CHESAPEAKE ENERGY CORP
Form 10-Q
November 09, 2010
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UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-Q

[X] Quarterly Report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

For the Quarterly Period Ended September 30, 2010

[ ] Transition Report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

For the transition period from ________ to ________

Commission File No. 1-13726

Chesapeake Energy Corporation

(Exact name of registrant as specified in its charter)

Oklahoma	**73-1395733**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
6100 North Western Avenue	
Oklahoma City, Oklahoma	**73118**
(Address of principal executive offices)	(Zip Code)

(405) 848-8000

(Registrant s telephone number, including area code)

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 [X] No [ ]

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes [X] No [ ]

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

Large accelerated filer [X] Accelerated filer [ ] Non-accelerated filer [ ] Smaller reporting company [ ]

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

As of November 3, 2010, there were 653,915,007 shares of our $0.01 par value common stock outstanding.

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CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

CONDENSED CONSOLIDATED BALANCE SHEETS

(Unaudited)

	September 30, 2010	December 31, 2009
	($ in millions)	
ASSETS		
CURRENT ASSETS:		
Cash and cash equivalents	$ 609	$ 307
Accounts receivable	1,454	1,325
Short-term derivative instruments	1,087	692
Deferred income tax asset		24
Other	123	98
Total Current Assets	3,273	2,446
PROPERTY AND EQUIPMENT:		
Natural gas and oil properties, at cost based on full-cost accounting:		
Evaluated natural gas and oil properties	37,391	35,007
Unevaluated properties	12,706	10,005
Less: accumulated depreciation, depletion and amortization of natural gas and oil properties	(25,232)	(24,220)
Total natural gas and oil properties, at cost based on full-cost accounting	24,865	20,792
Other property and equipment:		
Natural gas gathering systems and treating plants	1,837	3,516
Buildings and land	1,751	1,673
Drilling rigs and equipment	763	687
Natural gas compressors	284	325
Other	649	550
Less: accumulated depreciation and amortization of other property and equipment	(669)	(833)
Total other property and equipment	4,615	5,918
Total Property and Equipment	29,480	26,710
OTHER ASSETS:		
Investments	1,189	404
Long-term derivative instruments	29	60
Other assets	362	294
Total Other Assets	1,580	758
TOTAL ASSETS	$ 34,333	$ 29,914

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

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CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

CONDENSED CONSOLIDATED BALANCE SHEETS (Continued)

(Unaudited)

	September 30, 2010	December 31, 2009
	($ in millions)	
LIABILITIES AND EQUITY		
CURRENT LIABILITIES:		
Accounts payable	$ 1,773	$ 957
Short-term derivative instruments	26	27
Accrued liabilities	1,171	920
Deferred income taxes	379	
Income taxes payable	2	1
Revenues and royalties due others	650	565
Accrued interest	122	218
Total Current Liabilities	4,123	2,688
LONG-TERM LIABILITIES:		
Long-term debt, net	11,445	12,295
Deferred income tax liabilities	1,839	1,059
Long-term derivative instruments	967	787
Asset retirement obligations	291	282
Revenues and royalties due others	75	73
Other liabilities	320	389
Total Long-Term Liabilities	14,937	14,885
CONTINGENCIES AND COMMITMENTS (Note 3)		
EQUITY:		
Chesapeake stockholders equity:		
Preferred stock, $0.01 par value, 20,000,000 shares authorized:		
5.75% cumulative convertible non-voting preferred stock, 1,500,000 and 0 shares issued and outstanding as of September 30, 2010 and December 31, 2009, respectively, entitled in liquidation to $1.5 billion and $0	1,500	
5.75% cumulative convertible non-voting preferred stock (series A), 1,100,000 and 0 shares issued and outstanding as of September 30, 2010 and December 31, 2009, respectively, entitled in liquidation to $1.1 billion and $0	1,100	
4.50% cumulative convertible preferred stock, 2,558,900 shares issued and outstanding as of September 30, 2010 and December 31, 2009, entitled in liquidation to $256 million	256	256
5.00% cumulative convertible preferred stock (series 2005B), 2,095,615 shares issued and outstanding as of September 30, 2010 and December 31, 2009, entitled in liquidation to $209 million	209	209
5.00% cumulative convertible preferred stock (series 2005), 0 and 5,000 shares issued and outstanding as of September 30, 2010 and December 31, 2009, entitled in liquidation to $0 and $1 million		1
Common stock, $0.01 par value, 1,000,000,000 shares authorized, 655,330,601 and 648,549,165 shares issued at September 30, 2010 and December 31, 2009, respectively	7	6
Paid-in capital	12,138	12,146
Retained earnings (deficit)	57	(1,261)
Accumulated other comprehensive income, net of tax of ($16) million and ($62) million, respectively	25	102
Less: treasury stock, at cost; 1,049,382 and 877,205 common shares as of September 30, 2010 and December 31, 2009, respectively	(19)	(15)

Total Chesapeake Stockholders Equity	15,273	11,444
Noncontrolling interest		897
Total Equity	15,273	12,341
TOTAL LIABILITIES AND EQUITY	$ 34,333	$ 29,914

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

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CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS

(Unaudited)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2010	2009	2010	2009
	($ in millions, except per share data)			
REVENUES:				
Natural gas and oil sales	$ 1,639	$ 1,187	$ 4,698	$ 3,681
Marketing, gathering and compression sales	883	575	2,520	1,660
Service operations revenue	59	49	173	139
Total Revenues	2,581	1,811	7,391	5,480
OPERATING COSTS:				
Production expenses	231	218	652	670
Production taxes	34	25	119	71
General and administrative expenses	125	95	340	259
Marketing, gathering and compression expenses	851	546	2,429	1,569
Service operations expense	52	49	154	136
Natural gas and oil depreciation, depletion and amortization	378	295	1,025	1,037
Depreciation and amortization of other assets	56	62	159	177
Impairment or loss on sale of other property and equipment	37	124	37	159
Impairment of natural gas and oil properties				9,600
Restructuring costs				34
Total Operating Costs	1,764	1,414	4,915	13,712
INCOME (LOSS) FROM OPERATIONS	817	397	2,476	(8,232)
OTHER INCOME (EXPENSE):				
Interest expense	(3)	(43)	(12)	(52)
Loss on redemptions or exchanges of Chesapeake debt	(59)	(17)	(130)	(19)
Impairment of investments	(16)		(16)	(162)
Other income (expense)	168	(30)	202	(25)
Total Other Income (Expense)	90	(90)	44	(258)
INCOME (LOSS) BEFORE INCOME TAXES	907	307	2,520	(8,490)
INCOME TAX EXPENSE (BENEFIT):				
Current income taxes	(1)		4	1
Deferred income taxes	350	115	966	(3,185)
Total Income Tax Expense (Benefit)	349	115	970	(3,184)

NET INCOME (LOSS)	558	192	1,550	(5,306)
Net (income) loss attributable to noncontrolling interest				
NET INCOME (LOSS) ATTRIBUTABLE TO CHESAPEAKE	558	192	1,550	(5,306)
Preferred stock dividends	(43)	(6)	(68)	(18)
NET INCOME (LOSS) AVAILABLE TO CHESAPEAKE COMMON STOCKHOLDERS	$ 515	$ 186	$ 1,482	$ (5,324)
EARNINGS (LOSS) PER COMMON SHARE:				
Basic	$ 0.81	$ 0.30	$ 2.35	$ (8.78)
Diluted	$ 0.75	$ 0.30	$ 2.24	$ (8.78)
CASH DIVIDEND DECLARED PER COMMON SHARE	$ 0.075	$ 0.075	$ 0.225	$ 0.225
WEIGHTED AVERAGE COMMON AND COMMON EQUIVALENT SHARES OUTSTANDING (in millions):				
Basic	632	619	631	606
Diluted	744	626	692	606

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

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CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS

(Unaudited)

	Nine Months Ended September 30, 2010	Nine Months Ended September 30, 2009
	($ in millions)	
CASH FLOWS FROM OPERATING ACTIVITIES:		
NET INCOME (LOSS) ATTRIBUTABLE TO CHESAPEAKE	$ 1,550	$ (5,306)
ADJUSTMENTS TO RECONCILE NET INCOME (LOSS) TO CASH PROVIDED BY OPERATING ACTIVITIES:		
Depreciation, depletion and amortization	1,184	1,214
Deferred income tax expense (benefit)	966	(3,185)
Unrealized (gains) losses on derivatives	(45)	295
Realized gains on financing derivatives	(436)	(53)
Stock-based compensation	111	104
Accretion of discount on contingent convertible notes	58	60
(Gain) loss on equity investments	(120)	32
Loss on redemptions or exchanges of Chesapeake debt	29	19
Impairment or loss on sale of other property and equipment	37	159
Impairment of natural gas and oil properties		9,600
Impairment of investments	16	162
Restructuring costs		12
Other	12	8
Change in assets and liabilities	609	10
Cash provided by operating activities	3,971	3,131
CASH FLOWS FROM INVESTING ACTIVITIES:		
Exploration and development of natural gas and oil properties	(3,718)	(2,790)
Acquisitions of natural gas and oil proved and unproved properties	(4,217)	(1,348)
Additions to other property and equipment	(968)	(1,362)
Proceeds from divestitures of proved and unproved properties	3,107	1,729
Proceeds from sales of other assets	328	157
Additions to investments	(113)	(40)
Deposits on acquisitions	(95)	
Other	11	
Cash used in investing activities	(5,665)	(3,654)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Proceeds from credit facilities borrowings	10,458	5,563
Payments on credit facilities borrowings	(9,863)	(7,866)
Proceeds from issuance of preferred stock, net of offering costs	2,562	
Proceeds from issuance of senior notes, net of offering costs	1,967	1,346
Cash paid to redeem Chesapeake debt	(3,434)	
Cash paid for common stock dividends	(142)	(135)
Cash paid for preferred stock dividends	(49)	(18)

Realized gains on financing derivatives	436	19
Proceeds from sale of noncontrolling interest in midstream joint venture		588
Proceeds from sale/leaseback of real estate surface assets		145
Proceeds from mortgage of building		54
Net increase (decrease) in outstanding payments in excess of cash balance	116	(305)
Other	(55)	(97)
Cash provided by (used in) financing activities	1,996	(706)
Net increase (decrease) in cash and cash equivalents	302	(1,229)
Cash and cash equivalents, beginning of period	307	1,749
Cash and cash equivalents, end of period	$ 609	$ 520

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

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CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS (Continued)

(Unaudited)

	Nine Months Ended September 30, 2010		Nine Months Ended September 30, 2009	
SUPPLEMENTAL DISCLOSURE OF CASH FLOW INFORMATION OF CASH PAYMENTS FOR:				
Interest, net of capitalized interest	$	103	$	111
Income taxes, net of refunds received	$	(291)	$	176
SUPPLEMENTAL SCHEDULE OF SIGNIFICANT NON-CASH INVESTING AND FINANCING ACTIVITIES:				

As of September 30, 2010 and 2009, dividends payable on our common and preferred stock were $90 million and $52 million, respectively.

