UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-Q

(Mark One)

☒ **Quarterly report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934**

For the quarterly period ended March 31, 2021

or

☐ **Transition report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934**

For the transition period from to

Commission File Number: 001-33500

JAZZ PHARMACEUTICALS PUBLIC LIMITED COMPANY

(Exact name of registrant as specified in its charter)

Ireland	**98-1032470**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**

Fifth Floor, Waterloo Exchange,
Waterloo Road, Dublin 4, Ireland D04 E5W7
011-353-1-634-7800
(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Ordinary shares, nominal value $0.0001 per share	JAZZ	The Nasdaq Stock Market LLC

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

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

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

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

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

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

As of April 27, 2021, 56,895,944 ordinary shares of the registrant, nominal value $0.0001 per share, were outstanding.

JAZZ PHARMACEUTICALS PLC
QUARTERLY REPORT ON FORM 10-Q FOR THE QUARTER ENDED MARCH 31, 2021

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We own or have rights to various copyrights, trademarks, and trade names used in our business in the U.S. and/or other countries, including the following: Jazz Pharmaceuticals®, Xyrem® (sodium oxybate) oral solution, Sunosi® (solriamfetol), Defitelio® (defibrotide sodium), Defitelio® (defibrotide), Erwinaze® (asparaginase *Erwinia chrysanthemi*), Erwinase®, CombiPlex®, Vyxeos® (daunorubicin and cytarabine) liposome for injection, Vyxeos® liposomal 44 mg/100 mg powder for concentrate for solution for infusion, Zepzelca™ (lurbinectedin), and Xywav™ (calcium, magnesium, potassium, and sodium oxybates) oral solution. This report also includes trademarks, service marks and trade names of other companies. Trademarks, service marks and trade names appearing in this Quarterly Report on Form 10-Q are the property of their respective owners.

PART I – FINANCIAL INFORMATION

Item 1. Financial Statements

JAZZ PHARMACEUTICALS PLC
CONDENSED CONSOLIDATED BALANCE SHEETS
(In thousands)
(Unaudited)

	March 31, 2021	December 31, 2020
ASSETS		
Current assets:		
Cash and cash equivalents	$ 2,097,533	$ 1,057,769
Investments	335,000	1,075,000
Accounts receivable, net of allowances	413,976	396,490
Inventories	115,475	95,396
Prepaid expenses	57,185	62,422
Other current assets	147,727	152,491
Total current assets	3,166,896	2,839,568
Property, plant and equipment, net	123,863	127,935
Operating lease assets	125,738	129,169
Intangible assets, net	2,108,046	2,195,051
Goodwill	938,398	958,303
Deferred tax assets, net	258,454	254,916
Deferred financing costs	4,724	5,238
Other non-current assets	30,351	25,721
Total assets	$ 6,756,470	$ 6,535,901
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 77,738	$ 26,945
Accrued liabilities	374,035	352,732
Current portion of long-term debt	248,613	246,322
Income taxes payable	49,334	25,200
Deferred revenue	2,373	2,546
Total current liabilities	752,093	653,745
Deferred revenue, non-current	1,852	2,315
Long-term debt, less current portion	1,853,033	1,848,516
Operating lease liabilities, less current portion	136,020	140,035
Deferred tax liabilities, net	109,915	130,397
Other non-current liabilities	105,868	101,148
Commitments and contingencies (Note 11)		
Shareholders' equity:		
Ordinary shares	6	6
Non-voting euro deferred shares	55	55
Capital redemption reserve	472	472
Additional paid-in capital	2,694,858	2,633,670
Accumulated other comprehensive loss	(179,428)	(134,352)
Retained earnings	1,281,726	1,159,894
Total shareholders' equity	3,797,689	3,659,745
Total liabilities and shareholders' equity	$ 6,756,470	$ 6,535,901

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

JAZZ PHARMACEUTICALS PLC
CONDENSED CONSOLIDATED STATEMENTS OF INCOME (LOSS)
(In thousands, except per share amounts)
(Unaudited)

	Three Months Ended March 31,	
	2021	2020
Revenues:		
Product sales, net	$ 603,531	$ 530,205
Royalties and contract revenues	4,050	4,521
Total revenues	607,581	534,726
Operating expenses:		
Cost of product sales (excluding amortization of acquired developed technologies)	40,189	28,657
Selling, general and administrative	260,508	208,400
Research and development	76,573	86,107
Intangible asset amortization	68,192	62,847
Acquired in-process research and development	—	202,250
Impairment charge	—	136,139
Total operating expenses	445,462	724,400
Income (loss) from operations	162,119	(189,674)
Interest expense, net	(27,376)	(18,496)
Foreign exchange gain (loss)	943	(1,132)
Income (loss) before income tax provision (benefit) and equity in gain of investees	135,686	(209,302)
Income tax provision (benefit)	18,019	(51,287)
Equity in gain of investees	(4,165)	(182)
Net income (loss)	$ 121,832	$ (157,833)
Net income (loss) per ordinary share:		
Basic	$ 2.16	$ (2.82)
Diluted	$ 2.09	$ (2.82)
Weighted-average ordinary shares used in per share calculations - basic	56,468	55,956
Weighted-average ordinary shares used in per share calculations - diluted	58,393	55,956

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

JAZZ PHARMACEUTICALS PLC
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)
(In thousands)
(Unaudited)

	Three Months Ended March 31,	
	2021	2020
Net income (loss)	$ 121,832	$ (157,833)
Other comprehensive loss:		
Foreign currency translation adjustments	(46,220)	(29,990)
Unrealized gain (loss) on hedging activities, net of income tax provision (benefit) of $163 and ($579), respectively	1,144	(4,053)
Other comprehensive loss	(45,076)	(34,043)
Total comprehensive income (loss)	$ 76,756	$ (191,876)

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

JAZZ PHARMACEUTICALS PLC
CONDENSED CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY
(In thousands)
(Unaudited)

	Ordinary Shares		Non-voting Euro Deferred		Capital Redemption Reserve	Additional Paid-in Capital	Accumulated Other Comprehensive Loss	Retained Earnings	Total Equity
	Shares	Amount	Shares	Amount					
Balance at December 31, 2020	56,171	$ 6	4,000	$ 55	$ 472	$ 2,633,670	$ (134,352)	$ 1,159,894	$ 3,659,745
Issuance of ordinary shares in conjunction with exercise of share options	408	—	—	—	—	50,407	—	—	50,407
Issuance of ordinary shares in conjunction with vesting of restricted stock units	294	—	—	—	—	—	—	—	—
Shares withheld for payment of employee's withholding tax liability	—	—	—	—	—	(23,784)	—	—	(23,784)
Share-based compensation	—	—	—	—	—	34,565	—	—	34,565
Other comprehensive loss	—	—	—	—	—	—	(45,076)	—	(45,076)
Net income	—	—	—	—	—	—	—	121,832	121,832
Balance at March 31, 2021	56,873	$ 6	4,000	$ 55	$ 472	$ 2,694,858	$ (179,428)	$ 1,281,726	$ 3,797,689

	Ordinary Shares		Non-voting Euro Deferred		Capital Redemption Reserve	Additional Paid-in Capital	Accumulated Other Comprehensive Loss	Retained Earnings	Total Equity
	Shares	Amount	Shares	Amount					
Balance at December 31, 2019	56,140	$ 6	4,000	$ 55	$ 472	$ 2,266,026	$ (223,393)	$ 1,067,815	$ 3,110,981
Issuance of ordinary shares in conjunction with exercise of share options	145	—	—	—	—	13,264	—	—	13,264
Issuance of ordinary shares in conjunction with vesting of restricted stock units	214	—	—	—	—	—	—	—	—
Shares withheld for payment of employee's withholding tax liability	—	—	—	—	—	(13,547)	—	—	(13,547)
Share-based compensation	—	—	—	—	—	28,731	—	—	28,731
Shares repurchased	(1,131)	—	—	—	—	—	—	(139,053)	(139,053)
Other comprehensive loss	—	—	—	—	—	—	(34,043)	—	(34,043)
Net loss	—	—	—	—	—	—	—	(157,833)	(157,833)
Balance at March 31, 2020	55,368	$ 6	4,000	$ 55	$ 472	$ 2,294,474	$ (257,436)	$ 770,929	$ 2,808,500

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

JAZZ PHARMACEUTICALS PLC
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(In thousands)
(Unaudited)

	Three Months Ended March 31,	
	2021	**2020**
Operating activities		
Net income (loss)	$ 121,832	$ (157,833)
Adjustments to reconcile net income (loss) to net cash provided by operating activities:		
Intangible asset amortization	68,192	62,847
Share-based compensation	34,485	28,654
Impairment charge	—	136,139
Depreciation	4,779	4,527
Acquired in-process research and development	—	202,250
Deferred tax benefit	(19,110)	(63,976)
Provision for losses on accounts receivable and inventory	1,083	2,620
Amortization of debt discount and deferred financing costs	15,688	12,000
Other non-cash transactions	7,766	1,793
Changes in assets and liabilities:		
Accounts receivable	(18,245)	37,861
Inventories	(22,014)	(10,235)
Prepaid expenses and other current assets	(2,897)	(17,843)
Other non-current assets	157	505
Operating lease assets	3,690	3,195
Accounts payable	51,292	19,604
Accrued liabilities	13,719	(12,198)
Income taxes payable	24,625	20,829
Deferred revenue	(637)	(1,180)
Other non-current liabilities	4,774	7,316
Operating lease liabilities, less current portion	(4,182)	(3,906)
Net cash provided by operating activities	284,997	272,969
Investing activities		
Proceeds from maturity of investments	760,000	345,000
Purchases of property, plant and equipment	(2,168)	(4,830)
Acquired in-process research and development	—	(202,250)
Acquisition of intangible assets	—	(13,000)
Acquisition of investments	(20,700)	(185,000)
Net cash provided by (used in) investing activities	737,132	(60,080)
Financing activities		
Proceeds from employee equity incentive and purchase plans	50,407	13,264
Payment of employee withholding taxes related to share-based awards	(23,784)	(13,547)
Repayments of long-term debt	(8,347)	(8,347)
Share repurchases	—	(139,053)
Net cash provided by (used in) financing activities	18,276	(147,683)
Effect of exchange rates on cash and cash equivalents	(641)	(948)
Net increase in cash and cash equivalents	1,039,764	64,258
Cash and cash equivalents, at beginning of period	1,057,769	637,344
Cash and cash equivalents, at end of period	$ 2,097,533	$ 701,602

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

JAZZ PHARMACEUTICALS PLC
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

1. The Company and Summary of Significant Accounting Policies

Jazz Pharmaceuticals plc is a global biopharmaceutical company dedicated to developing and commercializing life-changing medicines that transform the lives of patients with serious diseases – often with limited or no options. We have a diverse portfolio of marketed medicines and novel product candidates, from early- to late-stage development, in key therapeutic areas. Our focus is in neuroscience, including sleep medicine and movement disorders, and in oncology, including hematologic malignancies and solid tumors. We actively explore new options for patients including novel compounds, small molecules, biologics and innovative delivery technologies.

Our lead marketed products are:

- **Xyrem® (sodium oxybate) oral solution**, a product approved by the U.S. Food and Drug Administration, or FDA, and marketed in the U.S. for the treatment of both cataplexy and excessive daytime sleepiness, or EDS, in narcolepsy patients seven years of age and older;
- **Xywav™ (calcium, magnesium, potassium, and sodium oxybates) oral solution**, a product that contains 92% less sodium than Xyrem, approved by FDA and launched in the U.S. in November 2020 for the treatment of cataplexy or EDS in narcolepsy patients seven years of age and older;
- **Sunosi® (solriamfetol)**, a product approved by FDA and marketed in the U.S. and in Europe to improve wakefulness in adult patients with EDS associated with narcolepsy or obstructive sleep apnea;
- **Zepzelca™ (lurbinectedin)**, a product approved by FDA in June 2020 and launched in the U.S. in July 2020 for the treatment of adult patients with metastatic small cell lung cancer, or SCLC, with disease progression on or after platinum-based chemotherapy;
- **Vyxeos® (daunorubicin and cytarabine) liposome for injection**, a product approved in the U.S. and in Europe (where it is marketed as Vyxeos® liposomal 44 mg/100 mg powder for concentrate for solution for infusion) for the treatment of adults with newly-diagnosed therapy-related acute myeloid leukemia, or AML, or AML with myelodysplasia-related changes;
- **Defitelio® (defibrotide sodium)**, a product approved in the U.S. for the treatment of adult and pediatric patients with hepatic veno-occlusive disease, or VOD, also known as sinusoidal obstruction syndrome, with renal or pulmonary dysfunction following hematopoietic stem cell transplantation, or HSCT, and in Europe (where it is marketed as Defitelio® (defibrotide)) for the treatment of severe VOD in adults and children undergoing HSCT therapy; and
- **Erwinaze® (asparaginase Erwinia chrysanthemi)**, a treatment approved in the U.S. and in certain markets in Europe (where it is marketed as Erwinase®) for patients with acute lymphoblastic leukemia, or ALL, who have developed hypersensitivity to E. coli-derived asparaginase.

Throughout this report, unless otherwise indicated or the context otherwise requires, all references to “Jazz Pharmaceuticals,” “the registrant,” “we,” “us,” and “our” refer to Jazz Pharmaceuticals plc and its consolidated subsidiaries. Throughout this report, all references to “ordinary shares” refer to Jazz Pharmaceuticals plc’s ordinary shares.

Basis of Presentation

These unaudited condensed consolidated financial statements have been prepared following the requirements of the U.S. Securities and Exchange Commission for interim reporting. As permitted under those rules, certain footnotes and other financial information that are normally required by U.S. generally accepted accounting principles, or U.S. GAAP, can be condensed or omitted. The information included in this Quarterly Report on Form 10-Q should be read in conjunction with our annual consolidated financial statements and accompanying notes included in our Annual Report on Form 10-K for the year ended December 31, 2020.

In the opinion of management, these condensed consolidated financial statements have been prepared on the same basis as the annual consolidated financial statements and include all adjustments, consisting only of normal recurring adjustments, considered necessary for the fair presentation of our financial position and operating results. The results for the three months ended March 31, 2021 are not necessarily indicative of the results to be expected for the year ending December 31, 2021, for any other interim period or for any future period.

Our significant accounting policies have not changed substantially from those previously described in our Annual Report on Form 10-K for the year ended December 31, 2020.

These condensed consolidated financial statements include the accounts of Jazz Pharmaceuticals plc and our subsidiaries, and intercompany transactions and balances have been eliminated.

Our operating segment is reported in a manner consistent with the internal reporting provided to the chief operating decision maker, or CODM. Our CODM has been identified as our chief executive officer. We have determined that we operate in one business segment, which is the identification, development and commercialization of meaningful pharmaceutical products that address unmet medical needs.

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosures in the condensed consolidated financial statements and accompanying notes. Management bases its estimates on historical experience and on assumptions believed to be reasonable under the circumstances. Actual results could differ materially from those estimates.

Adoption of New Accounting Standards

In December 2019, the Financial Accounting Standards Board, or FASB, issued ASU No. 2019-12, "Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes", which simplifies the accounting for income taxes by removing certain exceptions to the general principles in the existing guidance for income taxes and making other minor improvements. We adopted this standard on January 1, 2021 and adoption did not have a material impact on our consolidated financial statements.

Variable Interest Entity

In the three months ended March 31, 2021, we invested in a cell of a protected cell company, or the protected cell, as part of our directors' and officers' liability risk financing strategy. Based on our control and the structure of the protected cell, we concluded that Jazz is the primary beneficiary of the protected cell and is required to consolidate the protected cell. The insurance premium payable to the protected cell for the three months ended March 31, 2021 and the protected cell's assets and liabilities as of March 31, 2021 were immaterial.

