised in April 2026, and warrant transactions, which became exercisable commencing on July 1, 2026. The terms of the warrant transactions are subject to adjustment in connection with certain events, including upon the announcement of certain mergers or other business transactions involving us. In addition, the warrants may be required to be settled or unwound in connection with a merger or other business transaction involving us, which could make an acquisition of our company significantly more expensive to the purchaser.

These provisions, as well as Delaware law, including Section 203 of the Delaware General Corporation Law, and other of our agreements, may discourage certain types of transactions in which our stockholders might otherwise receive a premium for their shares over then-current market prices, and may limit the ability of our stockholders to approve transactions that they think may be in their best interests.

**Future sales of our common stock in the public market could adversely affect the trading price of our securities.***

Future sales of substantial amounts of our common stock in the public market, or the perception that such sales could occur, could adversely affect trading prices of our securities. For example, we may issue approximately 18.6 million shares of our common stock upon conversion of our 0% Notes due 2030 and 1.75% Notes due 2028. In connection with the issuance of the 0% Notes due 2026, we entered into certain call spread transactions consisting of convertible note hedges and warrant transactions covering 10.9 million shares. The convertible note hedges offset the dilution to holders of common stock that arose from the conversion of those notes. However, the anti-dilutive effect of the convertible note hedges is offset by the related warrant transactions, which became exercisable commencing on July 1, 2026. The addition of any of these shares into the public market may have an adverse effect on the price of our securities.

In addition, in connection with the warrant transactions, the counterparties may modify their hedge positions from time to time, including during the exercise period, by purchasing and selling shares of our common stock, other of our securities, or other instruments, including over-the-counter derivative instruments, that they may wish to use in connection with such hedging, which may have an adverse impact on the trading price of our common stock.

***Risks related to compliance with laws***

**Our operations are subject to extensive legal and regulatory requirements affecting the health care industry.**

Our operations are subject to extensive legal and regulatory requirements affecting the health care industry, including federal, state, and foreign fraud and abuse (including anti-kickback laws and false claims laws), transparency laws, such as the federal Sunshine Act, and health information privacy and security laws, which are subject to change at any time. It is possible that government authorities will conclude that our business practices may not comply with current or future statutes, regulations or case law involving applicable fraud and abuse or other healthcare laws and regulations. Penalties for violations of applicable healthcare laws and regulations may include significant civil, criminal and administrative penalties, damages, disgorgement, fines, imprisonment, exclusion of products from government funded healthcare programs, such as Medicare and Medicaid, and additional reporting requirements and oversight if we enter into a corporate integrity agreement or similar agreement to resolve allegations of non-compliance with these laws. In addition, violations may also result in reputational harm, diminished profits and future earnings.

**Because we use biological materials, hazardous materials, chemicals and radioactive compounds, if we do not comply with laws regulating the protection of the environment and health and human safety, our business could be adversely affected.**

Our research, development and manufacturing activities involve the use of potentially harmful biological materials as well as materials, chemicals and various radioactive compounds that could be hazardous to human health and safety or the environment. We store most of these materials and various wastes resulting from their use at our facilities in Carlsbad, California pending ultimate use and disposal. We cannot completely eliminate the risk of contamination, which could cause:

- interruption of our research, development and manufacturing efforts;
- injury to our employees and others;
- environmental damage resulting in costly clean up; and
- liabilities under federal, state and local laws and regulations governing health and human safety, as well as the use, storage, handling and disposal of these materials and resultant waste products.

In such an event, we may be held liable for any resulting damages, and any liability could exceed our resources. Although we carry insurance for pollution liability in amounts and types that we consider commercially reasonable, the coverage or coverage limits of our insurance policies may not be adequate. If our losses exceed our insurance coverage, our financial condition would be adversely affected.

**Our business is subject to changing regulations for corporate governance and public disclosure that has increased both our costs and the risk of noncompliance.**

Each year we are required to evaluate our internal control systems to allow management to report on, and our Independent Registered Public Accounting Firm to attest to, our internal controls as required by Section 404 of the Sarbanes-Oxley Act. As a result, we continue to incur additional expenses and divert our management's time to comply with these regulations. In addition, if we cannot continue to comply with the requirements of Section 404 in a timely manner, we might be subject to sanctions or investigation by regulatory authorities, such as the SEC, the Public Company Accounting Oversight Board, or PCAOB, or The Nasdaq Global Select Market. Any such action could adversely affect our financial results and the market price of our common stock.