For the nine months ended September 30, 2010 and 2009, natural gas and oil properties were adjusted by $116 million and ($72) million, respectively, as a result of an increase (decrease) in accrued exploration and development costs.

For the nine months ended September 30, 2010 and 2009, other property and equipment were adjusted by ($8) million and ($31) million, respectively, as a result of an increase (decrease) in accrued costs.

We recorded non-cash asset reductions to natural gas and oil properties of $2 million and $3 million for the nine months ended September 30, 2010 and 2009, respectively, for asset retirement obligations.

We recorded non-cash asset reductions to natural gas gathering systems of $2 million and $3 million for the nine months ended September 30, 2010 and 2009, respectively, for asset retirement obligations.

During the nine months ended September 30, 2010, holders of our 2.25% Contingent Convertible Senior Notes due 2038 exchanged approximately $11 million in aggregate principal amount for an aggregate of 298,500 shares of our common stock in privately negotiated exchanges.

On May 3, 2010, we converted all 5,000 shares of our outstanding 5.00% Cumulative Convertible Preferred Stock (Series 2005) into 20,774 shares of common stock pursuant to the company s mandatory conversion rights.

During the nine months ended September 30, 2009, we issued 24,822,832 shares of common stock, valued at $429 million, for the purchase of proved and unproved properties pursuant to an acquisition shelf registration statement.

During the nine months ended September 30, 2009, holders of our 2.25% Contingent Convertible Senior Notes due 2038 exchanged approximately $238 million in aggregate principal amount for an aggregate of 6,707,321 shares of our common stock in privately negotiated exchanges.

On June 15, 2009, we converted all 143,768 shares of our outstanding 6.25% Mandatory Convertible Preferred Stock into 1,239,538 shares of common stock.

On March 31, 2009, we converted all 3,033 shares of our outstanding 4.125% Cumulative Convertible Preferred Stock into 182,887 shares of common stock.

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

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CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

CONDENSED CONSOLIDATED STATEMENTS OF EQUITY

(Unaudited)

	Nine Months Ended September 30, 2010	2009
	($ in millions)	
PREFERRED STOCK:		
Balance, beginning of period	$ 466	$ 505
Issuance of 1,500,000 and 0 shares of 5.75% preferred stock	1,500	
Issuance of 1,100,000 and 0 shares of 5.75% preferred stock (series A)	1,100	
Conversion or exchange of 5,000 and 146,801 shares of preferred stock for common stock	(1)	(39)
Balance, end of period	3,065	466
COMMON STOCK:		
Balance, beginning of period	6	6
Conversion or exchange of convertible notes and preferred stock for 319,274 and 8,129,746 shares of common stock		
Issuance of 0 and 24,822,832 shares of common stock for the purchase of proved and unproved properties		
Stock-based compensation	1	
Balance, end of period	7	6
PAID-IN CAPITAL:		
Balance, beginning of period	12,146	11,680
Issuance of 0 and 24,822,832 shares of common stock for the purchase of proved and unproved properties		420
Conversion or exchange of convertible notes and preferred stock for 319,274 and 8,129,746 shares of common stock	9	203
Stock-based compensation	174	143
Offering expenses	(39)	
Dividends on common stock	(95)	(138)
Dividends on preferred stock	(44)	(17)
Allocation of joint venture capital to Global Infrastructure Partners		(263)
Tax benefit (reduction in tax benefit) from exercise of stock-based compensation	(13)	(47)
Balance, end of period	12,138	11,981
RETAINED EARNINGS (DEFICIT):		
Balance, beginning of period	(1,261)	4,569
Net income (loss)	1,550	(5,306)
Cumulative effect of accounting change, net of income taxes of $89 million	(142)	
Dividends on common stock	(47)	
Dividends on preferred stock	(43)	
Balance, end of period	57	(737)

ACCUMULATED OTHER COMPREHENSIVE INCOME (LOSS):		
Balance, beginning of period	102	267
Hedging activity	(70)	(60)
Investment activity	(7)	67
Balance, end of period	25	274
TREASURY STOCK COMMON:		
Balance, beginning of period	(15)	(10)
Purchase of 179,140 and 115,430 shares for company benefit plans	(4)	(2)
Release of 6,963 and 6,152 shares for company benefit plans		
Balance, end of period	(19)	(12)
TOTAL CHESAPEAKE STOCKHOLDERS EQUITY	15,273	11,978
NONCONTROLLING INTEREST:		
Balance, beginning of period	897	
Sale of noncontrolling interest in midstream joint venture		588
Allocation of joint venture capital to Global Infrastructure Partners		263
Deconsolidation of investment in CMP	(897)	
Balance, end of period		851
TOTAL EQUITY	$ 15,273	$ 12,829

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

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CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)

(Unaudited)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2010	2009	2010	2009
	($ in millions)			
Net income (loss)	$ 558	$ 192	$ 1,550	$ (5,306)
Other comprehensive income (loss), net of income tax:				
Change in fair value of derivative instruments, net of income taxes of $39 million, $38 million, $153 million and $372 million	65	62	251	609
Reclassification of gain on settled contracts, net of income taxes of ($68) million, ($144) million, ($203) million and ($377) million	(112)	(236)	(333)	(617)
Ineffective portion of derivatives qualifying for cash flow hedge accounting, net of income taxes of ($2) million, $2 million, $8 million and ($31) million	(3)	5	12	(52)
Unrealized (gain) loss on marketable securities, net of income taxes of $1 million, $4 million, ($4) million and $14 million	1	6	(7)	24
Reclassification of loss on investments, net of income taxes of $0, $0, $0 and $26 million				43
Comprehensive income (loss)	509	29	1,473	(5,299)
(Income) loss attributable to noncontrolling interest				
Comprehensive income (loss) available to Chesapeake	$ 509	$ 29	$ 1,473	$ (5,299)

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

CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS

(Unaudited)

1. Basis of Presentation and Summary of Significant Accounting Policies

Principles of Consolidation

The accompanying unaudited condensed consolidated financial statements of Chesapeake Energy Corporation and its subsidiaries have been prepared in accordance with the instructions to Form 10-Q as prescribed by the Securities and Exchange Commission (SEC). Chesapeake s annual report on Form 10-K for the year ended December 31, 2009 (2009 Form 10-K) includes certain definitions and a summary of significant accounting policies and should be read in conjunction with this Form 10-Q. All material adjustments (consisting solely of normal recurring adjustments) which, in the opinion of management, are necessary for a fair statement of the results for the interim periods have been reflected. The results for the three and nine months ended September 30, 2010 are not necessarily indicative of the results to be expected for the full year. This Form 10-Q relates to the three and nine months ended September 30, 2010 (the Current Quarter and the Current Period , respectively) and the three and nine months ended September 30, 2009 (the Prior Quarter and the Prior Period , respectively).

Cumulative Effect of Accounting Change

Effective January 1, 2010, in accordance with new authoritative guidance for variable interest entities, we ceased consolidating our 50/50 midstream joint venture with Global Infrastructure Partners within our financial statements and began to account for the joint venture under the equity method (see Note 9). Adoption of this new guidance resulted in an after-tax cumulative effect charge to retained earnings of $142 million, which is reflected in our condensed consolidated statement of equity for the Current Period. This charge reflects the difference between the carrying value of our initial investment in the joint venture, which was recorded at carryover basis as an entity under common control, and the fair value of our equity in the joint venture as of the formation date.

Critical Accounting Policies

We consider accounting policies related to hedging, natural gas and oil properties and income taxes to be critical policies. These policies are summarized in Management s Discussion and Analysis of Financial Condition and Results of Operations in our 2009 Form 10-K.

2. Financial Instruments and Hedging Activities

Natural Gas and Oil Derivatives

Our results of operations and operating cash flows are impacted by changes in market prices for natural gas and oil. To mitigate a portion of the exposure to adverse market changes, we have entered into various derivative instruments. These instruments allow us to predict with greater certainty the effective natural gas and oil prices to be received for our hedged production. Although derivatives often fail to achieve 100% effectiveness for accounting purposes, we believe our derivative instruments continue to be highly effective in achieving our risk management objectives. As of September 30, 2010 and December 31, 2009, our natural gas and oil derivative instruments were comprised of the following types of instruments:

Swaps: Chesapeake receives a fixed price and pays a floating market price to the counterparty for the hedged commodity.