Significant Risks and Uncertainties

With the global impact of the COVID-19 pandemic, we have developed a comprehensive response strategy including establishing cross-functional response teams and implementing business continuity plans to manage the impact of the COVID-19 pandemic on our employees, patients and our business. Since the second quarter of 2020, we have been experiencing financial and other impacts of the pandemic, and given the global economic slowdown, the overall disruption of global healthcare systems and the other risks and uncertainties associated with the pandemic, we expect that our business, financial condition, results of operations and growth prospects will continue to be adversely affected in future quarters. With respect to our commercialization activities, the evolving effects of the COVID-19 pandemic continue to have a negative impact on demand, new patient starts and treatments for our products, primarily due to the inherent limitations of telemedicine and a reprioritization of healthcare resources toward COVID-19. The extent of the impact on our ability to generate sales of and revenues from our approved products, execute on new product launches, our clinical development and regulatory efforts, our corporate development objectives and the value of and market for our ordinary shares, will depend on future developments that are highly uncertain and cannot be predicted with confidence at this time, such as the ultimate duration and severity of the pandemic, governmental "stay-at-home" orders and travel restrictions, quarantines, social distancing and business closure requirements in the U.S., Ireland and other countries, and the effectiveness of vaccination programs and other actions taken globally to contain and treat the disease.

Our business has been substantially dependent on Xyrem and while we expect that our business will continue to be substantially dependent on oxybate product sales from both Xyrem and Xywav, there is no guarantee that we can maintain oxybate sales at or near historical levels, or that oxybate sales will continue to grow. Our ability to maintain or increase oxybate sales is subject to a number of risks and uncertainties including, without limitation, those related to the introduction of authorized generic and generic versions of sodium oxybate and/or new products for treatment of cataplexy and/or EDS in narcolepsy in the U.S. market, the current and potential impacts of the ongoing COVID-19 pandemic, including the current and expected future negative impact on demand for our products and the uncertainty with respect to our ability to meet commercial demand in the future, increased pricing pressure from, changes in policies by, or restrictions on reimbursement imposed by, third party payers, including our ability to obtain and maintain adequate coverage and reimbursement for Xywav, challenges to our intellectual property around Xyrem and Xywav, and continued acceptance of Xyrem by physicians and patients and acceptance of Xywav by payers, physicians and patients.

In addition to risks related specifically to Xyrem and Xywav, we are subject to other challenges and risks related to successfully commercializing a portfolio of oncology products and other neuroscience products, including Sunosi, Defitelio, Erwinaze, Vyxeos and Zepzelca, and other risks specific to our business and our ability to execute on our strategy, as well as risks and uncertainties common to companies in the pharmaceutical industry with development and commercial operations, including, without limitation, risks and uncertainties associated with: obtaining regulatory approval of our late-stage product candidates; effectively commercializing our recently approved products such as Sunosi, Zepzelca and Xywav; obtaining and maintaining adequate coverage and reimbursement for our products; increasing scrutiny of pharmaceutical product pricing and resulting changes in healthcare laws and policy; market acceptance; delays or problems in the supply of our products, loss of single source suppliers or failure to comply with manufacturing regulations; identifying, acquiring or in-licensing additional products or product candidates; pharmaceutical product development and the inherent uncertainty of clinical success; the challenges of protecting and enhancing our intellectual property rights; complying with applicable regulatory requirements; and possible restrictions on our ability and flexibility to pursue certain future opportunities as a result of our substantial outstanding debt obligations. In addition, the pending acquisition of GW Pharmaceuticals plc, or GW, may not be completed on the currently contemplated timeline or terms, or at all, and even if consummated, the anticipated benefits of the pending acquisition to us may not be realized fully within the expected timeframe or at all or may take longer to realize or cost more than expected, which could materially and adversely affect our business, financial condition, results of operations and growth prospects. Moreover, to the extent the COVID-19 pandemic continues to adversely affect our business and results of operations, it may also have the effect of heightening many of the other risks and uncertainties discussed above. We discuss many of these risks, uncertainties and other risk factors in greater detail under Part I, Item 1A in our Annual Report on Form 10-K for the year ended December 31, 2020.

Concentrations of Risk

Financial instruments that potentially subject us to concentrations of credit risk consist of cash, cash equivalents, investments and derivative contracts. Our investment policy permits investments in U.S. federal government and federal agency securities, corporate bonds or commercial paper issued by U.S. corporations, money market instruments, certain qualifying money market mutual funds, certain repurchase agreements, and tax-exempt obligations of U.S. states, agencies and municipalities and places restrictions on credit ratings, maturities, and concentration by type and issuer. We are exposed to credit risk in the event of a default by the financial institutions holding our cash, cash equivalents and investments to the extent recorded on the balance sheet.

We manage our foreign currency transaction risk and interest rate risk within specified guidelines through the use of derivatives. All of our derivative instruments are utilized for risk management purposes, and we do not use derivatives for speculative trading purposes. As of March 31, 2021, we had foreign exchange forward contracts with notional amounts totaling $425.1 million. As of March 31, 2021, the outstanding foreign exchange forward contracts had a net liability fair value of $10.7 million. As of March 31, 2021, we had interest rate swap contracts with notional amounts totaling $300.0 million. These outstanding interest rate swap contracts had a net liability fair value of $1.5 million as of March 31, 2021. The counterparties to these contracts are large multinational commercial banks, and we believe the risk of nonperformance is not significant.

We are also subject to credit risk from our accounts receivable related to our product sales. We monitor our exposure within accounts receivable and record a reserve against uncollectible accounts receivable as necessary. We extend credit to pharmaceutical wholesale distributors and specialty pharmaceutical distribution companies, primarily in the U.S., and to other international distributors and hospitals. Customer creditworthiness is monitored and collateral is not required. We monitor deteriorating economic conditions in certain European countries which may result in variability of the timing of cash receipts and an increase in the average length of time that it takes to collect accounts receivable outstanding. Historically, we have not experienced significant credit losses on our accounts receivable and as of March 31, 2021 and December 31, 2020, allowances on receivables were not material. As of March 31, 2021, two customers accounted for 81% of gross accounts receivable, Express Scripts Specialty Distribution Services, Inc. and its affiliates, or ESSDS, which accounted for 67% of gross accounts receivable, and McKesson Corporation and affiliates, or McKesson, which accounted for 14% of gross accounts receivable. As of December 31, 2020, two customers accounted for 80% of gross accounts receivable, ESSDS, which accounted for 68% of gross accounts receivable, and McKesson, which accounted for 12% of gross accounts receivable.

We depend on single source suppliers for most of our products, product candidates and their active pharmaceutical ingredients, or APIs. With respect to Xyrem, the API is manufactured for us by a single source supplier and the finished product is manufactured both by us in our facility in Athlone, Ireland and by our U.S.-based Xyrem supplier.

Recent Accounting Pronouncements

In August 2020, the FASB issued ASU No. 2020-06, “Debt—Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging— Contracts in Entity’s Own Equity (Subtopic 815-40): Accounting for Convertible Instruments and Contracts in an Entity’s Own Equity”, which simplifies the accounting for convertible instruments by

eliminating the requirement to separate embedded conversion features from the host contract when the conversion features are not required to be accounted for as derivatives under Topic 815, Derivatives and Hedging, or that do not result in substantial premiums accounted for as paid-in capital. By removing the separation model, a convertible debt instrument will be reported as a single liability instrument with no separate accounting for embedded conversion features. This new standard also removes certain settlement conditions that are required for contracts to qualify for equity classification and eliminates the treasury stock method to calculate diluted earnings per share for convertible instruments and requires the use of the if-converted method. This new standard will be effective for us for fiscal years beginning after December 15, 2021, including interim periods within those fiscal years. Early adoption is permitted, but no earlier than the fiscal year beginning after December 15, 2020. We may elect to apply the amendments on a retrospective or modified retrospective basis. We are currently evaluating the timing, method of adoption and overall impact of this standard on our consolidated financial statements.

2. Acquisition Agreement

GW Transaction Agreement

On February 3, 2021, we announced that we have entered into a definitive transaction agreement, or the GW Transaction Agreement, with GW under which a wholly-owned subsidiary of ours, Jazz Pharmaceuticals UK Holdings Limited, or Acquisition Sub, agreed to acquire GW. The GW Transaction Agreement provides, among other things, that subject to the satisfaction or waiver of the conditions set forth in the GW Transaction Agreement, Acquisition Sub will acquire the entire issued share capital of GW pursuant to a scheme of arrangement under Part 26 of the United Kingdom Companies Act 2006, or Scheme of Arrangement, which we refer to as the GW Acquisition.

Under the GW Transaction Agreement, at the effective time of the Scheme of Arrangement, all GW ordinary shares issued and outstanding will be transferred to Acquisition Sub, and the holders of GW ordinary shares will have the right to receive, for each such share, (a) $16.66⅔ in cash and (b) an amount of our ordinary shares determined based on the exchange ratio, which exchange ratio will be determined as follows:

- If the volume-weighted weighted average sales price of our ordinary shares, as determined in accordance with the GW Transaction Agreement, or the Defined VWAP, is greater than $139.72 but less than $170.76, the exchange ratio will be an amount equal to the quotient obtained by dividing (x) $1.66⅔ by (y) the Defined VWAP;
- If the Defined VWAP is equal to or less than $139.72, the exchange ratio will be 0.011929; or
- If the Defined VWAP is an amount equal to or greater than $170.76, the exchange ratio will be 0.009760.

Because each American Depositary Share in GW, or GW ADSs, represents a beneficial interest in 12 GW ordinary shares, holders of GW ADSs will be entitled to receive 12 times the foregoing cash and share amounts, or (1) $200.00 in cash and (2) $20.00 in the form of our ordinary shares with the actual number of our ordinary shares being determined based on the exchange ratio set out above. The total consideration to be paid by us for the entire issued share capital of GW is approximately $7.2 billion.

The GW Transaction Agreement contains customary representations and warranties given by GW and us, covenants regarding the conduct of GW's business prior to the consummation of the GW Acquisition, termination rights and other customary provisions. The GW Acquisition is expected to close in the first half of May 2021, subject to the satisfaction or waiver of the conditions set forth in the GW Transaction Agreement.

3. Cash and Available-for-Sale Securities

Cash, cash equivalents and investments consisted of the following (in thousands):

	March 31, 2021					
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value	Cash and Cash Equivalents	Investments
Cash	$ 851,856	$ —	$ —	$ 851,856	$ 851,856	$ —
Time deposits	1,295,000	—	—	1,295,000	960,000	335,000
Money market funds	285,677	—	—	285,677	285,677	—
Totals	$ 2,432,533	$ —	$ —	$ 2,432,533	$ 2,097,533	$ 335,000

	December 31, 2020					
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value	Cash and Cash Equivalents	Investments
Cash	$ 517,117	$ —	$ —	$ 517,117	$ 517,117	$ —
Time deposits	1,360,000	—	—	1,360,000	285,000	1,075,000
Money market funds	255,652	—	—	255,652	255,652	—
Totals	$ 2,132,769	$ —	$ —	$ 2,132,769	$ 1,057,769	$ 1,075,000

Cash equivalents and investments are considered available-for-sale securities. We use the specific-identification method for calculating realized gains and losses on securities sold and include them in interest expense, net in the condensed consolidated statements of income (loss). Our investment balances represent time deposits with original maturities of greater than three months and less than one year. Interest income from available-for-sale securities was $1.2 million and $4.4 million in the three months ended March 31, 2021 and 2020, respectively.

4. Fair Value Measurement

The following table summarizes, by major security type, our available-for-sale securities and derivative contracts as of March 31, 2021 and December 31, 2020 that were measured at fair value on a recurring basis and were categorized using the fair value hierarchy (in thousands):

	March 31, 2021			December 31, 2020		
	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Total Estimated Fair Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Total Estimated Fair Value
Assets:						
Available-for-sale securities:						
Time deposits	$ —	$ 1,295,000	$ 1,295,000	$ —	$ 1,360,000	$ 1,360,000
Money market funds	285,677	—	285,677	255,652	—	255,652
Foreign exchange forward contracts	—	488	488	—	11,907	11,907
Totals	$ 285,677	$ 1,295,488	$ 1,581,165	$ 255,652	$ 1,371,907	$ 1,627,559
Liabilities:						
Interest rate contracts	$ —	$ 1,527	$ 1,527	$ —	$ 2,835	$ 2,835
Foreign exchange forward contracts	—	11,149	11,149	—	790	790
Totals	$ —	$ 12,676	$ 12,676	$ —	$ 3,625	$ 3,625

As of March 31, 2021, our available-for-sale securities included time deposits and money market funds and their carrying values were approximately equal to their fair values. Time deposits were measured at fair value using Level 2 inputs and money market funds were measured using quoted prices in active markets, which represent Level 1 inputs. Level 2 inputs, obtained from various third party data providers, represent quoted prices for similar assets in active markets, or these inputs were derived from observable market data, or if not directly observable, were derived from or corroborated by other observable market data.

Our derivative assets and liabilities include interest rate and foreign exchange derivatives that are measured at fair value using observable market inputs such as forward rates, interest rates, our own credit risk as well as an evaluation of our counterparties' credit risks. Based on these inputs, the derivative assets and liabilities are classified within Level 2 of the fair value hierarchy.

There were no transfers between the different levels of the fair value hierarchy in 2021 or 2020.

As of March 31, 2021, the carrying amount of investments measured using the measurement alternative for equity investments without a readily determinable fair value was $4.5 million. The carrying amount, which is recorded within other non-current assets, represents the purchase price paid in 2018.

As of March 31, 2021, the estimated fair values of our 1.875% exchangeable senior notes due 2021, or the 2021 Notes, our 1.50% exchangeable senior notes due 2024, or the 2024 Notes, and our 2.00% exchangeable senior notes due 2026, or the 2026 Notes, were approximately $224 million, $625 million and $1.3 billion, respectively. The fair values of the 2021 Notes, the 2024 Notes and the 2026 Notes, which we refer to collectively as the Exchangeable Senior Notes, were estimated using quoted market prices obtained from brokers (Level 2). The estimated fair value of our borrowing under our term loan was approximately equal to its book value based on the borrowing rates currently available for variable rate loans (Level 2).

5. Derivative Instruments and Hedging Activities

We are exposed to certain risks arising from operating internationally, including fluctuations in interest rates on our outstanding term loan borrowings and fluctuations in foreign exchange rates primarily related to the translation of euro-denominated net monetary liabilities, including intercompany balances, held by subsidiaries with a U.S. dollar functional currency. We manage these exposures within specified guidelines through the use of derivatives. All of our derivative instruments are utilized for risk management purposes, and we do not use derivatives for speculative trading purposes.

To achieve a desired mix of floating and fixed interest rates on our variable rate debt, we entered into interest rate swap agreements in March 2017 which are effective until July 2021. These agreements hedge contractual term loan interest rates. As of March 31, 2021 and December 31, 2020, the interest rate swap agreements had a notional amount of $300.0 million. As a result of these agreements, the interest rate on a portion of our term loan borrowings was fixed at 1.895%, plus the borrowing spread, until July 12, 2021.

The effective portion of changes in the fair value of derivatives designated as, and that qualify as, cash flow hedges is recorded in accumulated other comprehensive loss and is subsequently reclassified into earnings in the period that the hedged forecasted transaction affects earnings. The impact on accumulated other comprehensive income (loss) and earnings from derivative instruments that qualified as cash flow hedges for the three months ended March 31, 2021 and 2020 was as follows (in thousands):

	Three Months Ended March 31,	
Interest Rate Contracts:	**2021**	**2020**
Loss recognized in accumulated other comprehensive loss, net of tax	$ (16)	$ (4,200)
Loss reclassified from accumulated other comprehensive loss to interest expense, net of tax	1,160	147

Assuming no change in London Inter-Bank Offered Rate, or LIBOR, based interest rates from market rates as of March 31, 2021, $1.3 million of losses, net of tax, recognized in accumulated other comprehensive loss will be reclassified to earnings over the next 12 months.

We enter into foreign exchange forward contracts, with durations of up to 12 months, designed to limit the exposure to fluctuations in foreign exchange rates related to the translation of certain non-U.S. dollar denominated liabilities, including intercompany balances. Hedge accounting is not applied to these derivative instruments as gains and losses on these hedge transactions are designed to offset gains and losses on underlying balance sheet exposures. As of March 31, 2021 and December 31, 2020, the notional amount of foreign exchange contracts where hedge accounting is not applied was $425.1 million and $357.4 million, respectively.