The SEC and other regulators have continued to adopt new rules and regulations and make additional changes to existing regulations that require our compliance. In July 2010, the Dodd-Frank Wall Street Reform and Protection Act, or the Dodd-Frank Act, was enacted, and in August 2022, the SEC adopted additional rules and regulations under the Dodd-Frank Act related to "say on pay" and proxy access. Stockholder activism, the current political environment and the current high level of government intervention and regulatory reform may lead to substantial new regulations and disclosure obligations, which has and may in the future lead to additional compliance costs and impact the manner in which we operate our business.

***Risks related to taxes***

**Our ability to use our net operating loss carryovers and certain other tax attributes may be limited.**

Under the Internal Revenue Code of 1986, as amended, or the Code, a corporation is generally allowed a deduction for net operating losses, or NOLs, carried over from a prior taxable year. Under the Code, we can carry forward our NOLs to offset our future taxable income, if any, until such NOLs are used or expire. The same is true of other unused tax attributes, such as tax credits.

Under the current U.S. federal income tax law, U.S. federal NOLs generated in taxable years beginning after December 31, 2017 may be carried forward indefinitely, but the deductibility of such U.S. federal NOLs is limited to 80 percent of taxable income.

In addition, under Sections 382 and 383 of the Code, and corresponding provisions of state law, if a corporation undergoes an "ownership change," which is generally defined as a greater than 50 percentage-point cumulative change, by value, in its equity ownership over a three-year period, the corporation's ability to use its pre-change NOL carryforwards and other pre-change tax attributes to offset its post-change income or taxes may be limited. We may experience ownership changes in the future as a result of subsequent shifts in our stock ownership, some of which may be outside of our control. If an ownership change occurs and our ability to use our NOL carryforwards or other tax attributes is materially limited, it would harm our future operating results by effectively increasing our future tax obligations. As a result of our merger with Akcea Therapeutics, Inc. in 2020, or the Akcea Merger, we are subject to the separate return limitation year, or SRLY, rules. Under the SRLY rules, our utilization of Akcea's pre-merger NOL and tax credit carryforwards is limited to the amount of income that Akcea contributes to our consolidated taxable income. The Akcea pre-merger tax attributes cannot be used to offset any of the income that Ionis contributes to our consolidated taxable income. In addition, at the state level, there may be periods during which the use of NOLs is suspended or otherwise limited, which could accelerate or permanently increase state taxes owed. For example, in June 2024, California enacted Senate Bill 167, or SB 167, which, with certain exceptions, suspends the ability to use California net operating losses to offset California income and limits the ability to use California business tax credits to offset California taxes, for taxable years beginning after 2023 and before 2027.

**Our future taxable income could be impacted by changes in tax laws, regulations and treaties.**

A change in tax laws, treaties or regulations, or their interpretation, of any country in which we operate could materially affect us.

**We could be subject to additional tax liabilities.**

We are subject to U.S. federal, state, local and foreign income taxes, sales taxes in the U.S., withholding taxes and transaction taxes in foreign jurisdictions. Significant judgment is required in evaluating our tax positions and our worldwide provision for taxes. During the ordinary course of business, there are many activities and transactions for which the ultimate tax determination is uncertain. In addition, our tax obligations and effective tax rates could be adversely affected by changes in the relevant tax, accounting and other laws, regulations, principles and interpretations, including those relating to income tax nexus, by recognizing tax losses or lower than anticipated earnings in jurisdictions where we have lower statutory rates and higher than anticipated earnings in jurisdictions where we have higher statutory rates, by changes in foreign currency exchange rates, or by changes in the valuation of our deferred tax assets and liabilities. In particular, our tax obligations and effective tax rate in the jurisdictions in which we conduct business could increase in the future as a result of the base erosion and profit shifting, or BEPS, project led by the Organization for Economic Co-operation and Development, or OECD, and other initiatives led by the OECD or the European Commission. The OECD is leading work on an iteration of the BEPS project based on two "pillars" (subject to certain revenue thresholds), involving, among other measures, the reallocation of taxing rights in respect of certain multinational enterprises above a fixed profit margin to the jurisdictions in which they carry on business (referred to as "Pillar One") and imposition of a minimum effective corporate tax rate on certain multinational enterprises (referred to as "Pillar Two"). A number of countries in which we conduct business have enacted, or are in the process of enacting, core elements of the Pillar Two rules (with further provisions expected to be enacted in the future). Based on the minimum revenue thresholds we currently expect to fall within the scope of these requirements in the near term. The OECD has issued (and is expected to continue to issue further) administrative guidance providing transition and safe harbor rules in relation to the implementation of the Pillar Two proposal. For example, in January 2026, the OECD issued administrative guidance providing for, among other things, a side-by-side framework intended to limit the application of Pillar Two top-up taxes to U.S.-parented groups; however, the ultimate impact will depend on jurisdictional adoption and further guidance. We are monitoring developments and evaluating the potential impacts of the Pillar Two rules, including on our effective tax rates, and considering our eligibility to qualify for these safe harbor rules (including under the proposed "side-by-side" arrangement).