Collars: These instruments contain a fixed floor price (put) and ceiling price (call). If the market price exceeds the call strike price or falls below the put strike price, Chesapeake receives the fixed price and pays the market price. If the market price is between the put and the call strike price, no payments are due from either party. Three-way collars include an additional put option in exchange for a more favorable strike price on the collar. This eliminates the counterparty s downside exposure below the second put option.

Call options: Chesapeake sells call options in exchange for a premium from the counterparty. At the time of settlement, if the market price exceeds the fixed price of the call option, Chesapeake pays the counterparty such excess and if the market price settles below the fixed price of the call option, no payment is due from either party.

Put options: Chesapeake receives a premium from the counterparty in exchange for the sale of a put option. At the time of settlement, if the market price falls below the fixed price of the put option, Chesapeake pays the counterparty such shortfall, and if the market price settles above the fixed price of the put option, no payment is due from either party.

CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Continued)

(Unaudited)

Knockout swaps: Chesapeake receives a fixed price and pays a floating market price. The fixed price received by Chesapeake includes a premium in exchange for the possibility to reduce the counterparty s exposure to zero, in any given month, if the floating market price is lower than certain pre-determined knockout prices.

Basis protection swaps: These instruments are arrangements that guarantee a price differential to NYMEX for natural gas from a specified delivery point. For non-Appalachian Basin basis protection swaps, which typically have negative differentials to NYMEX, Chesapeake receives a payment from the counterparty if the price differential is greater than the stated terms of the contract and pays the counterparty if the price differential is less than the stated terms of the contract. For Appalachian Basin basis protection swaps, which typically have positive differentials to NYMEX, Chesapeake receives a payment from the counterparty if the price differential is less than the stated terms of the contract and pays the counterparty if the price differential is greater than the stated terms of the contract.

All of our derivative instruments are net settled based on the difference between the fixed-price payment and the floating-price payment, resulting in a net amount due to or from the counterparty.

The estimated fair values of our natural gas and oil derivative instruments as of September 30, 2010 and December 31, 2009 are provided below. The associated carrying values of these instruments are equal to the estimated fair values.

	September 30, 2010		December 31, 2009	
	Volume	Fair Value ($ in millions)	Volume	Fair Value ($ in millions)
Natural gas (bbtu):				
Fixed-price swaps	616,190	$ 1,378	492,053	$ 662
Fixed-price collars	10,980	37	74,240	92
Call options	1,333,619	(481)	996,750	(541)
Put options	(58,580)	(75)	(69,620)	(50)
Fixed-price knockout swaps	28,530	5	38,370	17
Basis protection swaps	154,502	(52)	125,469	(50)
Total natural gas	2,085,241	812	1,657,262	130
Oil (mbbl):				
Fixed-price swaps	8,044	(28)	5,475	3
Call options	42,259	(622)	14,975	(144)
Fixed-price knockout swaps	3,023	35	6,572	32
Total oil	53,326	(615)	27,022	(109)
Total estimated fair value		$ 197		$ 21

Pursuant to accounting guidance for derivatives and hedging, certain derivatives qualify for designation as cash flow hedges. Following this guidance, changes in the fair value of derivative instruments designated as cash flow hedges, to the extent they are effective in offsetting cash flows attributable to the hedged risk, are recorded in accumulated other comprehensive income until the hedged item is recognized in earnings as the physical transactions being hedged occur. Any change in fair value resulting from ineffectiveness is currently recognized in natural gas and oil sales as unrealized gains (losses). Changes in the fair value of non-qualifying derivatives that occur prior to their maturity (i.e., temporary fluctuations in value) are reported currently in the condensed consolidated statements of operations as unrealized gains (losses) within natural gas and oil sales. Realized gains (losses) are included in natural gas and oil sales in the month of related production.

CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Continued)

(Unaudited)

The components of natural gas and oil sales for the Current Quarter, the Prior Quarter, the Current Period and the Prior Period are presented below.

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2010	2009	2010	2009
	($ in millions)			
Natural gas and oil sales	$ 1,074	$ 785	$ 3,243	$ 2,280
Realized gains (losses) on natural gas and oil derivatives	512	687	1,484	1,802
Unrealized gains (losses) on non-qualifying natural gas and oil derivatives	48	(278)	(9)	(484)
Unrealized gains (losses) on ineffectiveness of cash flow hedges	5	(7)	(20)	83
Total natural gas and oil sales	$ 1,639	$ 1,187	$ 4,698	$ 3,681

Based upon the market prices at September 30, 2010, we expect to transfer approximately $188 million (net of income taxes) of the gain included in the accumulated other comprehensive income balance to net income (loss) during the next 12 months in the related month of production. All transactions hedged as of September 30, 2010 are expected to mature by December 31, 2022.

We have a multi-counterparty hedge facility with 13 counterparties that have committed to provide approximately 5.6 tcfe of trading capacity and an aggregate mark-to-market capacity of $15.0 billion under the terms of the facility. As of September 30, 2010, we had hedged a total of 2.3 tcfe under the facility. The multi-counterparty facility allows us to enter into cash-settled natural gas and oil price and basis hedges with the counterparties. Our obligations under the multi-counterparty facility are secured by natural gas and oil proved reserves, the value of which must cover the fair value of the transactions outstanding under the facility by at least 1.65 times, and guarantees by certain subsidiaries that also guarantee our corporate revolving bank credit facility and indentures. The counterparties obligations under the facility must be secured by cash or short-term U.S. Treasury instruments to the extent that any mark-to-market amounts they owe to Chesapeake exceed defined thresholds. The maximum volume-based trading capacity under the facility is governed by the expected production of the pledged reserve collateral, and volume-based trading limits are applied separately to price and basis hedges. In addition, there are volume-based sub-limits for natural gas and oil hedges. Chesapeake has significant flexibility with regard to releases and/or substitutions of pledged reserves, provided that certain collateral coverage and other requirements are met. The facility does not have a maturity date. Counterparties to the agreement have the right to cease trading with the company on a prospective basis as long as obligations associated with any existing trades in the facility continue to be satisfied in accordance with the terms of the agreement.

Interest Rate Derivatives

To mitigate our exposure to volatility in interest rates related to our senior notes and bank credit facilities, we enter into interest rate derivatives. As of September 30, 2010 and December 31, 2009, our interest rate derivative instruments were comprised of the following types of instruments:

Swaps: Chesapeake enters into fixed-to-floating interest rate swaps (we receive a fixed interest rate and pay a floating market rate) to mitigate our exposure to changes in the fair value of our senior notes. We enter into floating-to-fixed interest rate swaps (we receive a floating market rate and pay a fixed interest rate) to manage our interest rate exposure related to our bank credit facilities borrowings.

Collars: These instruments contain a fixed floor rate (floor) and a ceiling rate (cap). If the floating rate is above the cap, we have a net receivable from the counterparty and if the floating rate is below the floor, we have a net payable to the counterparty. If the floating rate is between the floor and the cap, there is no payment due from either party. Collars are used to manage our interest rate exposure related to our bank credit facilities borrowings.

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Call options: Occasionally we sell call options for a premium when we think it is more likely that the option will expire unexercised. The option allows the counterparty to terminate an open swap on a specific date.

Swaptions: Occasionally we sell an option to a counterparty for a premium which allows the counterparty to enter into a swap with us on a specific date.

The notional amount of debt hedged and the estimated fair value of our interest rate derivatives outstanding as of September 30, 2010 and December 31, 2009 are provided below.

	September 30, 2010 Notional Amount	September 30, 2010 Fair Value	December 31, 2009 Notional Amount	December 31, 2009 Fair Value
	($ in millions)			
Interest rate:				
Swaps	$ 1,300	$ (13)	$ 2,925	$ (113)
Collars			250	(6)
Call options	250	(26)	250	(2)
Swaptions	250		500	(11)
Totals	$ 1,800	$ (39)	$ 3,925	$ (132)

For interest rate derivative instruments designated as fair value hedges, the fair values of the hedges are recorded on the condensed consolidated balance sheets as assets or liabilities, with corresponding offsetting adjustments to the debt s carrying value. Changes in the fair value of non-qualifying derivatives that occur prior to their maturity (i.e., temporary fluctuations in value) are currently reported in the condensed consolidated statements of operations as unrealized gains (losses) within interest expense.

Realized gains or losses from interest rate derivative transactions are reflected as adjustments to interest expense in the condensed consolidated statements of operations. The components of interest expense for the Current Quarter, the Prior Quarter, the Current Period and the Prior Period are presented below.

	Three Months Ended September 30, 2010	Three Months Ended September 30, 2009	Nine Months Ended September 30, 2010	Nine Months Ended September 30, 2009
	($ in millions)			
Interest expense on senior notes	$ 167	$ 195	$ 550	$ 572
Interest expense on credit facilities	18	18	42	47
Capitalized interest	(185)	(153)	(525)	(467)
Realized (gains) losses on interest rate derivatives	(2)	(7)	(6)	(19)
Unrealized (gains) losses on interest rate derivatives	2	(20)	(75)	(106)
Amortization of loan discount and other	3	10	26	25

Total interest expense	$ 3	$ 43	$ 12	$ 52

Our qualifying interest rate swaps are considered 100% effective and therefore no ineffectiveness was recorded for the periods presented above.

Gains and losses related to terminated qualifying interest rate derivative transactions will be amortized as an adjustment to interest expense over the remaining term of the related senior notes. Over the next ten years, we will recognize $36 million in gains related to such transactions.