The foreign exchange gain (loss) in our condensed consolidated statements of income (loss) included the following losses associated with foreign exchange contracts not designated as hedging instruments (in thousands):

	Three Months Ended March 31,	
Foreign Exchange Forward Contracts:	**2021**	**2020**
Loss recognized in foreign exchange gain (loss)	$ (13,050)	$ (6,139)

The cash flow effects of our derivative contracts for the three months ended March 31, 2021 and 2020 are included within net cash provided by operating activities in the condensed consolidated statements of cash flows.

The following tables summarize the fair value of outstanding derivatives (in thousands):

	March 31, 2021			
	Asset Derivatives		Liability Derivatives	
	Balance Sheet Location	Fair Value	Balance Sheet Location	Fair Value
Derivatives designated as hedging instruments:				
Interest rate contracts	Other current assets	$ —	Accrued liabilities	$ 1,527
Derivatives not designated as hedging instruments:				
Foreign exchange forward contracts	Other current assets	488	Accrued liabilities	11,149
Total fair value of derivative instruments		$ 488		$ 12,676

	December 31, 2020			
	Asset Derivatives		Liability Derivatives	
	Balance Sheet Location	Fair Value	Balance Sheet Location	Fair Value
Derivatives designated as hedging instruments:				
Interest rate contracts	Other current assets	$ —	Accrued liabilities	$ 2,835
Derivatives not designated as hedging instruments:				
Foreign exchange forward contracts	Other current assets	11,907	Accrued liabilities	790
Total fair value of derivative instruments		$ 11,907		$ 3,625

Although we do not offset derivative assets and liabilities within our condensed consolidated balance sheets, our International Swap and Derivatives Association agreements provide for net settlement of transactions that are due to or from the same counterparty upon early termination of the agreement due to an event of default or other termination event. The following tables summarize the potential effect on our condensed consolidated balance sheets of offsetting our interest rate contracts and foreign exchange forward contracts subject to such provisions (in thousands):

	March 31, 2021					
				Gross Amounts Not Offset in the Consolidated Balance Sheet		
Description	Gross Amounts of Recognized Assets/ Liabilities	Gross Amounts Offset in the Consolidated Balance Sheet	Net Amounts of Assets/ Liabilities Presented in the Consolidated Balance Sheet	Derivative Financial Instruments	Cash Collateral Received (Pledged)	Net Amount
Derivative assets	$ 488	$ —	$ 488	$ (488)	$ —	$ —
Derivative liabilities	(12,676)	—	(12,676)	488	—	(12,188)

	December 31, 2020					
				Gross Amounts Not Offset in the Consolidated Balance Sheet		
Description	Gross Amounts of Recognized Assets/ Liabilities	Gross Amounts Offset in the Consolidated Balance Sheet	Net Amounts of Assets/ Liabilities Presented in the Consolidated Balance Sheet	Derivative Financial Instruments	Cash Collateral Received (Pledged)	Net Amount
Derivative assets	$ 11,907	$ —	$ 11,907	$ (2,207)	$ —	$ 9,700
Derivative liabilities	(3,625)	—	(3,625)	2,207	—	(1,418)

6. Inventories

Inventories consisted of the following (in thousands):

	March 31, 2021	December 31, 2020
Raw materials	$ 23,415	$ 16,003
Work in process	52,117	45,758
Finished goods	39,943	33,635
Total inventories	$ 115,475	$ 95,396

7. Goodwill and Intangible Assets

The gross carrying amount of goodwill was as follows (in thousands):

Balance at December 31, 2020	$ 958,303
Foreign exchange	(19,905)
Balance at March 31, 2021	$ 938,398

The gross carrying amounts and net book values of our intangible assets were as follows (in thousands):

		March 31, 2021			December 31, 2020		
	Remaining Weighted-Average Useful Life (In years)	Gross Carrying Amount	Accumulated Amortization	Net Book Value	Gross Carrying Amount	Accumulated Amortization	Net Book Value
Acquired developed technologies	12.5	$ 3,326,448	$ (1,218,402)	$ 2,108,046	$ 3,379,162	$ (1,184,111)	$ 2,195,051
Manufacturing contracts	—	12,551	(12,551)	—	13,135	(13,135)	—
Trademarks	—	2,903	(2,903)	—	2,917	(2,917)	—
Total intangible assets		$ 3,341,902	$ (1,233,856)	$ 2,108,046	$ 3,395,214	$ (1,200,163)	$ 2,195,051

The decrease in the gross carrying amount of intangible assets as of March 31, 2021 compared to December 31, 2020 reflects the negative impact of foreign currency translation adjustments due to the weakening of the euro against the U.S. dollar.

The assumptions and estimates used to determine future cash flows and remaining useful lives of our intangible and other long-lived assets are complex and subjective. They can be affected by various factors, including external factors, such as industry and economic trends, and internal factors such as changes in our business strategy and our forecasts for specific product lines.

Based on finite-lived intangible assets recorded as of March 31, 2021, and assuming the underlying assets will not be impaired and that we will not change the expected lives of the assets, future amortization expenses were estimated as follows (in thousands):

Year Ending December 31,	Estimated Amortization Expense
2021 (remainder)	$ 152,570
2022	172,486
2023	172,486
2024	172,486
2025	172,486
Thereafter	1,265,532
Total	$ 2,108,046

8. Certain Balance Sheet Items

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

	March 31, 2021	December 31, 2020
Leasehold improvements	$ 54,155	$ 54,113
Land and buildings	47,440	47,555
Manufacturing equipment and machinery	33,096	33,465
Computer software	24,479	22,781
Computer equipment	16,785	18,749
Furniture and fixtures	11,641	11,598
Construction-in-progress	6,256	7,262
Subtotal	193,852	195,523
Less accumulated depreciation and amortization	(69,989)	(67,588)
Property, plant and equipment, net	$ 123,863	$ 127,935

Accrued liabilities consisted of the following (in thousands):

	March 31, 2021	December 31, 2020
Rebates and other sales deductions	$ 137,337	$ 127,534
Employee compensation and benefits	81,155	102,601
Sales returns reserve	20,278	18,368
Royalties	17,824	15,230
Consulting and professional services	14,201	6,660
Current portion of operating lease liabilities	14,048	14,457
Derivative instrument liabilities	12,676	3,625
Inventory-related accruals	11,199	9,809
Clinical trial accruals	10,722	9,108
Accrued interest	7,539	5,722
Selling and marketing accruals	7,304	6,742
Accrued collaboration expenses	4,918	444
Accrued construction-in-progress	835	1,119
Other	33,999	31,313
Total accrued liabilities	$ 374,035	$ 352,732

9. Debt

The following table summarizes the carrying amount of our indebtedness (in thousands):

	March 31, 2021	December 31, 2020
2021 Notes	$ 218,812	$ 218,812
Unamortized discount and debt issuance costs on 2021 Notes	(3,592)	(5,883)
2021 Notes, net	215,220	212,929
2024 Notes	575,000	575,000
Unamortized discount and debt issuance costs on 2024 Notes	(89,519)	(95,275)
2024 Notes, net	485,481	479,725
2026 Notes	1,000,000	1,000,000
Unamortized discount and debt issuance costs on 2026 Notes	(172,678)	(179,518)
2026 Notes, net	827,322	820,482
Term loan	573,623	581,702
Total debt	2,101,646	2,094,838
Less current portion	248,613	246,322
Total long-term debt	$ 1,853,033	$ 1,848,516

Exchangeable Senior Notes

The Exchangeable Senior Notes were issued by Jazz Investments I Limited, or the Issuer, a 100%-owned finance subsidiary of Jazz Pharmaceuticals plc. The Exchangeable Senior Notes are senior unsecured obligations of the Issuer and are fully and unconditionally guaranteed on a senior unsecured basis by Jazz Pharmaceuticals plc. No subsidiary of Jazz Pharmaceuticals plc guaranteed the Exchangeable Senior Notes. Subject to certain local law restrictions on payment of dividends, among other things, and potential negative tax consequences, we are not aware of any significant restrictions on the ability of Jazz Pharmaceuticals plc to obtain funds from the Issuer or Jazz Pharmaceuticals plc's other subsidiaries by dividend or loan, or any legal or economic restrictions on the ability of the Issuer or Jazz Pharmaceuticals plc's other subsidiaries to transfer funds to Jazz Pharmaceuticals plc in the form of cash dividends, loans or advances. There is no assurance that in the future such restrictions will not be adopted.

As of March 31, 2021, the carrying values of the equity component of the 2021 Notes, 2024 Notes and the 2026 Notes, net of equity issuance costs, were $114.4 million, $149.8 million and $176.3 million, respectively.

Maturities

Scheduled maturities with respect to our long-term debt principal balances outstanding as of March 31, 2021 were as follows (in thousands):

Year Ending December 31,	Scheduled Long-Term Debt Maturities
2021 (remainder)	$ 243,852
2022	33,387
2023	517,494
2024	575,000
2025	—
Thereafter	1,000,000
Total	$ 2,369,733

10. Leases

The components of the lease expense for the three months ended March 31, 2021 and 2020 were as follows (in thousands):

Lease Cost	Three Months Ended March 31, 2021	2020
Operating lease cost	$ 5,546	$ 5,290
Short-term lease cost	1,375	870
Variable lease cost	1	1
Sublease income	—	(157)
Net lease cost	$ 6,922	$ 6,004

Supplemental balance sheet information related to operating leases was as follows (in thousands):

Leases	Classification	March 31, 2021	December 31, 2020
Assets			
Operating lease assets	Operating lease assets	$ 125,738	$ 129,169
Liabilities			
Current			
Operating lease liabilities	Accrued liabilities	14,048	14,457
Non-current			
Operating lease liabilities	Operating lease liabilities, less current portion	136,020	140,035
Total operating lease liabilities		$ 150,068	$ 154,492

Lease Term and Discount Rate	March 31, 2021	December 31, 2020
Weighted-average remaining lease term - operating leases (years)	8.6	8.7
Weighted-average discount rate - operating leases	5.3 %	5.3 %

Supplemental cash flow information related to operating leases was as follows (in thousands):

	Three Months Ended March 31, 2021	2020
Cash paid for amounts included in the measurement of lease liabilities:		
Operating cash outflows from operating leases	$ 6,293	$ 6,215
Non-cash operating activities:		
Operating lease assets obtained in exchange for new operating lease liabilities	$ 375	$ 201

Maturities of operating lease liabilities were as follows (in thousands):

Year Ending December 31,	Operating Leases
2021 (remainder)	$ 16,009
2022	22,265
2023	22,352
2024	24,192
2025	18,405
Thereafter	86,495
Total lease payments	189,718
Less imputed interest	(39,650)
Present value of lease liabilities	$ 150,068

11. Commitments and Contingencies

Indemnification

In the normal course of business, we enter into agreements that contain a variety of representations and warranties and provide for general indemnification, including indemnification associated with product liability or infringement of intellectual property rights. Our exposure under these agreements is unknown because it involves future claims that may be made but have not yet been made against us. To date, we have not paid any claims or been required to defend any action related to these indemnification obligations.

We have agreed to indemnify our executive officers, directors and certain other employees for losses and costs incurred in connection with certain events or occurrences, including advancing money to cover certain costs, subject to certain limitations. The maximum potential amount of future payments we could be required to make under the indemnification obligations is unlimited; however, we maintain insurance policies that may limit our exposure and may enable us to recover a portion of any future amounts paid. Assuming the applicability of coverage, the willingness of the insurer to assume coverage, and subject to certain retention, loss limits and other policy provisions, we believe the fair value of these indemnification obligations is not significant. Accordingly, we did not recognize any liabilities relating to these obligations as of March 31, 2021 and December 31, 2020. No assurances can be given that the covering insurers will not attempt to dispute the validity, applicability, or amount of coverage without expensive litigation against these insurers, in which case we may incur substantial liabilities as a result of these indemnification obligations.

Other Commitments

As of March 31, 2021, we had $88.8 million of noncancelable purchase commitments due within one year, primarily related to agreements with third party manufacturers and marketing campaigns.

Legal Proceedings

From June 2020 to March 2021, a number of class action lawsuits were filed on behalf of purported direct and indirect Xyrem purchasers, alleging that the patent litigation settlement agreements we entered with Hikma and other ANDA filers violate state and federal antitrust and consumer protection laws, as follows:

On June 17, 2020, a class action lawsuit was filed in the United States District Court for the Northern District of Illinois by Blue Cross and Blue Shield Association, or BCBS, against Jazz Pharmaceuticals plc, Jazz Pharmaceuticals, Inc., and Jazz Pharmaceuticals Ireland Limited, or, collectively, the Company Defendants (hereinafter referred to as the BCBS Lawsuit). The BCBS Lawsuit also names Roxane Laboratories, Inc., Hikma Pharmaceuticals USA Inc., Eurohealth (USA), Inc., Hikma Pharmaceuticals plc, Amneal Pharmaceuticals LLC, Par Pharmaceuticals, Inc., Lupin Ltd., Lupin Pharmaceuticals Inc., and Lupin Inc., or, collectively, the BCBS Defendants.

On June 18 and June 23, 2020, respectively, two additional class action lawsuits were filed against the Company Defendants and the BCBS Defendants: one by the New York State Teamsters Council Health and Hospital Fund in the United States District Court for the Northern District of California, and another by the Government Employees Health Association Inc. in the United States District Court for the Northern District of Illinois (hereinafter referred to as the GEHA Lawsuit).

On June 18, 2020, a class action lawsuit was filed in the United States District Court for the Northern District of California by the City of Providence, Rhode Island, on behalf of itself and all others similarly situated, against Jazz

Pharmaceuticals plc, and Roxane Laboratories, Inc., West-Ward Pharmaceuticals Corp., Hikma Labs Inc., Hikma Pharmaceuticals USA Inc., and Hikma Pharmaceuticals plc, or, collectively, the City of Providence Defendants.

On June 30, 2020, a class action lawsuit was filed in the United States District Court for the Northern District of Illinois by UFCW Local 1500 Welfare Fund on behalf of itself and all others similarly situated, against Jazz Pharmaceuticals Ireland Ltd., Jazz Pharmaceuticals, Inc., Roxane Laboratories, Inc., Hikma Pharmaceuticals plc, Eurohealth (USA), Inc. and West-Ward Pharmaceuticals Corp., or collectively the UFCW Defendants (hereinafter referred to as the UFCW Lawsuit).

On July 13, 2020, the plaintiffs in the BCBS Lawsuit and the GEHA Lawsuit dismissed their complaints in the United States District Court for the Northern District of Illinois, and refiled their respective lawsuits in the United States District Court for the Northern District of California. On July 14, 2020, the plaintiffs in the UFCW Lawsuit dismissed their complaint in the United States District Court for the Northern District of Illinois and on July 15, 2020, refiled their lawsuit in the United States District Court for the Northern District of California.

On July 31, 2020, a class action lawsuit was filed in the United States District Court for the Southern District of New York by the A.F. of L.-A.G.C Building Trades Welfare Plan on behalf of itself and all others similarly situated, against Jazz Pharmaceuticals plc (hereinafter referred to as the AFL Plan Lawsuit). The AFL Plan Lawsuit also names Roxane Laboratories Inc., West-Ward Pharmaceuticals Corp., Hikma Labs Inc., Hikma Pharmaceuticals plc, Amneal Pharmaceuticals LLC, Par Pharmaceuticals Inc., Lupin Ltd., Lupin Pharmaceuticals, Inc., and Lupin Inc.

On August 14, 2020, an additional class action lawsuit was filed in the United States District Court for the Southern District of New York by the Self-Insured Schools of California on behalf of itself and all others similarly situated, against the Company Defendants, as well as Hikma Pharmaceuticals plc, Eurohealth (USA) Inc., Hikma Pharmaceuticals USA, Inc., West-Ward Pharmaceuticals Corp., Roxane Laboratories, Inc., Amneal Pharmaceuticals LLC, Endo International, plc, Endo Pharmaceuticals LLC, Par Pharmaceutical, Inc., Lupin Ltd., Lupin Pharmaceuticals Inc., Lupin Inc., Sun Pharmaceutical Industries Ltd., Sun Pharmaceutical Holdings USA, Inc., Sun Pharmaceutical Industries, Inc., Ranbaxy Laboratories Ltd., Teva Pharmaceutical Industries Ltd., Watson Laboratories, Inc., Wockhardt Ltd., Morton Grove Pharmaceuticals, Inc., Wockhardt USA LLC, Mallinckrodt plc, and Mallinckrodt LLC (hereinafter the Self-Insured Schools Lawsuit).