We may be audited in various jurisdictions, and such jurisdictions may assess additional income, sales and value-added or other taxes against us. In addition, we are currently under examination by the Internal Revenue Service for tax year 2023. Although we believe our tax estimates are reasonable, the final determination of any tax audits or litigation could be materially different from our historical tax provisions and accruals, which could have a material adverse effect on our operating results or cash flows in the period for which a determination is made.

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

Not applicable.

## ITEM 3. DEFAULT UPON SENIOR SECURITIES

Not applicable.

## ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

## ITEM 5. OTHER INFORMATION

**Trading Plans**

During the quarter ended June 30, 2026, our directors and officers (as defined in Rule 16a-1(f) under the Exchange Act), or Section 16 officers and directors, adopted or terminated contracts, instructions or written plans for the purchase or sale of our securities as noted in the table below.

* Contract, instruction or written plan intended to satisfy the affirmative defense conditions of Rule 10b5-1(c) under the Exchange Act.
** "Non-Rule 10b5-1 trading arrangement" as defined in item 408(c) of Regulation S-K under the Exchange Act.

| | | | | Trading Arrangement | | | |
|---|---|---|---|---|---|---|---|
| **Name** | **Title** | **Action** | **Date** | **Rule 10b5-1*** | **Non-Rule 10b5-1**** | **Total Shares to be Sold** | **Expiration Date** |
| Shannon Devers | Executive Vice President, Chief Human Resources Officer | Termination | April 14, 2026 | X | | Indeterminable, as number of shares to be sold is dependent on total number of shares released upon vesting | The earlier to occur of (i) April 4, 2027, and (ii) Upon the execution of all instructions provided in the plan |

**ITEM 6. EXHIBITS**

a. Exhibits

| Exhibit Number | Description of Document |
|---|---|
| 10.1 | Amendment #9 dated April 2, 2026 to the Research, Development and License Agreement by and between the Registrant, Glaxo Group Limited and Glaxosmithkline Intellectual Property Development Limited, dated March 30, 2010. Portions of this exhibit have been omitted because they are both (i) not material and (ii) the type that the Registrant treats as private or confidential. |
| 31.1 | Certification by Chief Executive Officer pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as amended. |
| 31.2 | Certification by Chief Financial Officer pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as amended. |
| 32.1* | Certification Pursuant to 18 U.S.C. Section 1350 as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. |
| 101 | The following financial statements from the Ionis Pharmaceuticals, Inc. Quarterly Report on Form 10-Q for the quarter ended June 30, 2026, formatted in Inline Extensible Business Reporting Language (iXBRL): (i) condensed consolidated balance sheets, (ii) condensed consolidated statements of operations, (iii) condensed consolidated statements of comprehensive income (loss), (iv) condensed consolidated statements of stockholders' equity, (v) condensed consolidated statements of cash flows and (vi) notes to condensed consolidated financial statements (detail tagged). |
| 104 | Cover Page Interactive Data File (formatted in iXBRL and included in exhibit 101). |

* This certification is deemed not filed for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to the liability of that section, nor shall it be deemed incorporated by reference into any filing under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended.

## SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

| Signatures | Title | Date |
|---|---|---|
| /s/ BRETT P. MONIA<br>Brett P. Monia, Ph.D. | Director and Chief Executive Officer<br>(Principal executive officer) | July 29, 2026 |
| /s/ ELIZABETH L. HOUGEN<br>Elizabeth L. Hougen | Executive Vice President, Finance and Chief Financial Officer<br>(Principal financial and accounting officer) | July 29, 2026 |

**Exhibit 10.1**

Certain portions of this exhibit, marked by [***], have been excluded because they are both not material and are the type that the registrant treats as private or confidential

**AMENDMENT #9 TO THE RESEARCH, DEVELOPMENT AND LICENSE AGREEMENT**

This **AMENDMENT #9 TO THE RESEARCH, DEVELOPMENT AND LICENSE AGREEMENT** (this "***Amendment No. 9***") is entered into and made effective as of the 2nd day of April, 2026 (the "***Amendment No. 9 Effective Date***") by and between **Ionis Pharmaceuticals, Inc.**, a Delaware corporation, having its principal place of business at 2855 Gazelle Court, Carlsbad, CA 92010 (formerly Isis Pharmaceuticals, Inc.) ("***Ionis***"), and **Glaxo Group Limited**, a company existing under the laws of England and Wales, having its registered office at GSK Medicines Research Center, Gunnels Wood Road, Stevenage SG1 2NY, United Kingdom ("***GGL***"), and **Glaxosmithkline intellectual property development limited,** a company existing under the laws of England and Wales, having its registered office GSK Medicines Research Center, Gunnels Wood Road, Stevenage SG1 2NY, United Kingdom ("***GSK IPDL***"). GGL and GSK IPDL are referred to together as "***GSK***". Ionis and GSK are each referred to herein by name or as a "***Party***" or, collectively, as "***Parties***."

**RECITALS**

**Whereas**, Ionis and GGL are parties to the Research, Development and License Agreement dated March 30, 2010, as amended (the "***Agreement***") and GGL has sub-licensed its rights under the Agreement to GSK IPDL;

**Whereas**, pursuant to the Agreement, Ionis granted to GSK exclusive global rights to develop and commercialize bepirovirsen (formerly known as IONIS 505358) (referred to as the HBV Lead Compound in the Agreement);

**Whereas**, specific terms regarding the development and commercialization of bepirovirsen, and the relevant financial provisions, are set forth in Amendment #7 to the Research, Development and License Agreement, dated as of March 4, 2016, between the Parties ("***Amendment No. 7***");

**Whereas**, the Parties desire to amend certain terms of the Agreement, including Amendment No. 7, solely with respect to the development and sale of bepirovirsen in China, Hong Kong and Macau;

**Now, therefore**, in consideration of the premises and mutual covenants herein contained, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties, intending to be legally bound, do hereby agree as follows:

Capitalized terms used but not defined herein will have the meaning ascribed to such terms in the Agreement.

1. **Additional Definitions.** For purposes of this Amendment No. 9, the following capitalized terms will have the following meanings.

    a. "***DAP/TOM***" means GSK's combination RNA-interference therapy consisting of daplusiran and tomligisiran, also known as GSK 5637608.

b. "***[***]***]***" means [***].

c. "***NRDL***" means the National Reimbursement Drug List published by the National Healthcare Security Administration (or any successor governmental authority) of China, as such list may be amended, supplemented or replaced from time to time by the National Healthcare Security Administration (or successor governmental authority thereto) of China.

d. "***sNDA***" means a Supplemental New Drug Application submitted to the NMPA National Medical Products Administration of China (or any successor governmental authority).

**2. Amendments to Section 4(a) of Amendment No. 7: Milestone Payments for First Achievement of Development Milestone Event.**

a. Table 3B in Amendment No. 7 is hereby deleted and replaced with the following table:

**TABLE 3B**

| **Development Milestone Events for the HBV Program** | **Milestone Payment 1st Indication** | **Milestone Payment 2nd Indication** |
|---|---|---|
| [***] | [***] | [***] |
| [***] | [***] | [***] |
| [***] | [***] | [***] |
| [***] | [***] | [***] |
| Initiation of a Phase 1 Trial with the HBV LICA DC | $1,500,000 (already paid) | [***] |
| [***] | [***] | [***] |
| [***] | [***] | [***] |
| Initiation of a Phase 3 Trial | $15,000,000 (already paid) | [***] |
| Acceptance for review of first NDA Filing (or its foreign equivalent) in a Major Country† | $15,000,000 (achieved but not paid as of the Amendment No. 9 Effective Date) | [***] |
| Acceptance for review of a second NDA Filing (or its foreign equivalent) in a Major Country† | $15,000,000 (achieved but not paid as of the Amendment No. 9 Effective Date) | [***] |
| Approval by the applicable Regulatory Authority in a Major Country (other than China) | $35,000,000 | [***] |
| [***] | [***] | [***] |
| [***] | [***] | [***] |
| [***] | [***] | [***] |
| [***] | [***] | [***] |
| [***] | [***] | [***] |
| [***] | [***] | [***] |
| [***] | [***] | [***] |
| [***] | [***] | [***] |
| **Total Development Milestone Payments for the HBV Program** | [***] | [***] |