Foreign Currency Derivatives

On December 6, 2006, we issued 600 million of 6.25% Euro-denominated Senior Notes due 2017. Concurrent with the issuance of the euro-denominated senior notes, we entered into a cross currency swap to mitigate our exposure to fluctuations in the euro relative to the dollar over the term of the notes. Under the terms of the cross currency swap, on each semi-annual interest payment date, the counterparties pay Chesapeake 19 million and Chesapeake pays the counterparties $30 million, which yields an annual dollar-equivalent interest rate of 7.491%. Upon maturity of the notes, the counterparties will pay Chesapeake 600 million and Chesapeake will pay the counterparties $800 million. The terms of the cross currency swap were based on the dollar/euro exchange rate on the issuance date of $1.3325 to 1.00. Through the cross currency swap, we have eliminated any potential variability in Chesapeake s expected cash flows related to changes in foreign exchange rates and therefore the swap qualifies as a cash flow hedge. The fair value of the cross currency swap is recorded on the condensed consolidated

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balance sheet as a liability of $35 million at September 30, 2010. The euro-denominated debt in long-term debt has been adjusted to $816 million at September 30, 2010 using an exchange rate of $1.3601 to 1.00.

Additional Disclosures Regarding Derivative Instruments and Hedging Activities

In accordance with accounting guidance for derivatives and hedging, to the extent that a legal right of set-off exists, Chesapeake nets the value of its derivative arrangements with the same counterparty in the accompanying condensed consolidated balance sheets. Derivative instruments reflected as current in the condensed consolidated balance sheets represent the estimated fair value of derivatives scheduled to settle over the next twelve months based on market prices/rates as of the balance sheet date. The derivative settlement amounts are not due until the month in which the related underlying hedged transaction occurs. Cash settlements of our derivative arrangements are generally classified as operating cash flows unless the derivative contains a significant financing element at contract inception, in which case, all cash settlements are classified as financing cash flows in the accompanying condensed consolidated statements of cash flows.

The following table sets forth the fair value of each classification of derivative instrument as of September 30, 2010 and December 31, 2009, on a gross basis without regard to same-counterparty netting:

		Fair Value	
	Balance Sheet Location	September 30, 2010	December 31, 2009
		($ in millions)	
Asset Derivatives:			
Derivatives designated as hedging instruments:			
Commodity contracts	Short-term derivative instruments	$ 438	$ 417
Commodity contracts	Long-term derivative instruments	41	36
Foreign currency contracts	Long-term derivative instruments		43
Total		479	496
Derivatives not designated as hedging instruments:			
Commodity contracts	Short-term derivative instruments	794	318
Commodity contracts	Long-term derivative instruments	367	66
Interest rate contracts	Long-term derivative instruments	29	
Total		1,190	384
Liability Derivatives:			
Derivatives designated as hedging instruments:			
Commodity contracts	Short-term derivative instruments		(1)
Interest rate contracts	Long-term derivative instruments		(11)
Foreign currency contracts	Long-term derivative instruments	(35)	
Total		(35)	(12)

Derivatives not designated as hedging instruments:			
Commodity contracts	Short-term derivative instruments	(145)	(42)
Commodity contracts	Long-term derivative instruments	(1,298)	(768)
Interest rate contracts	Short-term derivative instruments	(26)	(27)
Interest rate contracts	Long-term derivative instruments	(42)	(94)
Total		(1,511)	(931)
Total derivative instruments		$ 123	$ (63)

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A consolidated summary of the effect of derivative instruments on the condensed consolidated statements of operations for the Current Quarter, the Prior Quarter, the Current Period and the Prior Period is provided below, separating fair value, cash flow and non-qualifying derivatives.

The following table presents the gain (loss) recognized in net income (loss) for instruments designated as fair value derivatives:

Fair Value Derivatives	Location of Gain (Loss)	Three Months Ended September 30, 2010	2009	Nine Months Ended September 30, 2010	2009
		($ in millions)			
Interest rate contracts	Interest expense[(a)]	$ 3	$ 13	$ 16	$ 31

(a) Interest expense on items hedged during the Current Quarter, the Prior Quarter, the Current Period and the Prior Period was $0, $33 million, $15 million and $66 million, respectively, which is included in interest expense on the condensed consolidated statements of operations.

The following table presents the pre-tax gain (loss) recognized in, and reclassified from, accumulated other comprehensive income (AOCI) and recognized in net income (loss), including any hedge ineffectiveness, for derivative instruments designated as cash flow derivatives:

Cash Flow Derivatives	Location of Gain (Loss)	Three Months Ended September 30, 2010	2009	Nine Months Ended September 30, 2010	2009
		($ in millions)			
Gain (Loss) Recognized in AOCI (Effective Portion)					
Commodity contracts	AOCI	$ 94	$ 107	$ 458	$ 819
Foreign exchange contracts	AOCI	5	1	(34)	79
		$ 99	$ 108	$ 424	$ 898
Gain (Loss) Reclassified from AOCI (Effective Portion)					
Commodity contracts	Natural gas and oil sales	$ 179	$ 381	$ 535	$ 994
		$ 179	$ 381	$ 535	$ 994

Gain (Loss) Recognized (Ineffective Portion and Amount Excluded from Effectiveness Testing)[(a)]					
Commodity contracts	Natural gas and oil sales	$ 2	$ (7)	$ (95)	$ 83
		$ 2	$ (7)	$ (95)	$ 83

(a) In the Current Quarter, the Prior Quarter, the Current Period and the Prior Period, the amount of gain (loss) recognized in net income (loss) represents $5 million, ($7) million, ($20) million and $83 million related to the ineffective portion of our cash flow derivatives and ($3) million, $0, ($75) million and $0, respectively, related to the amount excluded from the assessment of hedge effectiveness.

The following table presents the gain (loss) recognized in net income (loss) for instruments not qualifying as cash flow or fair value derivatives:

		Three Months Ended September 30,		**Nine Months Ended September 30,**	
Non-Qualifying Derivatives	**Location of Gain (Loss)**	**2010**	**2009**	**2010**	**2009**
		($ in millions)			
Commodity contracts	Natural gas and oil sales	$ 384	$ 28	$ 1,015	$ 324
Interest rate contracts	Interest expense	(3)	14	65	94
	Total	$ 381	$ 42	$ 1,080	$ 418

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Concentration of Credit Risk

A significant portion of our credit risk is concentrated in derivative instruments that enable us to hedge a portion of our exposure to natural gas and oil prices, interest rate volatility and exchange rate exposure. These arrangements expose us to credit risk from our counterparties. To mitigate this risk, we enter into derivative contracts only with investment-grade rated counterparties deemed by management to be competent and competitive market makers, and we attempt to limit our exposure to non-performance by any single counterparty. On September 30, 2010, our derivative instruments were spread among 14 counterparties. Additionally, our multi-counterparty secured hedging facility described previously includes 13 of our counterparties which are required to secure their natural gas and oil hedging obligations in excess of defined thresholds. We use this facility for all of our commodity hedging.

Other financial instruments which potentially subject us to concentrations of credit risk consist principally of investments in equity instruments and accounts receivable. Our accounts receivable are primarily from purchasers of natural gas and oil and exploration and production companies which own interests in properties we operate. This industry concentration has the potential to impact our overall exposure to credit risk, either positively or negatively, in that our customers may be similarly affected by changes in economic, industry or other conditions. We monitor the creditworthiness of all our counterparties. We generally require letters of credit for receivables from customers which are judged to have sub-standard credit, unless the credit risk can otherwise be mitigated. During the Current Quarter, the Prior Quarter and the Current Period, we recognized nominal amounts of bad debt expense related to potentially uncollectible receivables. During the Prior Period, we recognized $13 million of bad debt expense related to potentially uncollectible receivables.

3. Contingencies and Commitments

Litigation

On February 25, 2009, a putative class action was filed in the U.S. District Court for the Southern District of New York against the company and certain of its officers and directors along with certain underwriters of the company s July 2008 common stock offering. Following the appointment of a lead plaintiff and counsel, the plaintiff filed an amended complaint on September 11, 2009 alleging that the registration statement for the offering contained material misstatements and omissions and seeking damages under Sections 11, 12 and 15 of the Securities Act of 1933 of an unspecified amount and rescission. The action was transferred to the U.S. District Court for the Western District of Oklahoma on October 13, 2009. The defendants motion to dismiss was denied on September 2, 2010. A derivative action was also filed in the District Court of Oklahoma County, Oklahoma on March 10, 2009 against the company s directors and certain of its officers alleging breaches of fiduciary duties relating to the disclosure matters alleged in the securities case. The derivative action is stayed pursuant to stipulation.

On March 26, 2009, a shareholder filed a petition in the District Court of Oklahoma County, Oklahoma seeking to compel inspection of company books and records relating to compensation of the company s CEO. On August 20, 2009, the court denied the inspection demand, dismissed the petition and entered judgment in favor of Chesapeake. The shareholder is appealing the court s ruling in the Court of Civil Appeals of the State of Oklahoma.

Three derivative actions were filed in the District Court of Oklahoma County, Oklahoma on April 28, May 7, and May 20, 2009 against the company s directors alleging breaches of fiduciary duties relating to compensation of the company s CEO and alleged insider trading, among other things, and seeking unspecified damages, equitable relief and disgorgement. These three derivative actions were consolidated and a Consolidated Derivative Shareholder Petition was filed on June 23, 2009. Chesapeake is named as a nominal defendant. Chesapeake s motion to dismiss was granted on February 28, 2010 and plaintiffs were given leave to amend. Plaintiffs chose not to amend and on April 9, 2010, at plaintiffs request, the court entered an order certifying that the February 28, 2010 dismissal was a final, appealable order. Plaintiffs are appealing the dismissal in the Oklahoma Court of Civil Appeals.

We are currently unable to assess the probability of loss or estimate a range of potential loss associated with the foregoing cases. It is inherently difficult to predict the outcome of any litigation, and these proceedings are at an early stage.

Chesapeake is also involved in various other lawsuits and disputes incidental to its business operations, including commercial disputes, personal injury claims, claims for underpayment of royalties, property damage claims and contract actions. With regard to the latter, various mineral or leasehold owners have filed lawsuits against us seeking specific performance to require us to acquire their oil and natural gas interests and pay acreage bonus payments, damages based on breach of contract and/or, in certain cases, punitive damages based on alleged fraud.