On September 16, 2020, an additional class action lawsuit was filed in the United States District Court for the Northern District of California, by Ruth Hollman on behalf of herself and all others similarly situated, against the same defendants named in the Self-Insured Schools Lawsuit.

The plaintiffs in certain of these lawsuits are seeking to represent a class of direct purchasers of Xyrem, and the plaintiffs in the remaining lawsuits are seeking to represent a class of indirect purchasers of Xyrem. Each of the lawsuits generally alleges violations of U.S. federal and state antitrust, consumer protection, and unfair competition laws in connection with the Company Defendants' conduct related to Xyrem, including actions leading up to, and entering into, patent litigation settlement agreements with each of the other named defendants. Each of the lawsuits seeks monetary damages, exemplary damages, equitable relief against the alleged unlawful conduct, including disgorgement of profits and restitution, and injunctive relief. It is possible that additional lawsuits will be filed against the Company Defendants making similar or related allegations. If the plaintiffs were to be successful in their claims, they may be entitled to injunctive relief or we may be required to pay significant monetary damages, which could have a material adverse effect on our business, financial condition, results of operations and growth prospects.

In December 2020, these cases were centralized and transferred to the United States District Court for the Northern District of California, where the multidistrict litigation will proceed for the purpose of discovery and pre-trial proceedings. In January 2021, the Court issued a Case Management Order that schedules this case for trial in February 2023.

On March 18, 2021, United Healthcare Services, Inc. filed a lawsuit in the United States District Court for the District of Minnesota against the Company Defendants, Hikma Pharmaceuticals plc, Roxane Laboratories, Inc., Hikma Pharmaceuticals USA Inc., Eurohealth (USA) Inc., Amneal Pharmaceuticals LLC, Par Pharmaceutical Inc., Lupin Ltd., and Lupin Pharmaceuticals, Inc., raising similar allegations, or the UHS Lawsuit. On March 24, 2021, the U.S. Judicial Panel on Multidistrict Litigation conditionally transferred the UHS Lawsuit to the United States District Court for the Northern District of California, where it was consolidated for discovery and pre-trial proceedings with the other cases.

On March 15, 2021, GW filed a definitive proxy statement, or Proxy Statement, with the Securities and Exchange Commission in connection with the GW Acquisition.

Since the filing of the Proxy Statement, Jazz Pharmaceuticals plc has been named in two lawsuits filed in state and federal courts in New York on March 17, 2021 by purported GW shareholders in connection with the GW Acquisition, the first was filed in the United States District Court for the Southern District New York by James Farrell, referred to as the Farrell Lawsuit, and an additional suit was filed in New York state court by Brian Levy, or the Levy Lawsuit. In addition to Jazz Pharmaceuticals plc, Jazz Pharmaceuticals UK Holdings Ltd., GW Pharmaceuticals plc, and the GW Board of Directors are named as defendants in the Farrell Lawsuit. In the Levy Lawsuit, GW Pharmaceuticals plc, the GW Board of Directors,

Centerview Partners LLC, and Goldman Sachs & Co. LLC are named as defendants. In addition to the Farrell Lawsuit and the Levy Lawsuit, ten additional suits have been filed in New York, California, and Pennsylvania federal courts by purported GW shareholders against GW Pharmaceuticals plc and its Board of Directors, but which do not name any Jazz Pharmaceuticals parties, referred to as the GW Litigation, and collectively with the Farrell Lawsuit and the Levy Lawsuit, as the Transaction Litigation. In the Transaction Litigation, the plaintiffs allege that the Proxy Statement omitted material information and contained misrepresentations, and that the individual members of the GW Board of Directors breached their fiduciary duties, in violation of state and federal laws, including the Securities Exchange Act of 1934. The plaintiffs in the Transaction Litigation sought various remedies, including injunctive relief to prevent the consummation of the GW Acquisition unless certain allegedly material information was disclosed, or in the alternative, rescission or damages.

On April 14, 2021, GW filed a Form 8-K containing supplemental disclosures related to the GW Acquisition. Pursuant to a memorandum of understanding between the parties, the Levy Lawsuit was dismissed on April 14, 2021.

Jazz does not believe any of GW's supplemental disclosures were material or required by law, and further believes that the claims in the Transaction Litigation are meritless. Jazz will continue to defend itself in the remaining Transaction Litigation.

From time to time we are involved in legal proceedings arising in the ordinary course of business. We believe there is no other litigation pending that could have, individually or in the aggregate, a material adverse effect on our results of operations or financial condition.

12. Shareholders' Equity

Share Repurchase Program

In November 2016, our board of directors authorized a share repurchase program and as of March 31, 2021 had authorized the repurchase of ordinary shares having an aggregate purchase price of up to $1.5 billion, exclusive of any brokerage commissions. Under this program, which has no expiration date, we may repurchase ordinary shares from time to time on the open market. The timing and amount of repurchases will depend on a variety of factors, including the price of our ordinary shares, alternative investment opportunities, restrictions under the amended credit agreement, corporate and regulatory requirements and market conditions. The share repurchase program may be modified, suspended or discontinued at any time without prior notice. During the three months ended March 31, 2021, we did not repurchase any of our ordinary shares. As of March 31, 2021, the remaining amount authorized under the share repurchase program was $431.2 million.

Accumulated Other Comprehensive Income (Loss)

The components of accumulated other comprehensive income (loss) as of March 31, 2021 and December 31, 2020 were as follows (in thousands):

	Net Unrealized Loss From Hedging Activities	Foreign Currency Translation Adjustments	Total Accumulated Other Comprehensive Loss
Balance at December 31, 2020	$ (2,467)	$ (131,885)	$ (134,352)
Other comprehensive loss before reclassifications	(16)	(46,220)	(46,236)
Amounts reclassified from accumulated other comprehensive loss	1,160	—	1,160
Other comprehensive income (loss), net	1,144	(46,220)	(45,076)
Balance at March 31, 2021	$ (1,323)	$ (178,105)	$ (179,428)

During the three months ended March 31, 2021, other comprehensive loss reflects foreign currency translation adjustments, primarily due to the weakening of the euro against the U.S. dollar.

13. Net Income (Loss) per Ordinary Share

Basic net income (loss) per ordinary share is based on the weighted-average number of ordinary shares outstanding. Diluted net income (loss) per ordinary share is based on the weighted-average number of ordinary shares outstanding and potentially dilutive ordinary shares outstanding.

Basic and diluted net income (loss) per ordinary share were computed as follows (in thousands, except per share amounts):

	Three Months Ended March 31,	
	2021	2020
Numerator:		
Net income (loss)	$ 121,832	$ (157,833)
Denominator:		
Weighted-average ordinary shares used in per share calculations - basic	56,468	55,956
Dilutive effect of employee equity incentive and purchase plans	1,584	—
Dilutive effect of Exchangeable Senior Notes	341	—
Weighted-average ordinary shares used in per share calculations - diluted	58,393	55,956
Net income (loss) per ordinary share:		
Basic	$ 2.16	$ (2.82)
Diluted	$ 2.09	$ (2.82)

Potentially dilutive ordinary shares from our employee equity incentive and purchase plans and the Exchangeable Senior Notes are determined by applying the treasury stock method to the assumed exercise of share options, the assumed vesting of outstanding restricted stock units, or RSUs, the assumed issuance of ordinary shares under our employee stock purchase plan, or ESPP, and the assumed issuance of ordinary shares upon exchange of the Exchangeable Senior Notes. The potential issue of ordinary shares issuable upon exchange of the Exchangeable Senior Notes had no effect on diluted net income (loss) per ordinary share for the three months ended March 31, 2020 because the average price of our ordinary shares for the three months ended March 31, 2020 did not exceed the effective exchange prices per ordinary share of the Exchangeable Senior Notes.

The following table represents the weighted-average ordinary shares that were excluded from the calculation of diluted net income (loss) per ordinary share for the periods presented because including them would have an anti-dilutive effect (in thousands):

	Three Months Ended March 31,	
	2021	2020
Exchangeable Senior Notes	9,798	5,504
Options, RSUs and ESPP	1,671	5,611

14. Revenues

The following table presents a summary of total revenues (in thousands):

	Three Months Ended March 31,	
	2021	2020
Xyrem	$ 335,550	$ 407,875
Xywav	75,416	—
Total Oxybate	410,966	407,875
Sunosi	11,606	1,924
Total Neuroscience	422,572	409,799
Zepzelca	54,334	—
Vyxeos	33,155	32,720
Defitelio/defibrotide	49,619	47,432
Erwinaze/Erwinase	41,068	37,732
Total Oncology	178,176	117,884
Other	2,783	2,522
Product sales, net	603,531	530,205
Royalties and contract revenues	4,050	4,521
Total revenues	$ 607,581	$ 534,726

The following table presents a summary of total revenues attributed to geographic sources (in thousands):

	Three Months Ended March 31,	
	2021	2020
United States	$ 548,292	$ 477,789
Europe	47,233	41,556
All other	12,056	15,381
Total revenues	$ 607,581	$ 534,726

The following table presents a summary of the percentage of total revenues from customers that represented more than 10% of our total revenues:

	Three Months Ended March 31,	
	2021	2020
ESSDS	67 %	76 %
McKesson	14 %	13 %

Financing and payment

Our payment terms vary by the type and location of our customer but payment is generally required in a term ranging from 30 to 45 days.

Contract Liabilities - Deferred Revenue

The deferred revenue balance as of March 31, 2021 primarily related to deferred upfront fees received from Nippon Shinyaku Co., Ltd., or Nippon Shinyaku, in connection with two license, development and commercialization agreements granting Nippon Shinyaku exclusive rights to develop and commercialize each of Defitelio and Vyxeos in Japan. We recognized contract revenues of $0.6 million during the three months ended March 31, 2021, relating to these upfront payments. The deferred revenue balances are being recognized over an average of four years representing the period over which we expect to perform our research and developments obligations under each agreement.

The following table presents a reconciliation of our beginning and ending balances in contract liabilities from contracts with customers for the three months ended March 31, 2021 (in thousands):

	Contract Liabilities
Balance as of December 31, 2020	$ 4,861
Amount recognized within royalties and contract revenues	(636)
Balance as of March 31, 2021	$ 4,225

15. Share-Based Compensation

Share-based compensation expense related to share options, RSUs and grants under our ESPP was as follows (in thousands):

	Three Months Ended March 31,	
	2021	2020
Selling, general and administrative	$ 23,846	$ 20,596
Research and development	8,643	6,385
Cost of product sales	1,996	1,673
Total share-based compensation expense, pre-tax	34,485	28,654
Income tax benefit from share-based compensation expense	(6,587)	(3,121)
Total share-based compensation expense, net of tax	$ 27,898	$ 25,533

Share Options

The table below shows the number of shares underlying options granted to purchase our ordinary shares, the weighted-average assumptions used in the Black-Scholes option pricing model and the resulting weighted-average grant date fair value of share options granted:

	Three Months Ended March 31,	
	2021	2020
Shares underlying options granted (in thousands)	95	565
Grant date fair value	$ 51.33	$ 33.65
Black-Scholes option pricing model assumption information:		
Volatility	37 %	32 %
Expected term (years)	4.5	4.6
Range of risk-free rates	0.4-0.8%	0.8-1.6%
Expected dividend yield	— %	— %

Restricted Stock Units

The table below shows the number of RSUs granted covering an equal number of our ordinary shares and the weighted-average grant date fair value of RSUs granted:

	Three Months Ended March 31,	
	2021	2020
RSUs granted (in thousands)	1,201	959
Grant date fair value	$ 169.87	$ 114.19

The fair value of RSUs is determined on the date of grant based on the market price of our ordinary shares on that date. The fair value of RSUs is expensed ratably over the vesting period, generally over four years.

As of March 31, 2021, compensation cost not yet recognized related to unvested share options and RSUs was $52.0 million and $275.1 million, respectively, which is expected to be recognized over a weighted-average period of 2.2 years and 3.2 years, respectively.

16. Income Taxes

Our income tax provision was $18.0 million in the three months ended March 31, 2021, compared to an income tax benefit of $51.3 million for the same period in 2020. The effective tax rate was 13.3% in the three months ended March 31, 2021 compared to 24.5% for the same period in 2020. The decrease in the effective tax rate for the three months ended March 31, 2021 compared to the same period in 2020 was primarily due to the impact of the defibrotide acquired in-process research and development, or IPR&D, asset impairment charge and the acquired IPR&D expense relating to the $200.0 million upfront payment to Pharma Mar, S.A., or PharmaMar, for the exclusive U.S. commercialization and development rights to Zepzelca in 2020, and changes in income mix among the various jurisdictions in which we operate. The effective tax rate for the three months ended March 31, 2021 was higher than the Irish statutory rate of 12.5% primarily due to the impact of various expenses not deductible for tax purposes, income taxable at a rate higher than the Irish statutory rate and uncertain tax positions, partially offset by deductions available in respect of subsidiary equity and originating tax credits. We do not provide for Irish income taxes on undistributed earnings of our foreign operations that are intended to be indefinitely reinvested in our foreign subsidiaries.

Our net deferred tax asset is comprised primarily of U.S. federal and state tax credits, U.S. federal and state and foreign net operating loss carryforwards and other temporary differences, and is net of deferred tax liabilities related to acquired intangible assets. We maintain a valuation allowance against certain foreign and U.S. deferred tax assets. Each reporting period, we evaluate the need for a valuation allowance on our deferred tax assets by jurisdiction and adjust our estimates as more information becomes available.

We are required to recognize the financial statement effects of a tax position when it is more likely than not, based on the technical merits, that the position will be sustained upon examination. As a result, we have recorded an unrecognized tax benefit for certain tax benefits which we judge may not be sustained upon examination. Our most significant tax jurisdictions are Ireland and the U.S. (both at the federal level and in various state jurisdictions). For Ireland we are no longer subject to income tax audits by taxing authorities for the years prior to 2016. The U.S. jurisdictions generally have statute of limitations three to four years from the later of the return due date or the date when the return was filed. However, in the U.S. (at the federal level and in most states), carryforwards that were generated in 2016 and earlier may still be adjusted upon examination by the tax authorities. During the three months ended March 31, 2021, certain of our subsidiaries were under examination by the French tax authorities for the years ended December 31, 2012, 2013 and 2015 through 2019. Due to the subjective nature of the transfer pricing issues involved, the Company reached an agreement with the French tax authorities to settle the audits for all open years. The settlement agreement in respect of 2012 and 2013 has been finalized and the Company paid incremental taxes, interest and penalties of $18.6 million during the three months ended March 31, 2021 to close the audit of those periods. Settlements in respect of 2015 through 2019 are also expected to be finalized and paid in 2021, and $1.1 million has been accrued in this respect. Certain of our Italian subsidiaries are currently under examination by the Italian tax authorities for the year ended December 31, 2017. Certain of our Luxembourg subsidiaries are currently under examination by the Luxembourg tax authorities for the years ended December 31, 2017 and 2018. Our German subsidiary is currently under examination by the German tax authorities for the years ended December 31, 2017, 2018 and 2019.

17. Subsequent Event

Pending GW Acquisition

The respective obligations of GW and us to consummate the GW Acquisition are subject to the satisfaction or waiver of a number of customary conditions, including obtaining certain regulatory approvals and obtaining sanction of the Scheme of Arrangement by the High Court of Justice of England and Wales. Certain conditions have been satisfied, including expiration of the applicable waiting period under the Hart-Scott-Rodino Antitrust Improvements Act of 1976 and the approval by GW's shareholders of the Scheme of Arrangement. The GW Acquisition is not subject to approval by our shareholders, nor is the GW Acquisition subject to a financing contingency. The GW Acquisition is expected to close in the first half of May 2021, subject to the satisfaction or waiver of the conditions set forth in the GW Transaction Agreement.