3. **Amendments to Section 4(b) of Amendment No. 7: Milestone Payments for First Achievement of Sales Milestone Event for HBV Lead Compound.**

a. Table 4C in Amendment No. 7 is hereby deleted and replaced with the following table:

| **TABLE 4C** | |
|---|---|
| **Sales Milestones for each Licensed Product that includes the HBV Lead Compound** | **Milestone Payment** |
| [***] in worldwide Annual Net Sales | [***] |
| [***] in worldwide Annual Net Sales | [***] |
| [***] in worldwide Annual Net Sales | [***] |
| Annual Net Sales in China, Hong Kong and Macau exceed [***] in the aggregate (the "***[***] China Net Sales Milestone***") | [***] |
| Annual Net Sales in China, Hong Kong and Macau exceed [***] in the aggregate (the "***[***] China Net Sales Milestone***") | [***] |
| **Total Sales Milestone Payments for the Licensed Products that include the HBV Lead Compound** | [***] |

b. The following sentence is hereby added below Table 4C: "For clarity, the calculation of worldwide Annual Net Sales under this Section 4(b) shall include Annual Net Sales in China, Hong Kong and Macau."

4. **Additional Amendment to Section 4 of Amendment No. 7**. The following is hereby added as a new Section 4(c) to Amendment No. 7:

"(c) ***Skipped Milestones***.

(i) If the [***] China Net Sales Milestone in TABLE 4C is achieved at any time and the [***] in TABLE 3B has not previously been paid, then GSK will pay the [***] at the time the [***] China Net Sales Milestone is paid.

(ii) If the [***] China Net Sales Milestone in TABLE 4C is achieved in the Calendar Year ending December 31, [***] or before, and (A) the [***] in TABLE 3B has been paid but the [***] in TABLE 3B has not been paid, GSK will pay an additional [***] at the time the [***] China Net Sales Milestone is paid ([***]), or (B) neither the [***] in TABLE 3B nor the [***] in TABLE 3B have been paid, GSK will pay the [***] at the time the [***] China Net Sales Milestone is paid.

(iii) If the [***] China Net Sales Milestone in Table 4C is achieved in the Calendar Year ending December 31, [***] or after and neither the [***] in Table 3B nor the [***] in Table 3B have been paid, GSK will pay the [***] at the time the [***] China Net Sales Milestone is paid.

(iv) If the [***] China Net Sales Milestone in Table 4C is achieved at any time, then: (A) if the [***] in Table 3B has been paid but the [***] in Table 3B has not been paid or [***], GSK will pay an additional [***] ([***]); and (B) GSK will pay the [***] in Table 3B, if not previously paid, each at the time the [***] China Net Sales Milestone is paid.

(v) For clarity, no milestone will be paid more than once, and only *either* the [***] *or* [***] will be paid, but not both."

5. **Amendments to Section 5 of Amendment No. 7: HBV Lead Compound Royalties.**

   a. Table 5C in Amendment No. 7 is hereby deleted and replaced with the following table:

| **Table 5C** | |
|---|---|
| **Worldwide (excluding China, Hong Kong and Macau) Annual Net Sales of each Licensed Product that includes the HBV Lead Compound** | **Royalty Rate** |
| For the portion up to and including [***] | [***]% |
| For the portion above [***] and up to and including [***] | [***]% |
| For the portion above [***] | [***]% |

   b. The following sentence is hereby added below Table 5C: "For clarity, the calculation of Annual Net Sales under this Section 5 shall exclude Annual Net Sales in China, Hong Kong and Macau for all purposes."