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The company has satisfactorily resolved most of these suits but a few are pending, either at the trial court or appellate level. The company believes that it has substantial defenses to the claims made in all these cases.

The company records an associated liability when a loss is probable and the amount is reasonably estimable. Although the outcome of litigation cannot be predicted with certainty, management is of the opinion that no pending or threatened lawsuit or dispute incidental to its business operations is likely to have a material adverse effect on the company s consolidated financial position, results of operations or cash flows. The final resolution of such matters could exceed amounts accrued, however, and actual results could differ materially from management s estimates.

Environmental Risk

Due to the nature of the natural gas and oil business, Chesapeake and its subsidiaries are exposed to possible environmental risks. Chesapeake has implemented various policies and procedures to avoid environmental contamination and risks from environmental contamination. Chesapeake conducts periodic reviews, on a company-wide basis, to identify changes in our environmental risk profile. These reviews evaluate whether there is a contingent liability, its amount, and the likelihood that the liability will be incurred. The amount of any potential liability is determined by considering, among other matters, incremental direct costs of any likely remediation and the proportionate cost of employees who are expected to devote a significant amount of time directly to any possible remediation effort. We manage our exposure to environmental liabilities on properties to be acquired by identifying existing problems and assessing the potential liability. Depending on the extent of an identified environmental problem, Chesapeake may exclude a property from the acquisition, require the seller to remediate the property to our satisfaction, or agree to assume liability for the remediation of the property. Chesapeake has historically not experienced any significant environmental liability, and is not aware of any potential material environmental issues or claims at September 30, 2010.

Rig Leases

In a series of transactions since 2006, our drilling subsidiaries have sold 85 drilling rigs and related equipment for $704 million and entered into a master lease agreement under which we agreed to lease the rigs from the buyer for initial terms of seven to ten years for lease payments of approximately $97 million annually. The lease obligations are guaranteed by Chesapeake and certain of its subsidiaries. These transactions were recorded as sales and operating leasebacks and any related gain or loss is being amortized to service operations expense over the lease term. Under the rig leases, we can exercise an early purchase option after five and one-half to seven years or on the expiration of the lease term for a purchase price equal to the then fair market value of the rigs. Additionally, we have the option to renew the rig lease for a negotiated renewal term at a periodic lease payment equal to the fair market rental value of the rigs as determined at the time of renewal. Commitments related to rig lease payments are not recorded in the accompanying condensed consolidated balance sheets. As of September 30, 2010, the minimum aggregate undiscounted future rig lease payments were approximately $478 million.

Compressor Leases

Through various transactions since 2007, our compression subsidiary has sold 2,234 compressors, a significant portion of its compressor fleet, for $517 million and entered into a master lease agreement. The term of the agreement varies by buyer ranging from four to ten years for aggregate lease payments of approximately $77 million annually. The lease obligations are guaranteed by Chesapeake and certain of its subsidiaries. These transactions were recorded as sales and operating leasebacks and any related gain or loss is being amortized to marketing, gathering and compression expenses over the lease term. Under the leases, we can exercise an early purchase option or we can purchase the compressors at expiration of the lease for the fair market value at the time. In addition, we have the option to renew the lease for negotiated new terms at the expiration of the lease. Commitments related to compressor lease payments are not recorded in the accompanying condensed consolidated balance sheets. As of September 30, 2010, the minimum aggregate undiscounted future compressor lease payments were approximately $441 million.

CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

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Transportation Contracts

Chesapeake has various firm pipeline transportation service agreements with expiration dates ranging from 2010 to 2099. These commitments are not recorded in the accompanying condensed consolidated balance sheets. Under the terms of these contracts, we are obligated to pay demand charges as set forth in the transporter s Federal Energy Regulatory Commission (FERC) gas tariff. In exchange, the company receives rights to flow natural gas production through pipelines located in highly competitive markets. The aggregate undiscounted amounts of such required demand payments are presented below:

	September 30, 2010 ($ in millions)
2010	$ 82
2011	378
2012	378
2013	364
2014	344
2015 2099	2,449
Total	$ 3,995

Drilling and Rig Purchase Contracts

Currently, Chesapeake has contracts with various drilling contractors to lease approximately 46 rigs with terms of four months to four years. These commitments are not recorded in the accompanying condensed consolidated balance sheets. As of September 30, 2010, the aggregate undiscounted drilling rig commitment was approximately $204 million.

In September 2010, Chesapeake entered into a contract to purchase 7 rigs for $85 million. As of September 30, 2010, we had made a $9 million deposit and have a remaining commitment of $76 million. The transaction is expected to close in December 2010.

Natural Gas and Oil Purchase Obligations

Our marketing segment regularly commits to purchase natural gas from other owners in our properties and such commitments typically are short-term in nature. We have also committed to purchase any natural gas and oil associated with certain volumetric production payment transactions. The purchase commitments are based on market prices at the time of production, and the purchased natural gas and oil is resold.

Minimum Volume Commitments

We are a party to a gas gathering agreement with a subsidiary of Chesapeake Midstream Partners, L.P. (see Note 9), pursuant to which we have committed to deliver specified minimum volumes of natural gas from our Barnett Shale production annually through December 31, 2018 and for the six-month period ending June 30, 2019. At the end of the term or annually, Chesapeake will be invoiced for any shortfalls in such volume commitments at the rate specified in the agreement. Volume commitments remaining as of September 30, 2010 were as follows:

	Bcf
2010	129
2011	313
2012	325
2013	338
2014	351
After 2014	1,686
Total	3,142

In addition, Chesapeake has entered into commitments to deliver approximately 530 bcf through September 2021 to third-party midstream companies.

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Net Acreage Maintenance Commitments

Under the terms of our joint development agreements with our joint venture partners, Statoil and Total (see Note 8), we are required to extend, renew or replace certain expiring joint leasehold, at our cost, to ensure that the net acreage is maintained in certain designated areas.

Other Commitments

As of September 30, 2010, we had made commitments to acquire additional leasehold in various transactions during the next twelve months for approximately $1.7 billion, including the acquisition of a significant additional position in the Appalachian Basin from privately-held Anschutz Corporation which is expected to close in November 2010.

4. Net Income Per Share

Accounting guidance for earnings per share (EPS) requires presentation of basic and diluted earnings per share on the face of the statements of operations for all entities with complex capital structures as well as a reconciliation of the numerator and denominator of the basic and diluted EPS computations.

For the Current Quarter and the Current Period, no securities were antidilutive in the calculation of diluted EPS. The following securities and associated adjustments to net income comprised of dividends and losses on conversions/exchanges were not included in the calculation of diluted EPS for the Prior Quarter and the Prior Period, as the effect was antidilutive.

	Shares (in millions)	Net Income Adjustments ($ in millions)
Three Months Ended September 30, 2009:		
Common stock equivalent of our preferred stock outstanding:		
5.00% cumulative convertible preferred stock (series 2005B)	5	$ 3
4.50% cumulative convertible preferred stock	6	$ 3
Nine Months Ended September 30, 2009:		
Common stock equivalent of our preferred stock outstanding:		
5.00% cumulative convertible preferred stock (series 2005B)	5	$ 8
4.50% cumulative convertible preferred stock	6	$ 9
Common stock equivalent of our preferred stock outstanding prior to conversion:		
6.25% mandatory convertible preferred stock	1	$ 1
Outstanding stock options	1	$
Unvested restricted stock	5	$

For the Prior Period, as a result of the net loss to Chesapeake common stockholders, there was no difference between basic weighted average shares outstanding, which are used in computing basic EPS, and diluted weighted average shares, which are used in computing EPS assuming dilution.

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A reconciliation of basic EPS and diluted EPS for the Current Quarter, the Prior Quarter and the Current Period is as follows:

	Income (Numerator)	Weighted Average Shares (Denominator)	Per Share Amount
	(in millions, except per share data)		
Three Months Ended September 30, 2010:			
Basic EPS	$ 515	632	$ 0.81
Effect of Dilutive Securities:			
Assumed conversion as of the beginning of the period of preferred shares outstanding during the period:			
Common shares assumed issued for 5.75% cumulative convertible preferred stock	21	56	
Common shares assumed issued for 5.75% cumulative convertible preferred stock (series A)	16	40	
Common shares assumed issued for 5.00% cumulative convertible preferred stock (series 2005B)	2	5	
Common shares assumed issued for 4.50% cumulative convertible preferred stock	3	6	
Outstanding stock options		1	
Unvested restricted stock		4	
Diluted EPS	$ 557	744	$ 0.75
Three Months Ended September 30, 2009:			
Basic EPS	$ 186	619	$ 0.30
Effect of Dilutive Securities:			
Outstanding stock options		1	
Unvested restricted stock		6	
Diluted EPS	$ 186	626	$ 0.30
Nine Months Ended September 30, 2010:			
Basic EPS	$ 1,482	631	$ 2.35
Effect of Dilutive Securities:			

Assumed conversion as of the beginning of the period of preferred shares outstanding during the period:				
Common shares assumed issued for 5.75% cumulative convertible preferred stock	28	24		
Common shares assumed issued for 5.75% cumulative convertible preferred stock (series A)	23	20		
Common shares assumed issued for 5.00% cumulative convertible preferred stock (series 2005B)	8	5		
Common shares assumed issued for 4.50% cumulative convertible preferred stock	9	6		
Outstanding stock options		1		
Unvested restricted stock		5		
Diluted EPS	$ 1,550	692	$	2.24

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5. Stockholders Equity, Restricted Stock and Stock Options

Common Stock

The following is a summary of the changes in our common shares issued for the nine months ended September 30, 2010 and 2009:

	2010	2009
	(in thousands)	
Shares issued at January 1	648,549	607,953
Restricted stock issuances (net of forfeitures)	6,108	3,940
Stock option exercises	354	429
Convertible note exchanges	299	6,707
Preferred stock conversions/exchanges	21	1,422
Common stock issued for the purchase of proved and unproved properties		24,823
Shares issued at September 30	655,331	645,274

In the Current Period, we privately exchanged approximately $11 million in aggregate principal amount of our 2.25% Contingent Convertible Senior Notes due 2038 for an aggregate of 298,500 shares of our common stock valued at approximately $9 million. Through these transactions, we were able to retire this debt for common stock valued at approximately 80% of the face value of the notes. In connection with accounting guidance for debt with conversion and other options, we are required to account for the liability and equity components of our convertible debt instruments separately. Of the $11 million principal amount of convertible notes exchanged in the Current Period, $7 million was allocated to the debt component of the notes and the remaining $4 million was allocated to the equity conversion feature of the notes and was recorded as an adjustment to paid-in-capital. The difference between the debt component and value of the common stock exchanged in these transactions resulted in a $2 million loss (including a nominal amount of deferred charges associated with the exchanges).