On February 3, 2021, in connection with the execution of the GW Transaction Agreement, we entered into a commitment letter with BofA Securities, Inc., Bank of America, N.A. and JPMorgan Chase Bank, N.A. pursuant to which these commitment parties have committed to provide us with a senior secured revolving credit facility in an aggregate principal amount of up to $500.0 million, a senior secured term loan B facility in an aggregate principal amount of up to $3.15 billion and a senior secured bridge loan facility in an aggregate principal amount of up to $2.2 billion to, among other things, finance our obligations in respect of the GW Acquisition. The effectiveness of such credit facilities is subject to the occurrence of customary closing conditions, including the consummation of the GW Acquisition.

On April 20, 2021, we and certain of our wholly-owned subsidiaries, entered into Amendment No. 3 to our Credit Agreement, dated as of June 18, 2015, or the Existing Credit Agreement, with the lenders party thereto and Bank of America, N.A., as administrative agent, collateral agent, letter of credit issuer and swing line lender. The Amendment No. 3 amended the Existing Credit Agreement to permit the issuance of senior secured notes and made certain related changes as set forth therein.

On April 29, 2021, our wholly-owned subsidiary, Jazz Securities Designated Activity Company, issued $1.5 billion in aggregate principal amount of 4.375% senior secured notes due 2029.

Concurrently with the closing of the GW Acquisition, we expect to enter into new senior secured credit facilities, which is expected to consist of a $500.0 million revolving credit facility and a term loan B facility in an aggregate amount of approximately $3.85 billion. We expect to use term loan B borrowings under new senior secured credit facilities and the net proceeds from the senior secured notes, together with cash on hand to fund the cash consideration payable in connection with the GW Acquisition. The senior secured notes have a mandatory redemption clause that will be triggered under certain circumstances, including failure to complete the GW Acquisition within the time period outlined in the GW Transaction Agreement or the termination of the GW Acquisition.

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

The following discussion of our financial condition and results of operations should be read in conjunction with the condensed consolidated financial statements and the notes to condensed consolidated financial statements included elsewhere in this Quarterly Report on Form 10-Q. This discussion contains forward-looking statements that involve risks and uncertainties. When reviewing the discussion below, you should keep in mind the substantial risks and uncertainties that could impact our business. In particular, we encourage you to review the risks and uncertainties summarized under "Cautionary Note Regarding Forward-Looking Statements" that appears at the end of this discussion and as discussed in more detail under "Risk Factors" in Part I, Item 1A of our Annual Report on Form 10-K for the year ended December 31, 2020. These risks and uncertainties could cause actual results to differ materially from those projected in forward-looking statements contained in this report or implied by past results and trends. Forward-looking statements are statements that attempt to forecast or anticipate future developments in our business, financial condition or results of operations. See the "Cautionary Note Regarding Forward-Looking Statements" that appears at the end of this discussion. These statements, like all statements in this report, speak only as of the date of this Quarterly Report on Form 10-Q (unless another date is indicated), and we undertake no obligation to update or revise these statements in light of future developments.

Overview

Jazz Pharmaceuticals plc is an innovative global biopharmaceutical company dedicated to developing and commercializing life-changing medicines that transform the lives of patients with serious diseases – often with limited or no options. We have a diverse portfolio of marketed medicines and novel product candidates, in early- to late-stage development, across key therapeutic areas. Our focus is in neuroscience, including sleep and movement disorders, and in oncology, including hematologic malignancies and solid tumors. We actively explore new options for patients including novel compounds, small molecules, biologics and innovative delivery technologies.

Our continued growth is rooted in executing commercial launches; delivering positive clinical results; effectively deploying capital to strengthen the prospects of achieving our short- and long-term goals through strategic and capital-efficient corporate development; and delivering strong financial performance.

In our core therapeutic areas, we follow a similar approach to bring new medicines to patients and to create sustainable shareholder value. Most critically, we focus on patient populations with high unmet needs. We identify and develop differentiated therapies for these patients that we can support with an efficient sales force and that we expect will be long-lived, durable assets. In addition, we leverage our integrated capabilities and global infrastructure to effectively reach patients around the world.

Commercial Achievements

Our marketed products are approved in countries around the world to improve patient care.

Product	Indications	Initial U.S. Approval Date	Markets
NEUROSCIENCE			
Xywav™ (calcium, magnesium, potassium, and sodium oxybates)	Treatment of cataplexy or excessive daytime sleepiness, or EDS, in patients seven years of age and older with narcolepsy.	July 2020	U.S.
Xyrem® (sodium oxybate)	Treatment of cataplexy or EDS in patients seven years of age and older with narcolepsy.	July 2002	U.S., Other Markets
Sunosi® (solriamfetol)	Improve wakefulness in adult patients with EDS associated with narcolepsy or obstructive sleep apnea, or OSA.	March 2019	U.S., Europe, United Kingdom (UK)
ONCOLOGY			
Zepzelca™ (lurbinectedin)	Treatment of adult patients with metastatic small cell lung cancer, or SCLC, with disease progression on or after platinum-based chemotherapy.	June 2020	U.S. (licensed from Pharma Mar, S.A., or PharmaMar)
Vyxeos® (daunorubicin and cytarabine) liposome for injection (U.S.)	Newly-diagnosed therapy-related acute myeloid leukemia (t-AML) or AML with myelodysplasia-related changes (AML-MRC) in adults and pediatric patients one year and older.	August 2017	U.S.
Vyxeos® liposomal 44 mg/100 mg powder for concentrate for solution for infusion (Europe)	Adults with newly-diagnosed, therapy-related acute myeloid leukemia (t-AML) or AML with myelodysplasia-related changes (AML-MRC).		Europe, UK
Defitelio® (defibrotide sodium) (U.S.)	Treatment of adult and pediatric patients with hepatic veno-occlusive disease, or VOD, also known as sinusoidal obstruction syndrome, or SOS, with renal or pulmonary dysfunction following hematopoietic stem-cell transplantation, or HSCT.	March 2016	U.S., Europe, UK, Japan, and other markets
Defitelio® (defibrotide) (Europe)	Treatment of severe hepatic VOD, also known as SOS, in HSCT therapy.		
Erwinaze® (asparaginase Erwinia chrysanthemi)	Treatment of patients with acute lymphoblastic leukemia (ALL) who have developed hypersensitivity to E. coli-derived asparaginase.	November 2011	U.S., Europe, Other Markets

Neuroscience

We are the global leader in the development and commercialization of oxybate therapy for patients with sleep disorders. We introduced Xyrem in 2002, which has become a standard of care for treating EDS and cataplexy in narcolepsy. In 2020, we received U.S. Food and Drug Administration, or FDA, approval for Xywav, an oxybate therapy that contains 92% less sodium than Xyrem. Since there is no cure for narcolepsy and long-term disease management is needed, we believe that Xywav represents an important new therapeutic option for patients. Our commercial efforts are focused on educating patients and physicians about the lifelong impact of high sodium, and how the use of Xywav enables them to address what is a modifiable risk factor.

We have seen strong adoption of Xywav since its launch in November 2020. In the first quarter of 2021, there were 15,700 average active oxybate patients; exiting the quarter, there were 3,900 active Xywav patients. This increased from 1,900 active Xywav patients exiting the fourth quarter of 2020. We view this as a positive indication that physicians and patients appreciate the benefits of a lower-sodium oxybate option. We are seeing strong Xywav adoption among both existing and new-to-oxybate patients.

Coupled with strong adoption, we have met our goal to obtain broad payer coverage for Xywav within six months of launch. We now have agreements in place with all three major pharmacy benefit managers (PBMs) in the U.S. Commercial payer coverage overall is currently at approximately 80% of covered lives, and our team is working with payers to further expand coverage.

Sunosi was launched in the United States in 2019 as a therapy to improve wakefulness in adult patients with EDS associated with narcolepsy or OSA, and we remain focused on driving the next phase of its growth. We have established broad commercial payer coverage and have invested in an expanded and dedicated sales force and direct-to-consumer initiatives to raise awareness of EDS due to narcolepsy or OSA. Sunosi was approved in Europe and the United Kingdom in 2020, and we are pleased with the progression of our rolling launch.

Oncology

We acquired U.S. development and commercialization rights to Zepzelca in early 2020, and launched six months thereafter with an indication for treatment of patients with SCLC with disease progression on or after platinum-based chemotherapy. Our education and promotional efforts are focused on SCLC-treating physicians. We are seeing increased awareness of Zepzelca across academic and community cancer centers and continued growth in the second-line setting in both platinum-sensitive and platinum-resistant patients, reflecting the significant unmet need and favorable Zepzelca product profile. We are also developing Zepzelca in additional indications.

Vyxeos is a treatment for adults with newly-diagnosed therapy-related AML, or AML with myelodysplasia-related changes. In March 2021, FDA approved a revised label to include a new indication to treat newly-diagnosed therapy-related acute myeloid leukemia (t-AML) or AML with myelodysplasia-related changes in pediatric patients aged one year and older. We have a number of ongoing development activities and continue to expand into new markets internationally.

Defitelio provides an important treatment option for patients with VOD following HSCT. There was a significant decline in the number of patients receiving HSCT due to the effects of the COVID-19 pandemic. We anticipate the use of Defitelio will increase as hospital systems globally are able to move forward with more HSCT procedures.

Erwinaze, which is approved to treat a limited population of patients with ALL who have developed hypersensitivity to E. coli-derived asparaginase, is licensed from and manufactured by a single source, Porton Biopharma Limited, or PBL. Our license and supply agreement with PBL expired on December 31, 2020. We expect to distribute Erwinaze through the first half of 2021. In the past, a significant challenge to maintaining sales of Erwinaze and a barrier to increasing sales was PBL's inability to consistently supply product that meets specifications in quantities that are adequate to meet market demand. Given the urgent need for a reliable and high-quality recombinant asparaginase, we are focused on bringing JZP458 to market as quickly as possible. Our commercial team is currently preparing for its anticipated U.S. launch, targeted for mid-year 2021, subject to FDA approval.

Research and Development Progress

Our development activities encompass all stages of development and currently include clinical testing of new product candidates and activities related to clinical improvements of, or additional indications or new clinical data for, our existing marketed products. We have also expanded into preclinical exploration of novel therapies, including precision medicines in hematology and oncology. We are increasingly leveraging our growing internal research and development function, and we have also entered into collaborations with third parties for the research and development of innovative early-stage product candidates and have supported additional investigator-sponsored trials, or ISTs, that will generate additional data related to our products. We also seek out investment opportunities in support of development of early- and mid-stage technologies in our

therapeutic areas and adjacencies. We have a number of licensing and collaboration agreements with third parties, including biotechnology companies, academic institutions and research-based companies and institutions, related to preclinical and clinical research and development activities in hematology and in precision oncology, as well as in neuroscience.

We remain on track to deliver two important therapies to patients in 2021: Xywav in idiopathic hypersomnia, or IH, and JZP458 in ALL. We have taken both products from concept to commercial readiness, underscoring the strength of our portfolio and development capabilities.

At the American Academy of Neurology (AAN) Annual Meeting in April 2021, we presented positive results from the Phase 3 clinical trial evaluating Xywav in adult patients with IH. IH is a chronic neurological disorder that is primarily characterized by EDS and that currently has no approved therapies in the U.S. FDA granted Fast Track designation for Xywav in IH in September 2020, and we completed the rolling submission of a supplemental new drug application, or sNDA, in February 2021. Subsequently, FDA granted Priority Review and a PDUFA action date of August 12, 2021. We are planning for a potential commercial launch in the fourth quarter of 2021.

For JZP458, we initiated a rolling biologics licensing application, or BLA, submission to FDA under Real-Time Oncology Review. We are working closely with FDA to complete the BLA submission and remain focused on bringing JZP458 to patients as quickly as possible. We are targeting a mid-2021 launch in the U.S., subject to FDA approval.

Additionally, we remain on track to begin planned Phase 2 trials for JZP385 and JZP150 this year for essential tremor and post-traumatic stress disorder, respectively. These are both patient populations who suffer significant impacts to their quality of life and for whom there are limited current treatment options.

Below is a summary of our key ongoing and planned development projects related to our products and pipeline and their corresponding current stages of development:

Product Candidates	**Description**
NEUROSCIENCE	
Regulatory Review	
Xywav	IH
Phase 3	
Zepzelca	Small cell lung cancer (planned study)
Phase 2b	
JZP385	Essential tremor (planned study)
Phase 2	
JZP150	Post-traumatic stress disorder (planned study)
Phase 1	
JZP324	Oxybate extended-release formulation
Preclinical	
Undisclosed targets	Neuroscience
ONCOLOGY	
Regulatory Review	
JZP458	ALL/lymphoblastic lymphoma, or LBL
Phase 3	
Vyxeos	AML or high-risk Myelodysplastic Syndrome, or MDS (AML18 and AML19) (cooperative group studies) Newly diagnosed adults with standard- and high-risk AML (AML Study Group cooperative group study) Newly diagnosed pediatric patients with AML (Children's Oncology Group cooperative group study)
Phase 2	
Vyxeos	High-risk MDS (European Myelodysplastic Syndromes Cooperative Group cooperative group study) Newly diagnosed older adults with high-risk AML (planned cooperative group study)
Vyxeos + venetoclax	De novo or relapsed/refractory, or R/R, AML (MD Anderson collaboration study)
Phase 1	

Product Candidates	Description
Vyxeos	Low intensity dosing for higher risk MDS (MD Anderson collaboration study)
Vyxeos + other approved therapies	R/R AML or hypomethylating agent failure MDS (MD Anderson collaboration study) First-line, fit AML (Phase 1b study) Low intensity therapy for first-line, unfit AML (Phase 1b study)
Preclinical	
CombiPlex	Hematology/oncology exploratory activities
JZP341 (long-acting *Erwinia* asparaginase)	ALL and other hematological malignancies (collaboration with Ligand Pharmaceuticals Incorporated, or Ligand)
Pan-Raf inhibitor program	Raf and Ras mutant tumors (acquired from Redx Pharma, or Redx, which is continuing development)
Undisclosed targets	Ras/Raf/MAP kinase pathway (collaboration with Redx)
Exosome targets (NRAS and 3 others)	Hematological malignancies/solid tumors (collaboration with Codiak BioSciences, Inc., or Codiak)
Defibrotide	Exploratory activities

Acquisition of GW Pharmaceuticals Plc Creates Innovative High-Growth, Global Biopharma Leader

In February 2021, we entered into an agreement to acquire GW Pharmaceuticals plc, or GW, with the objectives of broadening our neuroscience portfolio, further diversifying our revenue and driving sustainable, long-term value creation opportunities. Under the agreement, the total consideration to be paid by us for the entire issued share capital of GW is approximately $7.2 billion. The acquisition, which we refer to as the GW Acquisition, is expected to close in early May 2021.

GW specializes in discovering, developing, manufacturing and commercializing therapeutics from its proprietary cannabinoid product platform to address a broad range of diseases. GW's lead product, Epidiolex® (cannabidiol) oral solution, is approved in patients one-year and older for the treatment of seizures associated with Lennox-Gastaut Syndrome, Dravet Syndrome and Tuberous Sclerosis Complex, all of which are rare diseases characterized by severe early-onset epilepsy. Epidiolex was the first plant-derived cannabinoid medicine ever approved by FDA, and has also been approved in Europe under the trade name Epidyolex. In addition to the approved indications for Epidiolex, we believe there are considerable opportunities to pursue other indications within the epilepsy field, including other treatment-resistant epilepsies where significant unmet needs of patients exist.

GW is leveraging its scientific platform and specialized manufacturing expertise to develop additional cannabinoid-based therapies. This pipeline includes nabiximols, for which GW is in Phase 3 clinical trials for the treatment of spasticity associated with multiple sclerosis and spinal cord injury, as well as earlier-stage cannabinoid product candidates.

We view the transaction as consistent with our overall business and capital allocation strategy to expand our neuroscience portfolio and drive substantial value for our shareholders. We expect that product sales, operating expenses and interest expense will be significantly higher in 2021 than in 2020 due to the impact of the inclusion of the results of operations from GW commencing on closing the GW Acquisition, the higher debt balance in connection with the GW Acquisition and the continued growth of the organization.