6. **Additional Obligations**.

   a. [***].

   b. **NRDL Process**: GSK will use Commercially Reasonable Efforts to submit all necessary application materials before the applicable deadlines for inclusion in the process by which NRDL renders breakthrough classification decisions before December 31, [***].

   c. **Parallel Trade**: If either Party becomes aware of material parallel trade activity on bepiroversen products (i.e. bepirovirsen products originally sold by GSK in China, Hong Kong or Macau being resold to satisfy demand outside of those countries), such Party will provide prompt notice of such activity to the other Party. The Parties will meet to discuss potential resolutions to the issue with the aim of preserving Ionis' economic interests in the HBV Program, and GSK will keep Ionis updated on the reasonable actions it takes after such meeting.

d. **Share of Recoveries**: Any damages or other monetary awards recovered, or non-monetary consideration received, by GSK with respect to a Proceeding alleging Competitive Infringement of, or with respect to any other transaction by GSK that grants rights to, [***] shall be allocated according to the provisions of Section 6.5.4 of the Agreement, provided that (i) for the avoidance of doubt, the reference to [***] in Section 6.5.4(B) shall mean [***], and (ii) with respect to any [***] received by GSK with respect to such Proceeding or transaction, the Parties will agree upon [***] to be allocated pursuant to Section 6.5.4 of the Agreement. If the Parties, [***], then such dispute will be resolved in accordance with Section 12.1 of the Agreement.

7. **Governing Law; Counterparts**. This Amendment No. 9 and any dispute arising from the performance or breach hereof will be governed by and construed and enforced in accordance with the laws of the State of Delaware, U.S.A., without reference to conflicts of laws principles. This Amendment No. 9 may be signed in counterparts, each and every one of which will be deemed an original, notwithstanding variations in format or file designation which may result from the electronic transmission, storage and printing of copies of this Amendment No. 9 from separate computers or printers. Facsimile signatures and signatures transmitted via PDF will be treated as original signatures.

* - * - * - *

**[Signature page follows]**

**IN WITNESS WHEREOF**, the Parties have caused this Amendment No. 9 to be executed by their duly authorized representatives as of the Amendment No. 9 Effective Date.

**IONIS PHARMACEUTICALS, INC.**

By: */s/ Brett Monia*

Name: Brett Monia

Title: CEO

**GLAXO GROUP LIMITED**

By: */s/ Adam Walker*

Name: Adam Walker

Title: Director

**GLAXOSMITHKLINE INTELLECTUAL PROPERTY DEVELOPMENT LIMITED**

By: */s/ Darren Barnett*

Name: Darren Barnett

Title: Authorised signatory for and on behalf of The Wellcome Foundation Limited, Corporate Director of GlaxoSmithKline Intellectual Property Development Limited

**EXHIBIT 31.1**

CERTIFICATION

I, Brett P. Monia, certify that:

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

2. Based on my knowledge, this quarterly 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 quarterly report;

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

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

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

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

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

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

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of 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: July 29, 2026

/s/ BRETT P. MONIA
Brett P. Monia, Ph.D.
Chief Executive Officer

**EXHIBIT 31.2**

CERTIFICATION

I, Elizabeth L. Hougen, certify that:

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

2. Based on my knowledge, this quarterly 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 quarterly report;

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

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

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

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

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

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

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of 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: July 29, 2026

/s/ ELIZABETH L. HOUGEN
Elizabeth L. Hougen
Chief Financial Officer

**Exhibit 32.1**

CERTIFICATION

Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, Brett P. Monia, the Chief Executive Officer of Ionis Pharmaceuticals, Inc., (the "Company"), and Elizabeth L. Hougen, the Chief Financial Officer of the Company, each hereby certifies that, to the best of his or her knowledge:

1. The Company's Quarterly Report on Form 10-Q for the period ended June 30, 2026, to which this Certification is attached as Exhibit 32.1 (the "Periodic Report"), fully complies with the requirements of Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934, as amended; and

2. The information contained in the Periodic Report fairly presents, in all material respects, the financial condition of the Company at the end of the period covered by the Periodic Report and the results of operations of the Company for the period covered by the Periodic Report.

Dated: July 29, 2026

/s/ BRETT P. MONIA
Brett P. Monia, Ph.D.
Chief Executive Officer

/s/ ELIZABETH L. HOUGEN
Elizabeth L. Hougen
Chief Financial Officer

A signed original of this written statement required by Section 906 has been provided to Ionis Pharmaceuticals, Inc. and will be retained by Ionis Pharmaceuticals, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.