In the Prior Period, we privately exchanged approximately $238 million in aggregate principal amount of our 2.25% Contingent Convertible Senior Notes due 2038 for an aggregate of 6,707,321 shares of our common stock valued at approximately $164 million. Through these transactions, we were able to retire this debt for common stock valued at approximately 70% of the face value of the notes. Of the $238 million principal amount of convertible notes exchanged in the Prior Period, $148 million was allocated to the debt component of the notes and the remaining $90 million was allocated to the equity conversion feature of the notes and was recorded as an adjustment to paid-in-capital. The difference between the debt component and value of the common stock exchanged in these transactions resulted in a $19 million loss (including $3 million of deferred charges associated with the exchanges that were written off).

In the Prior Period, pursuant to an acquisition shelf registration statement, we issued 24,822,832 shares of common stock valued at $429 million for the purchase of proved and unproved properties.

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Preferred Shares

The following is a summary of the changes in our preferred shares outstanding for the nine months ended September 30, 2010 and 2009:

	5.75%	5.75%(A)	4.50%	5.00% (2005B)	5.00% (2005)	6.25%	4.125%
			(in thousands)				
Shares outstanding at January 1, 2010			2,559	2,096	5		
Preferred stock issuances	1,500	1,100					
Conversion of preferred into common stock					(5)		
Shares outstanding at September 30, 2010	1,500	1,100	2,559	2,096			
Shares outstanding at January 1, 2009			2,559	2,096	5	144	3
Conversion of preferred into common stock						(144)	(3)
Shares outstanding at September 30, 2009			2,559	2,096	5		

On May 17, 2010, we issued 600,000 shares of 5.75% Cumulative Convertible Non-Voting Preferred Stock, par value $0.01 per share and liquidation preference $1,000 per share, in a private placement for net proceeds of approximately $594 million. We also granted an option to such purchasers to place additional shares of the preferred stock. Upon the exercise of the placement option, we issued an additional 900,000 shares of 5.75% Cumulative Convertible Non-Voting Preferred Stock on June 18, 2010 for net proceeds of approximately $877 million.

On May 17, 2010, we issued 1,100,000 shares of 5.75% Cumulative Convertible Non-Voting Preferred Stock (Series A), par value $0.01 per share and liquidation preference $1,000 per share, in a private placement for net proceeds of approximately $1.091 billion.

On May 3, 2010, we converted all 5,000 shares of our outstanding 5.00% Cumulative Convertible Preferred Stock (Series 2005) into 20,774 shares of common stock pursuant to the company s mandatory conversion rights.

On June 15, 2009, we converted all 143,768 shares of our outstanding 6.25% Mandatory Convertible Preferred Stock into 1,239,538 shares of common stock pursuant to the company's mandatory conversion rights.

On March 31, 2009, we converted all 3,033 shares of our outstanding 4.125% Cumulative Convertible Preferred Stock into 182,887 shares of common stock pursuant to the company s mandatory conversion rights.

Dividends

Dividends declared on our common stock and preferred stock are reflected as adjustments to retained earnings to the extent a surplus of retained earnings will exist after giving effect to the dividends. To the extent retained earnings are insufficient to fund the distributions, such payments constitute a return of contributed capital rather than earnings and are accounted for as a reduction to paid-in capital.

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NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Continued)

(Unaudited)

Stock-Based Compensation

Chesapeake s stock-based compensation programs consist of restricted stock issued to employees and non-employee directors. To the extent compensation cost relates to employees directly involved in natural gas and oil exploration and development activities, such amounts are capitalized to natural gas and oil properties. Amounts not capitalized are recognized as general and administrative expenses, production expenses, marketing, gathering and compression expenses, service operations expense or restructuring costs. We recorded the following stock-based compensation during the Current Quarter, the Prior Quarter, the Current Period and the Prior Period:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2010	2009	2010	2009
	($ in millions)			
Natural gas and oil properties	$ 30	$ 27	$ 95	$ 85
General and administrative expenses	21	22	63	60
Production expenses	9	8	27	26
Marketing, gathering and compression expenses	5	4	13	12
Service operations expense	2	2	7	6
Restructuring costs				9
Total	$ 67	$ 63	$ 205	$ 198

Restricted Stock. Chesapeake regularly issues shares of restricted common stock to employees and to non-employee directors. The fair value of the awards issued is determined based on the fair market value of the shares on the date of grant. This value is amortized over the vesting period, which is generally four or five years from the date of grant for employees and three years for non-employee directors.

A summary of the changes in unvested shares of restricted stock for the nine months ended September 30, 2010 is presented below:

	Number of Unvested Restricted Shares (in thousands)	Weighted-Average Grant-Date Fair Value
Unvested shares as of January 1, 2010	19,225	$ 31.89
Granted	8,901	$ 24.21
Vested	(5,332)	$ 32.49
Forfeited	(885)	$ 30.49
Unvested shares as of September 30, 2010	21,909	$ 28.68

The aggregate intrinsic value of restricted stock vested during the Current Period was approximately $124 million based on the stock price at the time of vesting.

As of September 30, 2010, there was $425 million of total unrecognized compensation cost related to unvested restricted stock. The cost is expected to be recognized over a weighted average period of 2.4 years.

The vesting of certain restricted stock grants results in state and federal income tax benefits related to the difference between the market price of the common stock at the date of vesting and the date of grant. During the Current Quarter, the Prior Quarter, the Current Period and the Prior Period, we recognized a reduction in tax benefits related to restricted stock of $14 million, $36 million, $15 million and $48 million, respectively, which were recorded as adjustments to additional paid-in capital and deferred income taxes.

Stock Options. We granted stock options prior to 2006 under several stock compensation plans. Outstanding options expire ten years from the date of grant and vested over a four-year period. All stock options outstanding are fully vested and exercisable.

CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

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(Unaudited)

The following table provides information related to stock option activity for the nine months ended September 30, 2010:

	Number of Shares Underlying Options (in thousands)	Weighted Average Exercise Price Per Share	Weighted Average Contract Life in Years	Aggregate Intrinsic Value[(a)] ($ in millions)
Outstanding at January 1, 2010	2,283	$ 8.36	2.75	$ 40
Exercised	(366)	$ 6.15		
Expired		$		
Outstanding at September 30, 2010	1,917	$ 8.78	2.22	$ 27
Exercisable at September 30, 2010	1,917	$ 8.78	2.22	$ 27

(a) The intrinsic value of a stock option is the amount by which the current market value or the market value upon exercise of the underlying stock exceeds the exercise price of the option.

During the Current Quarter, the Prior Quarter, the Current Period and the Prior Period we recognized excess tax benefits related to stock options of $1 million, $1 million, $2 million and $1 million which were recorded as adjustments to additional paid-in capital and deferred income taxes.

6. Debt

Our total debt consisted of the following at September 30, 2010 and December 31, 2009:

	September 30, 2010	December 31, 2009
	($ in millions)	
7.5% senior notes due 2013	$	$ 364
7.625% senior notes due 2013	500	500
7.0% senior notes due 2014		300
7.5% senior notes due 2014		300
6.375% senior notes due 2015		600
9.5% senior notes due 2015	1,425	1,425
6.625% senior notes due 2016		600

6.875% senior notes due 2016		670
6.25% euro-denominated senior notes due 2017[a]	816	860
6.5% senior notes due 2017	1,100	1,100
6.25% senior notes due 2018		600
6.875% senior notes due 2018	600	
7.25% senior notes due 2018	800	800
6.625% senior notes due 2020	1,400	
6.875% senior notes due 2020	500	500
2.75% contingent convertible senior notes due 2035[b]	451	451
2.5% contingent convertible senior notes due 2037[b]	1,378	1,378
2.25% contingent convertible senior notes due 2038[b]	752	763
Corporate revolving bank credit facility	2,237	1,892
Midstream revolving bank credit facility	250	
Midstream joint venture revolving bank credit facility[c]		44
Discount on senior notes[d]	(800)	(921)
Interest rate derivatives[e]	36	69
Total notes payable and long-term debt	$ 11,445	$ 12,295

(a) The principal amount shown is based on the dollar/euro exchange rate of $1.3601 to 1.00 and $1.4332 to 1.00 as of September 30, 2010 and December 31, 2009, respectively. See Note 2 for information on our related foreign currency derivatives.