Operational Excellence

We remain focused on continuing to build excellence in areas that we believe will give us a competitive advantage, including building an increasingly agile and adaptable commercialization engine and strengthening our customer-focused market expertise across patients, providers and payers. We are refining our approach to engaging our customers by strengthening alignment and integration across functions and across regions. This includes a more integrated approach to brand planning, a heightened focus on launch and operational excellence and multichannel customer engagement. We have fully adapted to virtual scientific congresses designed to ensure we can continue to provide promotional and non-promotional interactions and have supported our field-based teams with virtual customer interaction tools, training and content. These initiatives mark a significant operational evolution that is directly linked to our corporate strategy and are designed to better enable our teams to work collaboratively on an aligned and shared agenda through both virtual and in-person interactions.

COVID-19 Business Update

We have implemented a comprehensive response strategy to effectively manage the impact of the COVID-19 pandemic on our employees, patients and our business. We have experienced limited financial and other impacts due to the pandemic. We expect that our business, financial condition, results of operations, and growth prospects may continue to be impacted on a limited basis by the pandemic, albeit to a lesser extent as vaccines and treatments reduce the global impact of COVID-19 and enable a resumption to more normal business practices and initiatives.

We support broad public health strategies designed to prevent the spread of COVID-19 and are focused on the health and welfare of our employees. Our global organization has mobilized to enable our employees to accomplish our most critical goals through a combination of remote work and in-person initiatives. In addition to rolling out new technologies and collaboration tools, we have implemented processes and resources to support our employees in the event an employee receives a positive COVID-19 diagnosis. We have developed plans regarding the opening of our sites to enable our employees to return to work in our global offices, the field and our manufacturing facilities, which take into account applicable public health authority and local government guidelines and which are designed to ensure community and employee safety. We plan to permanently move to a more flexible mix of virtual and in-person working to advance our culture, drive innovation and agility and enable greater balance and well-being for our workforce. This will also enable us to reconfigure our physical workspaces to optimize the footprint of our company-owned or leased office spaces.

Commercialization

While there continues to be some impact on demand arising from the pandemic, we have seen improvements as healthcare systems have adapted to cope with the ongoing situation. We are utilizing technology to continue to engage healthcare professionals and other customers virtually to support patient care. As more clinics and institutions begin to allow in-person interactions pursuant to local health authority and government guidelines, our field teams continue to resume in-person interactions with healthcare professionals and clinics combined with virtual engagement. The level of renewed in-person engagement varies by account, region and country. The lack of access to healthcare providers has caused, and may continue to cause, delays in appropriate diagnosis, treatment and ongoing care for some patients, which could subsequently impact prescribing and use of our products.

Supply Chain

Our manufacturing facilities in Athlone, Ireland, which produces Xyrem and Xywav, and Villa Guardia, Italy, which produces defibrotide, are operational with essential staff onsite and office-based staff working remotely. We currently expect to have adequate global supply of Xyrem, Xywav, Sunosi, Zepzelca, Vyxeos, and Defitelio in 2021.

Research and Development

With respect to our clinical trial activities, we have taken measures to implement remote and virtual approaches, including remote data monitoring where possible, to maintain patient safety and trial continuity and to preserve study integrity. We have seen limited COVID-19-related impact to our mid- and late-stage clinical trial activity, despite delays in initiating trial sites. We rely on contract research organizations or other third parties to assist us with clinical trials, and we cannot guarantee that they will continue to perform their contractual duties in a timely and satisfactory manner as a result of the evolving effects of the COVID-19 pandemic. Similarly, our ability to recruit and retain patients and principal investigators and site staff who, as healthcare providers, may have heightened exposure to COVID-19, may adversely impact our clinical trial operations.

Corporate Development and Other Financial Impacts

With our strong cash balance and positive cash flow, we anticipate having sufficient liquidity to continue to make planned investments in our business in support of our long-term growth strategy. However, the COVID-19 pandemic continues to rapidly evolve and has resulted in significant volatility in the global financial markets. If the disruption persists and deepens, we could experience an inability to access additional capital, which could in the future negatively affect our capacity for certain corporate development transactions or our ability to make other important, opportunistic investments. The effects of the pandemic could also impact our ability to do in-person due diligence, negotiations, and other interactions to identify new opportunities.

Corporate Response

The COVID-19 pandemic has caused a significant burden on health systems globally and has highlighted the need for companies to evaluate existing therapies to assess if they can be utilized beyond their current indications to treat COVID-19 as well as consider developing new therapies. To this end, we have granted requests for several ISTs to evaluate the use of defibrotide in COVID-19 patients experiencing respiratory distress.

In addition, we are supporting our local communities and patient-focused organizations in COVID-19 relief efforts including through corporate donations to charitable organizations providing food and medical relief to our communities in

which we operate in Italy, Philadelphia and the San Francisco Bay Area, and other localities where the needs related to the impact of COVID-19 are greatest. We are engaging with patient advocacy organizations to better understand the impact of COVID-19 and working to ensure that patients living with sleep disorders and hematology and oncology conditions continue to have access to treatments and that their other needs are addressed given the impact of COVID-19 on the healthcare system. We are committed to enabling our employees to give back, including allowing licensed healthcare practitioners employed by us to support local response efforts.

Other Challenges, Risks and Trends Related to Our Business

Our business has been substantially dependent on Xyrem. Our future plans assume that our newly launched oxybate product Xywav, with 92% lower sodium compared to Xyrem, depending on the dose, absence of a sodium warning and dosing titration option, will become the treatment of choice for patients who can benefit from oxybate treatment, current Xyrem patients, and patients who previously were not prescribed Xyrem, including those patients for whom sodium content is a concern. While we expect that our business will continue to be substantially dependent on oxybate product sales from both Xyrem and Xywav, there is no guarantee that we can maintain oxybate sales at or near historical levels, or that oxybate sales will continue to grow.

Our ability to successfully commercialize Xywav will depend on, among other things, our ability to obtain and maintain adequate coverage and reimbursement for Xywav and acceptance of Xywav by payers, physicians and patients. In an effort to support strong adoption of Xywav, we are focused on providing robust patient access programs and facilitating payer coverage for Xywav. Moreover, we have increasingly experienced pressure from third party payers to agree to discounts, rebates or restrictive pricing terms for our products, and we cannot guarantee we will be able to agree to commercially reasonable terms with pharmacy benefit managers, or PBMs, and other third party payers, or that we will be able to ensure patient access to our existing and future products and acceptance of our products on institutional formularies. Entering into agreements with PBMs and payers to ensure patient access has and will likely continue to result in higher gross to net deductions for these products. In addition to the COVID-19 related impacts described above, in the future, we expect our oxybate products to face competition from generic and authorized generic versions of sodium oxybate pursuant to the settlement agreements we have entered into with multiple abbreviated new drug application filers. Generic competition can decrease the prices at which Xyrem and Xywav are sold and the number of prescriptions written for Xyrem and Xywav. Xyrem and Xywav may also face increased competition from new branded products for treatment of cataplexy and/or EDS in narcolepsy in the U.S. market.

As for other products in our neuroscience therapeutic area, if we are unable to successfully commercialize Sunosi in the U.S. and Europe, or if sales of Sunosi do not reach the levels we expect, our anticipated revenue from Sunosi will be negatively affected, which would have a material adverse effect on our business, financial condition, results of operations and growth prospects.

In addition to our neuroscience products and product candidates, we are commercializing a portfolio of oncology products, including Defitelio, Erwinaze, Vyxeos and Zepzelca. An inability to effectively commercialize Defitelio, Vyxeos and Zepzelca and to maximize their potential where possible through successful research and development activities could have a material adverse effect on our business, financial condition, results of operations and growth prospects.

Our license and supply agreement with PBL, a limited liability company wholly owned by the UK Secretary of State for Health which includes an exclusive right to market, sell or distribute Erwinaze, an exclusive license to Erwinaze trademarks, and a non-exclusive license to PBL's manufacturing know-how, expired on December 31, 2020. Under our agreement with PBL, we have the right to sell certain Erwinaze inventory for a post-termination sales period of 12 months and retain ownership of certain data, know-how and other property interests, including the BLA for Erwinaze in the U.S. and marketing authorizations for Erwinase in several other countries. We expect to distribute available Erwinaze supply during the first half of 2021. In addition, if we are unable to replace the future product sales we will lose from Erwinaze with our existing or future products, our business, financial condition, results of operations and growth prospects would be materially adversely affected.

A key aspect of our growth strategy is our continued investment in our evolving and expanding research and development activities. If we are not successful in the clinical development of these or other product candidates, if we are unable to obtain regulatory approval for our product candidates in a timely manner, or at all, or if sales of an approved product do not reach the levels we expect, our anticipated revenue from our product candidates would be negatively affected, which could have a material adverse effect on our business, financial condition, results of operations and growth prospects.

In addition to continued investment in our research and development pipeline, we intend to continue to grow our business by acquiring or in-licensing, and developing, including with collaboration partners, additional products and product candidates that we believe are highly differentiated and have significant commercial potential. Failure to identify and acquire, in-license or develop additional products or product candidates, successfully manage the risks associated with integrating any products or product candidates into our portfolio or the risks arising from anticipated and unanticipated problems in connection with an acquisition or in-licensing, such as the pending GW Acquisition, could have a material adverse effect on our business, results of

operations and financial condition. In particular, the success of the GW Acquisition will depend, in part, on our ability to realize the anticipated benefits from successfully combining our and GW's businesses and we plan to continue to devote substantial management attention and resources to integrating our business practices and operations with GW's so that we can fully realize the anticipated benefits of the pending acquisition. Nonetheless, the products and technologies acquired may not be successful or continue to grow at the same rate as when our companies operated independently or they may require significantly greater resources and investments than originally anticipated. The acquisition could also result in the assumption of unknown or contingent liabilities. In addition, difficulties may arise during the process of combining the operations of our companies that could result in the failure to achieve the synergies or free cash flow that we anticipate, the failure to integrate operations and internal systems, programs and controls, the loss of key employees that may be difficult to replace in the very competitive pharmaceutical field, the failure to harmonize both companies' corporate cultures, the disruption of each company's ongoing businesses or inconsistencies in standards, controls, procedures and policies that adversely affect our ability to maintain relationships with customers, suppliers, distributors, collaboration partners, clinical trial investigators or managers of our clinical trials. As a result, the anticipated benefits of the pending acquisition may not be realized fully within the expected timeframe or at all or may take longer to realize or cost more than expected, which could materially and adversely affect our business, financial condition, results of operations and growth prospects.

Our industry has been, and is expected to continue to be, subject to healthcare cost containment and drug pricing scrutiny by regulatory agencies in the U.S. and internationally. If healthcare policies or reforms intended to curb healthcare costs are adopted or if we experience negative publicity with respect to pricing of our products or the pricing of pharmaceutical drugs generally, the prices that we charge for our products may be affected, our commercial opportunity may be limited and/or our revenues from sales of our products may be negatively impacted. We are also subject to increasing pricing pressure and restrictions on reimbursement imposed by payers. If we fail to obtain and maintain adequate formulary positions and institutional access for newly-launched products such as Sunosi, Xywav, Zepzelca and future approved products, we will not be able to achieve a return on our investment and our business, financial condition, results of operations and growth prospects would be materially adversely affected.

Finally, business practices by pharmaceutical companies, including product formulation improvements, patent litigation settlements, and risk evaluation and mitigation strategy, or REMS, programs, have increasingly drawn public scrutiny from legislators and regulatory agencies, with allegations that such programs are used as a means of improperly blocking or delaying competition. If we become the subject of any future government investigation with respect to our business practices, including as they relate to the Xywav and Xyrem REMS, the launch of Xywav, our Xyrem patent litigation settlement agreements or otherwise, we could incur significant expense and could be distracted from operation of our business and execution of our strategy. From June to September 2020, a number of class action lawsuits were filed on behalf of purported direct and indirect Xyrem purchasers, alleging that the patent litigation settlement agreements we entered with certain generic companies violate state and federal antitrust and consumer protection laws. For additional information on these class action complaints, see Note 11, Commitments and Contingencies-Legal Proceedings of the Notes to Condensed Consolidated Financial Statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q. It is possible that additional lawsuits will be filed against us making similar or related allegations. We cannot predict the outcome of these or potential additional lawsuits or government action; however, if the plaintiffs were to be successful in their claims, they may be entitled to injunctive relief or we may be required to pay significant monetary damages. Any of the foregoing risks and uncertainties could have a material adverse effect on our business, financial condition, results of operations and growth prospects. In addition, to the extent the COVID-19 pandemic continues to adversely affect our business and results of operations, it may also have the effect of heightening many of the other risks and uncertainties described above. All of these risks and uncertainties are discussed in greater detail, along with other risks and uncertainties, in "Risk Factors" in Part I, Item 1A of the annual report on Form 10-K for the year ended December 31, 2020, filed with the Securities and Exchange Commission on February 23, 2021, or the 2020 Form 10-K.

Results of Operations

The following table presents our revenues and expenses (in thousands, except percentages):

	Three Months Ended March 31,		Increase/
	2021	2020	(Decrease)
Product sales, net	$ 603,531	$ 530,205	14 %
Royalties and contract revenues	4,050	4,521	(10)%
Cost of product sales (excluding amortization of acquired developed technologies)	40,189	28,657	40 %
Selling, general and administrative	260,508	208,400	25 %
Research and development	76,573	86,107	(11)%
Intangible asset amortization	68,192	62,847	9 %
Impairment charge	—	136,139	N/A(1)
Acquired in-process research and development	—	202,250	N/A(1)
Interest expense, net	27,376	18,496	48 %
Foreign exchange (gain) loss	(943)	1,132	(183)%
Income tax provision (benefit)	18,019	(51,287)	(135)%
Equity in gain of investees	(4,165)	(182)	2,188 %

(1) Comparison to prior period not meaningful.

Revenues

The following table presents our net product sales, royalties and contract revenues, and total revenues (in thousands, except percentages):

	Three Months Ended March 31,		Increase/
	2021	2020	(Decrease)
Xyrem	$ 335,550	$ 407,875	(18)%
Xywav	75,416	—	N/A(1)
Total Oxybate	410,966	407,875	1 %
Sunosi	11,606	1,924	503 %
Total Neuroscience	422,572	409,799	3 %
Zepzelca	54,334	—	N/A(1)
Vyxeos	33,155	32,720	1 %
Defitelio/defibrotide	49,619	47,432	5 %
Erwinaze/Erwinase	41,068	37,732	9 %
Total Oncology	178,176	117,884	51 %
Other	2,783	2,522	10 %
Product sales, net	603,531	530,205	14 %
Royalties and contract revenues	4,050	4,521	(10)%
Total revenues	$ 607,581	$ 534,726	14 %

(1) Comparison to prior period not meaningful.

Product Sales, Net

Total oxybate product sales increased in the three months ended March 31, 2021 compared to the same period in 2020 primarily due to a higher average selling price, partially offset by a decrease in commercial sales volumes. Total oxybate revenue bottle volume decreased by 3% in the three months ended March 31, 2021 compared to the same period in 2020 reflecting our investment in patient access programs during the launch of Xywav. Average active oxybate patients on therapy were approximately 15,700 in the first quarter of 2021, an increase of approximately 4% compared to the same period in 2020. Xyrem product sales decreased in the three months ended March 31, 2021 compared to the same period in 2020 primarily due

to a decrease in sales volume, and to a lesser extent higher gross to net deductions, partially offset by a higher average net selling price. Price increases were instituted in January 2020 and January 2021. Xyrem product sales volume decreased in the three months ended March 31, 2021, compared to the same period in 2020 driven by the strong adoption of Xywav by existing Xyrem patients. Xywav product sales in the three months ended March 31, 2021 were $75.4 million, following its U.S. launch in November 2020. Sunosi product sales increased in the three months ended March 31, 2021, compared to the same period in 2020 primarily due to an increase in sales volume. Sunosi launched in the U.S. in July 2019 and the European rolling launch commenced in May 2020.

Zepzelca product sales were $54.3 million in the three months ended March 31, 2021 following its U.S. launch in July 2020. Vyxeos product sales for the three months ended March 31, 2021 were in line with the same period in 2020. Defitelio/defibrotide product sales increased in the three months ended March 31, 2021 compared to the same period in 2020 primarily due to the positive impact of foreign exchange rates. Erwinaze/Erwinase product sales increased in the three months ended March 31, 2021 compared to the same period in 2020 primarily due to the timing of availability of supply of inventory from the manufacturer.

Royalties and Contract Revenues

Royalties and contract revenues decreased in the three months ended March 31, 2021 compared to the same period in 2020 primarily due to lower revenues from out-licensing agreements.

Cost of Product Sales

Cost of product sales increased in the three months ended March 31, 2021 compared to the same period in 2020 primarily due to changes in product mix. Gross margin as a percentage of net product sales was 93.3% for the three months ended March 31, 2021 compared to 94.6% for the same period in 2020.

Selling, General and Administrative Expenses

Selling, general and administrative expenses increased in the three months ended March 31, 2021 compared to the same period in 2020 primarily due to increased investment in sales, marketing and launch activities with the commencement of the Sunosi direct-to-consumer marketing campaign in the U.S. and the continuation of the launches of Zepzelca and Xywav in the U.S., transaction expenses related to the proposed GW Acquisition as well as an increase in other expenses related to the expansion of our business.

Research and Development Expenses

Research and development expenses consist primarily of costs related to clinical studies and outside services, personnel expenses, and other research and development costs. Clinical study and outside services costs relate primarily to services performed by clinical research organizations, materials and supplies, and other third party fees. Personnel expenses relate primarily to salaries, benefits and share-based compensation. Other research and development expenses primarily include overhead allocations consisting of various support and facilities-related costs. We do not track fully-burdened research and development expenses on a project-by-project basis. We manage our research and development expenses by identifying the research and development activities that we anticipate will be performed during a given period and then prioritizing efforts based on our assessment of which development activities are important to our business and have a reasonable probability of success, and by dynamically allocating resources accordingly. We also continually review our development pipeline projects and the status of their development and, as necessary, reallocate resources among our development pipeline projects that we believe will best support the future growth of our business.

The following table provides a breakout of our research and development expenses by major categories of expense (in thousands):

	Three Months Ended March 31,	
	2021	2020
Clinical studies and outside services	$ 31,046	$ 47,749
Personnel expenses	36,226	25,902
Other	9,301	12,456
Total	$ 76,573	$ 86,107

Research and development expenses decreased by $9.5 million in the three months ended March 31, 2021, compared to the same period in 2020. Clinical studies and outside services costs decreased by $16.7 million in the three months ended

March 31, 2021, compared to the same period in 2020 primarily due to a decrease in expenses related to our clinical programs, including JZP458. Personnel expenses increased by $10.3 million in the three months ended March 31, 2021, compared to the same period in 2020 primarily due to increased headcount in support of our development programs.

Intangible Asset Amortization

Intangible asset amortization increased by $5.3 million in the three months ended March 31, 2021 compared to the same period in 2020 primarily due to the impact of changes in foreign exchange rates on euro-denominated intangible assets and the commencement of amortization of the Zepzelca intangible asset upon FDA approval in June 2020.

Impairment Charge

In the three months ended March 31, 2020, we recorded an acquired in-process research and development, or IPR&D, asset impairment charge of $136.1 million following the decision to stop enrollment in our Phase 3 clinical study of defibrotide for the prevention of VOD due to a determination that the study is highly unlikely to reach one of its primary endpoints.

Acquired In-Process Research and Development

Acquired IPR&D expense in the three months ended March 31, 2020 primarily related to an upfront payment of $200.0 million to PharmaMar in connection with our license agreement.

Interest Expense, Net

Interest expense, net increased by $8.9 million in the three months ended March 31, 2021 compared to the same period in 2020, primarily due to higher non-cash interest expense following the issuance of our 2.00% exchangeable senior notes due 2026, or the 2026 Notes, in June 2020 and lower interest income.

Foreign Exchange (Gain) Loss

The foreign exchange (gain) loss is primarily related to the translation of euro-denominated net monetary liabilities, primarily intercompany balances, held by subsidiaries with a U.S. dollar functional currency and related foreign exchange forward contracts not designated as hedging instruments.

Income Tax Provision (Benefit)

Our income tax provision was $18.0 million in the three months ended March 31, 2021, compared to an income tax benefit of $51.3 million for the same period in 2020. The effective tax rate was 13.3% in the three months ended March 31, 2021 compared to 24.5% for the same period in 2020. The decrease in the effective tax rate for the three months ended March 31, 2021 compared to the same period in 2020 was primarily due to the impact of the defibrotide acquired IPR&D asset impairment charge and the acquired IPR&D expense relating to the $200.0 million upfront payment to PharmaMar for the exclusive U.S. commercialization and development rights to Zepzelca in 2020, and changes in income mix among the various jurisdictions in which we operate. The effective tax rate for the three months ended March 31, 2021 was higher than the Irish statutory rate of 12.5% primarily due to the impact of various expenses not deductible for tax purposes, income taxable at a rate higher than the Irish statutory rate and uncertain tax positions, partially offset by deductions available in respect of subsidiary equity and originating tax credits. We do not provide for Irish income taxes on undistributed earnings of our foreign operations that are intended to be indefinitely reinvested in our foreign subsidiaries.

Equity in Earnings of Investees

Equity in earnings of investees relates to our share in the net gain of companies in which we have made investments accounted for under the equity method of accounting.

Liquidity and Capital Resources

As of March 31, 2021, we had cash, cash equivalents and investments of $2.4 billion, borrowing availability under our revolving credit facility of $1.6 billion and long-term debt principal balance of $2.4 billion. Our long-term debt included $575.9 million aggregate principal amount term loan, $218.8 million principal amount of our 1.875% exchangeable senior notes due 2021, or the 2021 Notes, $575.0 million principal amount of our 1.50% exchangeable senior notes due 2024, or the 2024 Notes, and $1.0 billion principal amount of our 2026 Notes. We generated cash flows from operations of $285.0 million during the three months ended March 31, 2021, and we expect to continue to generate positive cash flows from operations during 2021.

On April 20, 2021, we and certain of our wholly-owned subsidiaries, entered into Amendment No. 3 to our Credit Agreement, dated as of June 18, 2015, or the Existing Credit Agreement, with the lenders party thereto and Bank of America, N.A., as administrative agent, collateral agent, letter of credit issuer and swing line lender. The Amendment No. 3 amended the Existing Credit Agreement to permit the issuance of senior secured notes and made certain related changes as set forth therein.

On April 29, 2021, our wholly-owned subsidiary, Jazz Securities Designated Activity Company, issued $1.5 billion in aggregate principal amount of 4.375% senior secured notes due 2029.

Concurrently with the closing of the GW Acquisition, we expect to enter into new senior secured credit facilities, which is expected to consist of a $500.0 million revolving credit facility and a term loan B facility in an aggregate amount of approximately $3.85 billion. We expect to use term loan B borrowings under new senior secured credit facilities and the net proceeds from the senior secured notes, together with cash on hand to fund the cash consideration payable in connection with the GW Acquisition. The senior secured notes have a mandatory redemption clause that will be triggered under certain circumstances, including failure to complete the acquisition within the time period outlined in the GW Transaction Agreement or the termination of the GW Acquisition.

We believe that our existing cash, cash equivalents and investments balances, cash we expect to generate from operations and funds available under our revolving credit facility will be sufficient to fund our operations and to meet our existing obligations for the foreseeable future. The adequacy of our cash resources depends on many assumptions, including primarily our assumptions with respect to product sales and expenses, as well as the other factors set forth in “Risk Factors” in Part I, Item 1A in our Annual Report on Form 10-K for the year ended December 31, 2020 under the headings “Risks Related to our Lead Products and Product Candidates” and “To continue to grow our business, we will need to commit substantial resources, which could result in future losses or otherwise limit our opportunities or affect our ability to operate and grow our business.” Our assumptions may prove to be wrong or other factors may adversely affect our business, and as a result we could exhaust or significantly decrease our available cash resources, and we may not be able to generate sufficient cash to service our debt obligations which could, among other things, force us to raise additional funds and/or force us to reduce our expenses, either of which could have a material adverse effect on our business.

To continue to grow our business over the longer term, we plan to commit substantial resources to product acquisition and in-licensing, product development, clinical trials of product candidates and expansion of our commercial, development, manufacturing and other operations. In this regard, we have evaluated and expect to continue to evaluate a wide array of strategic transactions as part of our strategy to acquire or in-license and develop additional products and product candidates. Acquisition opportunities that we pursue could materially affect our liquidity and capital resources and may require us to incur additional indebtedness, seek equity capital or both. In addition, we may pursue new operations or continue the expansion of our existing operations. Accordingly, we expect to continue to opportunistically seek access to additional capital to license or acquire additional products, product candidates or companies to expand our operations or for general corporate purposes. Raising additional capital could be accomplished through one or more public or private debt or equity financings, collaborations or partnering arrangements. However, the COVID-19 pandemic continues to rapidly evolve and has resulted in significant volatility in the global financial markets. If the disruption persists and deepens, we could experience an inability to access additional capital or an impact on liquidity, which could in the future negatively affect our capacity for certain corporate development transactions or our ability to make other important, opportunistic investments. In addition, any equity financing would be dilutive to our shareholders, and the consent of the lenders under the amended credit agreement could be required for certain financings.

In November 2016, our board of directors authorized a share repurchase program and as of March 31, 2021 had authorized the repurchase of ordinary shares having an aggregate purchase price of up to $1.5 billion, exclusive of any brokerage commissions. Under this program, which has no expiration date, we may repurchase ordinary shares from time to time on the open market. The timing and amount of repurchases will depend on a variety of factors, including the price of our ordinary shares, alternative investment opportunities, restrictions under the amended credit agreement, corporate and regulatory requirements and market conditions. The share repurchase program may be modified, suspended or discontinued at any time without prior notice. During the three months ended March 31, 2021, we did not repurchase any of our ordinary shares. As of March 31, 2021, the remaining amount authorized under the share repurchase program was $431.2 million.

The following table presents a summary of our cash flows for the periods indicated (in thousands):

	Three Months Ended March 31,	
	2021	2020
Net cash provided by operating activities	$ 284,997	$ 272,969
Net cash provided by (used in) investing activities	737,132	(60,080)
Net cash provided by (used in) financing activities	18,276	(147,683)
Effect of exchange rates on cash and cash equivalents	(641)	(948)
Net increase in cash and cash equivalents	$ 1,039,764	$ 64,258

Operating activities

Net cash provided by operating activities increased by $12.0 million in the three months ended March 31, 2021 compared to the same period in 2020, primarily due to:

- An increase in net cash inflow related to changes in operating assets and liabilities primarily driven by the timing of payments to suppliers, partially offset by the timing of receipts from customers.

Investing activities

Net cash provided by (used in) investing activities increased by $797.2 million in the three months ended March 31, 2021 compared to the same period in 2020, primarily due to the following:

- $579.3 million increase in net proceeds from maturity of investments, primarily time deposits;
- $202.3 million decrease in upfront payments for acquired IPR&D primarily driven by the $200.0 million payment under our license agreement with PharmaMar in the three months ended March 31, 2020.

Financing activities

Net cash provided by (used in) financing activities increased by $166.0 million in the three months ended March 31, 2021 compared to the same period in 2020, primarily due to:

- The impact of share repurchases of $139.1 million in the three months ended March 31, 2020;
- An increase of $37.1 million in proceeds from employee equity incentive and purchase plans; partially offset by
- An increase of $10.2 million in payment of employee withholding taxes related to share-based awards.

Debt

The summary of our outstanding indebtedness under our financing arrangements is included in Note 9, Debt, of the Notes to Condensed Consolidated Financial Statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q. During the three months ended March 31, 2021, there were no material changes to the amended credit agreement, as set forth in Note 11, Debt, of the Notes to Consolidated Financial Statements included in our Annual Report on Form 10-K for the year ended December 31, 2020.

On April 29, 2021, our wholly-owned subsidiary, Jazz Securities Designated Activity Company, issued $1.5 billion in aggregate principal amount of 4.375% senior secured notes due 2029.

Contractual Obligations

During the three months ended March 31, 2021, there were no material changes to our contractual obligations as set forth in Part II, Item 7 “Management’s Discussion and Analysis of Financial Condition and Results of Operations” in our Annual Report on Form 10-K for the year ended December 31, 2020.

Critical Accounting Estimates

To understand our financial statements, it is important to understand our critical accounting estimates. The preparation of our financial statements in conformity with U.S. generally accepted accounting principles requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the

date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Significant estimates and assumptions are required in determining the amounts to be deducted from gross revenues, in particular estimates of government rebates, which include Medicaid and TRICARE rebates, commercial contracting and estimated product returns. Significant estimates and assumptions are also required to determine whether to capitalize intangible assets, the amortization periods for identifiable intangible assets, the potential impairment of goodwill and other intangible assets and income taxes. Some of these judgments can be subjective and complex, and, consequently, actual results may differ from these estimates. For any given individual estimate or assumption we make, there may also be other estimates or assumptions that are reasonable. Although we believe our estimates and assumptions are reasonable, they are based upon information available at the time the estimates and assumptions were made.

Our critical accounting policies and significant estimates are detailed in our Annual Report on Form 10-K for the year ended December 31, 2020. Our critical accounting policies and significant estimates have not changed substantially from those previously disclosed in our Annual Report on Form 10-K for the year ended December 31, 2020.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements.

Cautionary Note Regarding Forward-Looking Statements

This Quarterly Report on Form 10-Q contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, which are subject to the "safe harbor" created by those sections. Forward-looking statements are based on our management's current plans, objectives, estimates, expectations and intentions and on information currently available to our management. In some cases, you can identify forward-looking statements by terms such as "may," "will," "should," "could," "would," "expect," "plan," "anticipate," "believe," "estimate," "project," "predict," "propose," "intend," "continue," "potential," "possible," "foreseeable," "likely," "unforeseen" and similar expressions intended to identify forward-looking statements. These statements involve known and unknown risks, uncertainties and other factors which may cause our actual results, performance, time frames or achievements to be materially different from any future results, performance, time frames or achievements expressed or implied by the forward-looking statements. These known and unknown risks, uncertainties and other factors include, without limitation:

- We may not realize the anticipated benefits and synergies from our pending GW Acquisition.
- The GW Acquisition may not be completed on the currently contemplated timeline or terms, or at all.
- Failure to complete the GW Acquisition could have a material and adverse effect on us.
- The indebtedness of the combined company following the consummation of the GW Acquisition will be substantially greater than our indebtedness on a standalone basis and greater than the combined indebtedness of Jazz and GW prior to the announcement of the acquisition. This increased level of indebtedness could adversely affect the combined company's business flexibility and increase its borrowing costs.
- Our inability to maintain or increase sales from our neuroscience therapeutic area would have a material adverse effect on our business, financial condition, results of operations and growth prospects.
- The introduction of new products in the U.S. market that compete with, or otherwise disrupt the market for, our oxybate products and product candidates would adversely affect sales of our oxybate products and product candidates.
- The distribution and sale of our oxybate products are subject to significant regulatory restrictions, including the requirements of a REMS and these regulatory requirements subject us to risks and uncertainties, any of which could negatively impact sales of Xyrem and Xywav.
- While we expect our oxybate products, Xyrem and Xywav, to remain the largest part of our business, our success also depends on our ability to effectively commercialize products in our oncology therapeutic area. An inability to effectively commercialize Defitelio, Vyxeos and Zepzelca and to maximize their potential where possible through successful research and development activities and an inability to replace the future product sales we will lose from Erwinaze, would have a material adverse effect on our business, financial condition, results of operations and growth prospects.
- We face substantial competition from other companies, including companies with larger sales organizations and more experience working with large and diverse product portfolios, and the commercial potential of our current products and any future products may be reduced or eliminated if our competitors develop or acquire and commercialize

generic or branded products that are safer or more effective, are more convenient or are less expensive than our products.