(b) The holders of our contingent convertible senior notes may require us to repurchase, in cash, all or a portion of their notes at 100% of the principal amount of the notes on any of four dates that are five, ten, fifteen and twenty

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years before the maturity date. The notes are convertible, at the holder s option, prior to maturity under certain circumstances into cash and, if applicable, shares of our common stock using a net share settlement process. One such triggering circumstance is when the price of our common stock exceeds a threshold amount during a specified period in a fiscal quarter. Convertibility based on common stock price is measured quarter by quarter. In the third quarter of 2010, the price of our common stock was below the threshold level for each series of the contingent convertible senior notes during the specified period and, as a result, the holders do not have the option to convert their notes into cash and common stock in the fourth quarter of 2010 under this provision. The notes are also convertible, at the holder s option, during specified five-day periods if the trading price of the notes is below certain levels determined by reference to the trading price of our common stock. In general, upon conversion of a contingent convertible senior note, the holder will receive cash equal to the principal amount of the note and common stock for the note s conversion value in excess of such principal amount. We will pay contingent interest on the convertible senior notes after they have been outstanding at least ten years, under certain conditions. We may redeem the convertible senior notes once they have been outstanding for ten years at a redemption price of 100% of the principal amount of the notes, payable in cash. The optional repurchase dates, the common stock price conversion threshold amounts and the ending date of the first six-month period contingent interest may be payable for the contingent convertible senior notes are as follows:

Contingent Convertible Senior Notes	Repurchase Dates	Common Stock Price Conversion Thresholds	Contingent Interest First Payable (if applicable)
2.75% due 2035	November 15, 2015, 2020, 2025, 2030	$ 48.71	May 14, 2016
2.5% due 2037	May 15, 2017, 2022, 2027, 2032	$ 64.26	November 14, 2017
2.25% due 2038	December 15, 2018, 2023, 2028, 2033	$ 107.36	June 14, 2019

(c) Effective January 1, 2010, our midstream joint venture was no longer consolidated in accordance with the new authoritative guidance. See Notes 1 and 9 for further details.

(d) Included in this discount is $731 million at September 30, 2010 and $794 million at December 31, 2009 associated with the equity component of our contingent convertible senior notes.

(e) See Note 2 for discussion related to these instruments.

Senior Notes

Our senior notes are unsecured senior obligations of Chesapeake and rank equally in right of payment with all of our other existing and future senior indebtedness and rank senior in right of payment to all of our future subordinated indebtedness. Chesapeake is a holding company and owns no operating assets and has no significant operations independent of its subsidiaries. Our senior note obligations are guaranteed by certain of our wholly owned subsidiaries. See Note 12 for condensed consolidating financial information regarding our guarantor and non-guarantor subsidiaries. We may redeem the senior notes, other than the contingent convertible senior notes, at any time at specified make-whole or redemption prices. Our senior notes are governed by indentures containing covenants that limit our ability and our subsidiaries ability to incur certain secured indebtedness; enter into sale/leaseback transactions; and consolidate, merge or transfer assets.

We are required to account for the liability and equity components of our convertible debt instruments separately and to reflect interest expense at the interest rate of similar nonconvertible debt at the time of issuance. These rates for our 2.75% Contingent Convertible Senior Notes due

2035, our 2.5% Contingent Convertible Senior Notes due 2037 and our 2.25% Contingent Convertible Senior Notes due 2038 are 6.86%, 8.0% and 8.0%, respectively.

On June 21, 2010, we redeemed in whole for an aggregate redemption price of approximately $1.366 billion, plus accrued interest, approximately $364 million in principal amount of our outstanding 7.50% Senior Notes due 2013, $300 million in principal amount of our 7.50% Senior Notes due 2014 and approximately $670 million in principal amount of our 6.875% Senior Notes due 2016. Associated with the redemptions, we recognized a loss of $69 million in the Current Period.

On July 22, 2010, we redeemed in whole for a redemption price of approximately $619 million, plus accrued interest, all $600 million in principal amount of our 6.375% Senior Notes due 2015. Associated with the redemption, we recognized a loss of $19 million in the Current Quarter.

On August 3, 2010, we filed a shelf registration statement on Form S-3 with the SEC for the offering from time to time of debt securities.

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On August 17, 2010, we completed a public offering of $2.0 billion aggregate principal amount of senior notes for net proceeds of approximately $1.967 billion. The offering consisted of $600 million of 6.875% Senior Notes due 2018 and $1.4 billion of 6.625% Senior Notes due 2020. Both series were priced at par.

On August 30, 2010, we completed tender offers to purchase for cash $245 million of 7.00% Senior Notes due 2014, $567 million of 6.625% Senior Notes due 2016 and $582 million of 6.25% Senior Notes due 2018. On September 16, 2010, we redeemed the remaining $55 million of 7.00% Senior Notes due 2014, $33 million of 6.625% Senior Notes due 2016 and $18 million of 6.25% Senior Notes due 2018 based on the redemption provisions in the indentures. Associated with the tender offers and redemptions, we recognized a loss of $40 million in the Current Quarter.

During the Current Period, holders of our 2.25% Contingent Convertible Senior Notes due 2038 exchanged approximately $11 million in aggregate principal amount for an aggregate of 298,500 shares of our common stock in privately negotiated exchanges. Associated with these exchanges, we recognized a loss of $2 million in the Current Period.

No scheduled principal payments are required under our senior notes until 2013 when $500 million is due.

Bank Credit Facilities

We utilize two bank credit facilities, described below, as sources of liquidity.

	Corporate Credit Facility[(a)]	Midstream Credit Facility[(b)]
	($ in millions)	
Borrowing capacity	$ 3,500	$ 300
Maturity date	November 2012	July 2015
Facility structure	Senior secured revolving	Senior secured revolving
Amount outstanding as of September 30, 2010	$ 2,237	$ 250
Letters of credit outstanding as of September 30, 2010	$ 13	$

(a) Borrowers are Chesapeake Exploration, L.L.C. and Chesapeake Appalachia, L.L.C.

(b) Borrower is Chesapeake Midstream Operating, L.L.C., a wholly owned subsidiary of Chesapeake Midstream Development, L.P.

Our credit facilities do not contain material adverse change or adequate assurance covenants. Although the applicable interest rates under our corporate credit facility fluctuate slightly based on our long-term senior unsecured credit ratings, neither of our credit facilities contains provisions which would trigger an acceleration of amounts due under the facilities or a requirement to post additional collateral in the event of a downgrade of our credit ratings.

Corporate Credit Facility

Our $3.5 billion syndicated revolving bank credit facility is used for general corporate purposes. Borrowings under the facility are secured by natural gas and oil proved reserves and bear interest at our option at either (i) the greater of the reference rate of Union Bank, N.A. or the federal funds effective rate plus 0.50%, both of which are subject to a margin that varies from 0.00% to 0.75% per annum according to our senior unsecured long-term debt ratings, or (ii) the London Interbank Offered Rate (LIBOR), plus a margin that varies from 1.50% to 2.25% per annum according to our senior unsecured long-term debt ratings. The collateral value and borrowing base are determined periodically. The unused portion of the facility is subject to a commitment fee of 0.50%. Interest is payable quarterly or, if LIBOR applies, it may be payable at more frequent intervals.

The credit facility agreement contains various covenants and restrictive provisions which limit our ability to incur additional indebtedness, make investments or loans and create liens and require us to maintain an indebtedness to total capitalization ratio and an indebtedness to EBITDA ratio, in each case as defined in the agreement. We were in compliance with all covenants under the agreement at September 30, 2010. If we should fail to perform our obligations under these and other covenants, the revolving credit commitment could be terminated and any outstanding borrowings under the facility could be declared immediately due and payable. Such acceleration, if involving a principal amount of $50 million or more, would constitute an event of default under our senior note indentures, which could in turn result in the acceleration of a significant portion of our senior note indebtedness. The

CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Continued)

(Unaudited)

credit facility agreement also has cross default provisions that apply to other indebtedness of Chesapeake and its restricted subsidiaries with an outstanding principal amount in excess of $75 million.

The facility is fully and unconditionally guaranteed, on a joint and several basis, by Chesapeake and certain of our other wholly owned subsidiaries.

Midstream Credit Facility

Our $300 million midstream syndicated revolving bank credit facility is used to fund capital expenditures to build natural gas gathering and other systems for our drilling program and for general corporate purposes associated with our midstream operations. Borrowings under the midstream credit facility are secured by all of the assets of the wholly owned subsidiaries (the restricted subsidiaries) of Chesapeake Midstream Development, L.P. (CMD), itself a wholly owned subsidiary of Chesapeake, and bear interest at our option at either (i) the greater of the reference rate of Wells Fargo Bank, National Association, the federal funds effective rate plus 0.50%, and the one-month LIBOR plus 1.00%, all of which are subject to a margin that varies from 1.75% to 2.25% per annum according to the most recent leverage ratio described below or (ii) the LIBOR plus a margin that varies from 2.75% to 3.25% per annum according to the most recent leverage ratio. The unused portion of the facility is subject to a commitment fee of 0.50% per annum according to the most recent leverage ratio. Interest is payable quarterly or, if LIBOR applies, it may be payable at more frequent intervals.

The midstream credit facility agreement contains various covenants and restrictive provisions which limit the ability of CMD and its restricted subsidiaries to incur additional indebtedness, make investments or loans and create liens. The agreement requires maintenance of a leverage ratio based on the ratio of indebtedness to EBITDA and an interest coverage ratio based on the ratio of EBITDA to interest expense, in each case as defined in the agreement. The leverage ratio increases during any three-quarter period, beginning in the quarter in which CMD makes a material disposition of assets to our master limited partnership midstream affiliate, Chesapeake Midstream Partners, L.P. We were in compliance with all covenants under the agreement at September 30, 2010. If CMD or its restricted subsidiaries should fail to perform their obligations under these and other covenants, the revolving credit commitment could be terminated and any outstanding borrowings under the facility could be declared immediately due and payable. The midstream credit facility agreement also has cross default provisions that apply to other indebtedness CMD and its restricted subsidiaries may have with an outstanding principal amount in excess of $15 million.