- Adequate coverage and reimbursement from third party payers may not be available for our products and we may be unable to successfully contract for coverage from pharmacy benefit managers and group purchasing organizations, which could diminish our sales or affect our ability to sell our products profitably; conversely, to secure coverage from these organizations, we may be required to pay rebates or other discounts or other restrictions to reimbursement that could diminish our sales.
- The pricing of pharmaceutical products has come under increasing scrutiny as part of a global trend toward healthcare cost containment and resulting changes in healthcare law and policy may impact our business in ways that we cannot currently predict, which could have a material adverse effect on our business and financial condition.
- In addition to access, coverage and reimbursement, the commercial success of our products depends upon their market acceptance by physicians, patients, third party payers and the medical community.
- Delays or problems in the supply of our products for sale or for use in clinical trials, loss of our single source suppliers or failure to comply with manufacturing regulations could materially and adversely affect our business, financial condition, results of operations and growth prospects.
- Our future success depends on our ability to successfully develop and obtain and maintain regulatory approvals for our late-stage product candidates and, if approved, to successfully launch and commercialize those product candidates.
- We may not be able to successfully identify and acquire or in-license additional products or product candidates to grow our business, and, even if we are able to do so, we may otherwise fail to realize the anticipated benefits of these transactions.
- Conducting clinical trials is costly and time-consuming, and the outcomes are uncertain. A failure to prove that our product candidates are safe and effective in clinical trials, or to generate data in clinical trials to support expansion of the therapeutic uses for our existing products, could materially and adversely affect our business, financial condition, results of operations and growth prospects.
- We have incurred and may in the future incur substantial costs as a result of litigation or other proceedings relating to patents, other intellectual property rights and related matters, and we may be unable to protect our rights to, or commercialize, our products.
- Our business is currently adversely affected and could be materially and adversely affected in the future by the evolving effects of the COVID-19 pandemic and related global economic slowdown as a result of the current and potential future impacts on our commercialization efforts, clinical trial activity, research and development activities, supply chain and corporate development activities and other business operations, in addition to the impact of a global economic slowdown.
- Significant disruptions of information technology systems or data security breaches could adversely affect our business.
- We are subject to significant ongoing regulatory obligations and oversight, which may result in significant additional expense and limit our ability to commercialize our products.
- If we fail to comply with our reporting and payment obligations under the Medicaid Drug Rebate program or other governmental pricing programs, we could be subject to additional reimbursement requirements, penalties, sanctions and fines, which could have a material adverse effect on our business, financial condition, results of operations and growth prospects.
- We have incurred substantial debt, and expect to incur additional debt in connection with the GW Acquisition, which could impair our flexibility and access to capital and adversely affect our financial position, and our business would be adversely affected if we are unable to service our debt obligations.
- To continue to grow our business, we will need to commit substantial resources, which could result in future losses or otherwise limit our opportunities or affect our ability to operate and grow our business.

Additional discussion of the risks, uncertainties and other factors described above, as well as other risks material to our business, can be found under “Risk Factors” in Part I, Item 1A of the 2020 Annual Report on Form 10-K. Given these risks, uncertainties and other factors, you should not place undue reliance on these forward-looking statements. Also, these forward-looking statements represent our plans, objectives, estimates, expectations and intentions only as of the date of this filing. You should read this Quarterly Report on Form 10-Q completely and with the understanding that our actual future results and the

timing of events may be materially different from what we expect. We hereby qualify our forward-looking statements by our cautionary statements. Except as required by law, we undertake no obligation to update or supplement any forward-looking statements publicly, or to update or supplement the reasons that actual results could differ materially from those anticipated in these forward-looking statements, even if new information becomes available in the future.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

During the three months ended March 31, 2021, there were no material changes to our market risk disclosures as set forth in Part II, Item 7A "Quantitative and Qualitative Disclosures About Market Risk" in our Annual Report on Form 10-K for the year ended December 31, 2020.

Item 4. Controls and Procedures

Evaluation of Disclosure Controls and Procedures. We have carried out an evaluation under the supervision and with the participation of management, including our principal executive officer and principal financial officer, of our disclosure controls and procedures (as defined in Rule 13a-15(e) of the Securities Exchange Act of 1934, as amended) as of the end of the period covered by this Quarterly Report on Form 10-Q. Based on their evaluation, our principal executive officer and principal financial officer concluded that our disclosure controls and procedures were effective as of March 31, 2021.

Limitations on the Effectiveness of Controls. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Because of inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues, if any, within an organization have been detected. Accordingly, our disclosure controls and procedures are designed to provide reasonable, not absolute, assurance that the objectives of our disclosure control system are met and, as set forth above, our principal executive officer and principal financial officer have concluded, based on their evaluation as of the end of the period covered by this report, that our disclosure controls and procedures were effective to provide reasonable assurance that the objectives of our disclosure control system were met.

Changes in Internal Control over Financial Reporting. During the quarter ended March 31, 2021, there have been no changes to our internal control over financial reporting that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II – OTHER INFORMATION

Item 1. Legal Proceedings

The information required to be set forth under this Item 1 is incorporated by reference to Note 11, Commitments and Contingencies—Legal Proceedings of the Notes to Condensed Consolidated Financial Statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q.

Item 1A. Risk Factors

There have been no material changes to the risk factors as previously disclosed in Part I, Item 1A in our Annual Report on Form 10-K for the year ended December 31, 2020.

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

Issuer Purchases of Equity Securities

In November 2016, our board of directors authorized a share repurchase program and as of March 31, 2021 had authorized the repurchase of ordinary shares having an aggregate purchase price of up to $1.5 billion, exclusive of any brokerage commissions. Under this program, which has no expiration date, we may repurchase ordinary shares from time to time on the open market. During the three months ended March 31, 2021, we did not repurchase any of our ordinary shares. As of March 31, 2021, the remaining amount authorized under the share repurchase program was $431.2 million.

Under our share repurchase program, we are authorized to repurchase shares from time to time through open market repurchases. Such repurchases may be pursuant to Rule 10b-18 or Rule 10b5-1 agreements as determined by our management and in accordance with the requirements of the Securities and Exchange Commission.

Item 6. Exhibits

Exhibit Number	Description of Document
2.1	Agreement and Plan of Merger and Reorganization, dated as of September 19, 2011, by and among Azur Pharma Limited (now Jazz Pharmaceuticals plc), Jaguar Merger Sub Inc., Jazz Pharmaceuticals, Inc. and Seamus Mulligan, solely in his capacity as the Indemnitors' Representative (incorporated herein by reference to Exhibit 2.1 in Jazz Pharmaceuticals, Inc.'s Current Report on Form 8-K (File No. 001-33500) filed with the SEC on September 19, 2011).
2.2	Letter Agreement, dated as of January 17, 2012, by and among Jazz Pharmaceuticals plc, Jaguar Merger Sub Inc., Jazz Pharmaceuticals, Inc. and Seamus Mulligan, solely in his capacity as the Indemnitors' Representative (incorporated by reference to Exhibit 2.2 in Jazz Pharmaceuticals plc's Current Report on Form 8-K (File No. 001-33500), as filed with the SEC on January 18, 2012).
2.3	Agreement and Plan of Merger, dated as of April 26, 2012, by and among Jazz Pharmaceuticals plc, Jewel Merger Sub Inc., EUSA Pharma Inc., and Essex Woodlands Health Ventures, Inc., Mayflower L.P., and Bryan Morton, in their capacity as the representatives of the equity holders of EUSA Pharma Inc. (incorporated herein by reference to Exhibit 2.1 in Jazz Pharmaceuticals plc's Current Report on Form 8-K (File No. 001-33500), as filed with the SEC on April 27, 2012).
2.4	Assignment, dated as of June 11, 2012, by and among Jazz Pharmaceuticals plc and Jazz Pharmaceuticals, Inc. (incorporated herein by reference to Exhibit 2.1B in Jazz Pharmaceuticals plc's Current Report on Form 8-K (File No. 001-33500), as filed with the SEC on June 12, 2012).
2.5	Tender Offer Agreement, dated December 19, 2013, by and among Jazz Pharmaceuticals Public Limited Company, Jazz Pharmaceuticals Italy S.r.l. and Gentium S.p.A. (incorporated herein by reference to Exhibit 2.1 in Jazz Pharmaceuticals plc's Current Report on Form 8-K/A (File No. 001-33500), as filed with the SEC on December 20, 2013).
2.6†	Asset Purchase Agreement, dated January 13, 2014, by and among Jazz Pharmaceuticals International III Limited, Aerial BioPharma, LLC and Jazz Pharmaceuticals plc (incorporated herein by reference to Exhibit 2.1 in Jazz Pharmaceuticals plc's Current Report on Form 8-K (File No. 001-33500), as filed with the SEC on January 13, 2014).
2.7†	Assignment Agreement, dated July 1, 2014, by and among Jazz Pharmaceuticals International II Limited, Sigma-Tau Pharmaceuticals, Inc., Jazz Pharmaceuticals plc and Gentium S.p.A. (incorporated herein by reference to Exhibit 2.1 in Jazz Pharmaceuticals plc's Current Report on Form 8-K (File No. 001-33500), as filed with the SEC on August 5, 2014).
2.8	Amended and Restated Agreement for the Acquisition of the Topaz Portfolio Business of Jazz Pharmaceuticals plc, dated March 20, 2015, between Jazz Pharmaceuticals plc and Essex Bidco Limited (incorporated herein by reference to Exhibit 2.1 in Jazz Pharmaceuticals plc's Current Report on Form 8-K (File No. 001-33500), as filed with the SEC on March 23, 2015).
2.9	Agreement and Plan of Merger, dated as of May 27, 2016, by and among Jazz Pharmaceuticals plc, Plex Merger Sub, Inc., and Celator Pharmaceuticals, Inc. (incorporated herein by reference to Exhibit 2.1 in Jazz Pharmaceuticals plc's Current Report on Form 8-K (File No. 001-33500), as filed with the SEC on May 31, 2016).
2.10‡	Transaction Agreement, dated as of February 3, 2021, by and among Jazz Pharmaceuticals UK Holdings Limited, Jazz Pharmaceuticals Public Limited Company and GW Pharmaceuticals PLC (incorporated herein by reference to Exhibit 2.1 in Jazz Pharmaceuticals plc's Current Report on Form 8-K (File No. 001-33500), as filed with the SEC on February 4, 2021).
3.1	Amended and Restated Memorandum and Articles of Association of Jazz Pharmaceuticals plc, as amended on August 4, 2016 (incorporated herein by reference to Exhibit 3.1 in Jazz Pharmaceuticals plc's Quarterly Report on Form 10-Q (File No. 001-33500) for the period ended June 30, 2016, as filed with the SEC on August 9, 2016).
4.1	Reference is made to Exhibit 3.1.
4.2A	Indenture, dated as of August 13, 2014, by and among Jazz Pharmaceuticals plc, Jazz Investments I Limited and U.S. Bank National Association (incorporated herein by reference to Exhibit 4.1 in Jazz Pharmaceuticals plc's Current Report on Form 8-K (File No. 001-33500), as filed with the SEC on August 13, 2014).
4.2B	Form of 1.875% Exchangeable Senior Note due 2021 (incorporated herein by reference to Exhibit 4.1 in Jazz Pharmaceuticals plc's Current Report on Form 8-K (File No. 001-33500), as filed with the SEC on August 13, 2014).
4.3A	Indenture, dated as of August 23, 2017, among Jazz Pharmaceuticals Public Limited Company, Jazz Investments I Limited and U.S. Bank National Association (incorporated herein by reference to Exhibit 4.1 in Jazz Pharmaceuticals plc's Current Report on Form 8-K (File No. 001-033500), as filed with the SEC on August 23, 2017).
4.3B	Form of 1.50% Exchangeable Senior Note due 2024 (incorporated herein by reference to Exhibit 4.2 in Jazz Pharmaceuticals plc's Current Report on Form 8-K (File No. 001-033500), as filed with the SEC on August 23, 2017).

4.4A	Indenture, dated as of June 11, 2020 among Jazz Pharmaceuticals Public Limited Company, Jazz Investments I Limited and U.S. Bank National Association (incorporated herein by reference to Exhibit 4.1 in Jazz Pharmaceuticals plc's Current Report on Form 8-K (File No. 001-033500), as filed with the SEC on June 11, 2020).
4.4B	Form of 2.000% Exchangeable Senior Note due 2026 (incorporated herein by reference to Exhibit 4.2 in Jazz Pharmaceuticals plc's Current Report on Form 8-K (File No. 001-033500), as filed with the SEC on June 11, 2020).
4.5A	Indenture, dated as of April 29, 2021, among Jazz Securities Designated Activity Company, the guarantors party thereto, U.S. Bank National Association, as trustee and acknowledged by U.S. Bank National Association, as collateral trustee. (incorporated herein by reference to Exhibit 4.1 in Jazz Pharmaceuticals plc's Current Report on Form 8-K (File No. 001-033500), as filed with the SEC on April 29, 2021).
4.5B	Form of 4.375% Senior Notes due 2029 (incorporated herein by reference to Exhibit 4.2 in Jazz Pharmaceuticals plc's Current Report on Form 8-K (File No. 001-033500), as filed with the SEC on April 29, 2021).
31.1	Certification of Chief Executive Officer pursuant to Rules 13a-14(a) and 15d-14(a) promulgated under the Securities Exchange Act of 1934, as amended.
31.2	Certification of Chief Financial Officer pursuant to Rules 13a-14(a) and 15d-14(a) promulgated under the Securities Exchange Act of 1934, as amended.
32.1*	Certifications of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS	XBRL Instance Document - The instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document
101.SCH	Inline XBRL Taxonomy Extension Schema Document
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	Inline XBRL Taxonomy Extension Labels Linkbase Document
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)

+ Indicates management contract or compensatory plan.

† Confidential treatment has been granted for portions of this exhibit. Omitted portions have been filed separately with the SEC.

‡ Certain portions of this exhibit have been omitted pursuant to Item 601(b)(2) of Regulation S-K.

* The certification attached as Exhibit 32.1 accompanies this Quarterly Report on Form 10-Q pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, and shall not be deemed "filed" by the Registrant for purposes of Section 18 of the Securities Exchange Act of 1934, as amended.

SIGNATURES

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

Date: May 4, 2021

JAZZ PHARMACEUTICALS PUBLIC LIMITED COMPANY
(Registrant)

/s/ Bruce C. Cozadd

Bruce C. Cozadd

Chairman and Chief Executive Officer and Director
(Principal Executive Officer)

/s/ Renée Galá

Renée Galá

Executive Vice President and Chief Financial Officer
(Principal Financial Officer)

/s/ Patricia Carr

Patricia Carr

Vice President, Finance
(Principal Accounting Officer)

Exhibit 31.1

CERTIFICATION

I, Bruce C. Cozadd, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Jazz Pharmaceuticals public limited company;

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

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

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

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

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

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

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

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

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

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

Date: May 4, 2021

By: /s/ Bruce C. Cozadd

Bruce C. Cozadd
Chairman and Chief Executive Officer and Director

Exhibit 31.2

CERTIFICATION

I, Renée Galá, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Jazz Pharmaceuticals public limited company;

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

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

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

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

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

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

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

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

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

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

Date: May 4, 2021

By: /s/ Renée Galá

Renée Galá
Executive Vice President and Chief Financial Officer

Exhibit 32.1

CERTIFICATION[(1)]

Pursuant to the requirement set forth in Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and Section 1350 of Chapter 63 of Title 18 of the United States Code (18 U.S.C. Section 1350), Bruce C. Cozadd, Chief Executive Officer of Jazz Pharmaceuticals public limited company (the "Company"), and Renée Galá, Executive Vice President and Chief Financial Officer of the Company, each hereby certifies that, to the best of his knowledge:

1. The Company's Quarterly Report on Form 10-Q for the period ended March 31, 2021, 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 Exchange Act; and

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

Date: May 4, 2021

/s/ Bruce C. Cozadd

Bruce C. Cozadd
Chairman and Chief Executive Officer and Director

/s/ Renée Galá

Renée Galá
Executive Vice President and Chief Financial Officer

(1) This certification accompanies the Quarterly Report on Form 10-Q to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of Jazz Pharmaceuticals public limited company under the Securities Act of 1933, as amended, or the Exchange Act (whether made before or after the date of the Form 10-Q), irrespective of any general incorporation language contained in such filing. A signed original of this written statement required by Section 906 of the Sarbanes-Oxley Act of 2002 has been provided to Jazz Pharmaceuticals public limited company and will be retained by Jazz Pharmaceuticals public limited company and furnished to the Securities and Exchange Commission or its staff upon request.