Other Financings

In 2009, we financed 113 real estate surface assets in the Barnett Shale area for approximately $145 million and entered into a 40-year master lease agreement under which we agreed to lease the sites for approximately $15 million to $27 million annually. This lease transaction was recorded as a financing lease and the cash received was recorded with an offsetting long-term liability on the condensed consolidated balance sheet. Chesapeake exercised its option to repurchase two of the assets in the Current Period. As of September 30, 2010, 111 assets were leased and the minimum aggregate undiscounted future lease payments were approximately $832 million.

In 2009, we financed our regional Barnett Shale headquarters building in Fort Worth, Texas for net proceeds of approximately $54 million with a five-year term loan which has a floating rate of prime plus 275 basis points. At our option, we may prepay in full without penalty beginning in year four. The payment obligation is guaranteed by Chesapeake.

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7. Segment Information

In accordance with accounting guidance for disclosures about segments of an enterprise and related information, we have two reportable operating segments. Our exploration and production operational segment and natural gas and oil midstream segment are managed separately because of the nature of their products and services. The exploration and production segment is responsible for finding and producing natural gas and oil. The midstream segment is responsible for marketing, gathering and compression of natural gas and oil primarily from Chesapeake-operated wells. We also have drilling rig and trucking operations which are responsible for providing drilling rigs primarily used on Chesapeake-operated wells and trucking services utilized in the transportation of drilling rigs on both Chesapeake-operated wells and wells operated by third parties. Our drilling rig and trucking service operations are presented in Other Operations in the table below.

Management evaluates the performance of our segments based upon income (loss) before income taxes. Revenues from the midstream segment s sale of natural gas and oil related to Chesapeake s ownership interests are reflected as exploration and production revenues. Such amounts totaled \$1.045 billion, \$716 million, \$2.978 billion and \$2.009 billion for the Current Quarter, the Prior Quarter, the Current Period and the Prior Period. The following table presents selected financial information for Chesapeake s operating segments.

	Exploration and Production	Midstream	Other Operations	Intercompany Eliminations	Consolidated Total
			($ in millions)		
Three Months Ended September 30, 2010:					
Revenues	$ 1,639	$ 1,928	$ 187	$ (1,173)	$ 2,581
Intersegment revenues		(1,045)	(128)	1,173	
Total revenues	$ 1,639	$ 883	$ 59	$	$ 2,581
Income (loss) before income taxes	$ 822	$ 96	$ (7)	$ (4)	$ 907
Three Months Ended September 30, 2009:					
Revenues	$ 1,187	$ 1,291	$ 69	$ (736)	$ 1,811
Intersegment revenues		(716)	(20)	736	
Total revenues	$ 1,187	$ 575	$ 49	$	$ 1,811
Income (loss) before income taxes	$ 431	$ (111)	$ (19)	$ 6	$ 307
Nine Months Ended September 30, 2010:					
Revenues	$ 4,698	$ 5,498	$ 538	$ (3,343)	$ 7,391
Intersegment revenues		(2,978)	(365)	3,343	
Total revenues	$ 4,698	$ 2,520	$ 173	$	$ 7,391

Income (loss) before income taxes	$ 2,401	$ 152	$ (32)	$ (1)	$ 2,520
Nine Months Ended September 30, 2009:					
Revenues	$ 3,681	$ 3,669	$ 338	$ (2,208)	$ 5,480
Intersegment revenues		(2,009)	(199)	2,208	
Total revenues	$ 3,681	$ 1,660	$ 139	$	$ 5,480
Income (loss) before income taxes	$ (8,354)	$ (82)	$ (53)	$ (1)	$ (8,490)
As of September 30, 2010:					
Total assets	$ 30,945	$ 3,481	$ 721	$ (814)	$ 34,333
As of December 31, 2009:					
Total assets	$ 25,637	$ 4,323	$ 660	$ (706)	$ 29,914

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8. Divestitures

Joint Ventures

In January 2010, Chesapeake and Total E&P USA, Inc., a wholly owned subsidiary of Total S.A., closed a $2.25 billion Barnett Shale joint venture transaction, whereby Total acquired a 25% interest in our upstream Barnett Shale assets. Total paid us approximately $800 million in cash at closing (plus $78 million of drilling and completion carries due from the effective date of the transaction to the closing date) and is obligated to pay a total of $1.45 billion over time by funding 60% of our share of future drilling and completion expenditures. We expect this drilling carry to be fully utilized by year-end 2013.

During the Current Period and Prior Period, our drilling and completion costs included the benefit of approximately $745 million and $959 million, respectively, in drilling and completion carries associated with our shale play joint ventures with Total, Statoil, BP America and Plains Exploration & Production Company as follows:

Shale Play	Joint Venture Partner	Joint Venture Date	Nine Months Ended September 30, 2010	2009
			($ in millions)	
Barnett	Total	January 2010	$ 349	$
Marcellus	Statoil	November 2008	396	85
Fayetteville	BP	September 2008		524
Haynesville	Plains	July 2008		350
			$ 745	$ 959

During the Current Period, as part of our joint venture agreements with Total, Statoil and Plains, we sold interests in additional leasehold in the Barnett, Marcellus and Haynesville shale plays for approximately $395 million.

For accounting purposes, cash proceeds from these joint venture transactions were reflected as a reduction of natural gas and oil properties with no gain or loss recognized.

Volumetric Production Payments

On February 5, 2010, we sold certain Chesapeake-operated long-lived producing assets in East Texas and the Texas Gulf Coast in our sixth volumetric production payment (VPP) transaction for net proceeds of approximately $180 million, or $3.95 per mcfe.

On June 14, 2010, we sold certain Chesapeake-operated long-lived producing assets in the Permian Basin in our seventh VPP transaction for proceeds of approximately $335 million, or $8.73 per mcfe.

On September 30, 2010, we sold certain Chesapeake-operated long-lived producing assets in the Barnett Shale in our eighth VPP transaction for proceeds of approximately $1.15 billion, or $2.93 per mcfe.

For accounting purposes, cash proceeds from these transactions were reflected as a reduction of natural gas and oil properties with no gain or loss recognized, and our proved reserves were reduced accordingly.

Other Divestitures

In the Current Period, we sold producing properties and gathering systems in Virginia and in the Permian Basin for proceeds of approximately $330 million.

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9. Investments

At September 30, 2010, investments accounted for under the equity method totaled $1.160 billion and investments accounted for under the cost method totaled $29 million. Following is a summary of our investments:

	Approximate % Owned	Accounting Method	Carrying Value September 30, 2010	Carrying Value December 31, 2009
			($ in millions)	
Chesapeake Midstream Partners, L.P.	42%	Equity	$ 666	$
Frac Tech Services, LLC	26%	Equity	347	239
Chaparral Energy, Inc.	20%	Equity	137	103
Gastar Exploration Ltd.	14%	Cost	27	32
Other[(a)]		Cost/Equity	12	30
			$ 1,189	$ 404

(a) In the Current Quarter, we recorded a $16 million impairment of certain other equity investments.

Chesapeake Midstream Partners, L.P. On September 30, 2009, we formed a joint venture with Global Infrastructure Partners (GIP), a New York-based private equity fund, to own and operate natural gas midstream assets. As part of the transaction, Chesapeake contributed certain natural gas gathering and processing assets to, and GIP purchased a 50% interest in, a new joint venture entity. The assets we contributed to the joint venture were substantially all of our midstream assets in the Barnett Shale and also the majority of our non-shale midstream assets in the Arkoma, Anadarko, Delaware and Permian Basins. During the fourth quarter of 2009, the joint venture was consolidated within our financial statements. Effective January 1, 2010, in accordance with new authoritative guidance for variable interest entities, we changed the accounting for our investment in the joint venture to the equity method. Adoption of this new guidance resulted in an after-tax cumulative effect charge to retained earnings of $142 million, which is reflected in our condensed consolidated statement of equity for the Current Period. This charge reflects the difference between the carrying value of our initial investment in the joint venture, which was recorded at carryover basis as an entity under common control, and the fair value of our equity in the joint venture as of the formation date. In May 2010, we received a $75 million cash distribution from the joint venture. The carrying value of our investment in the joint venture is less than our underlying equity in net assets by approximately $240 million as of September 30, 2010. This difference is being accreted over 20 years.

On August 3, 2010, Chesapeake Midstream Partners, L.P. (NYSE: CHKM), which we and GIP formed to own, operate, develop and acquire midstream assets, completed an initial public offering of 24,437,500 common units (including 3,187,500 common units issued pursuant to the exercise of the underwriters' over-allotment option on August 3, 2010) representing limited partner interests and received gross offering proceeds of approximately $513 million at an initial offering price of $21.00 per unit less approximately $38 million for underwriting discounts and commissions, structuring fees and offering expenses. Pursuant to the terms of our contribution agreement with GIP, CHKM distributed the approximate $62 million of net proceeds from the exercise of the over-allotment option to GIP on August 3, 2010. In connection with the closing of the offering, Chesapeake and GIP contributed the interests of the midstream joint venture's operating subsidiary to CHKM, and CHKM is continuing the business that had been conducted by the joint venture. Common units owned by public security holders represent 17.7% of all outstanding limited partner interests, and Chesapeake and GIP hold 42.3% and 40.0%, respectively, of all outstanding limited partner interests. The limited partners, collectively, have a 98.0% interest in CHKM and the general partner, which is owned and controlled 50/50 by Chesapeake and GIP, has a 2.0% interest in CHKM.

As a result of the initial public offering by CHKM, we recognized a $90 million gain on our investment in the Current Quarter. This gain represented our proportionate share of the excess of offering proceeds over the carrying value of our investment in CHKM.

Frac Tech Services, LLC. The carrying value of our investment in Frac Tech is in excess of our underlying equity in net assets by approximately $190 million as of September 30, 2010. This excess amount is attributed to certain intangibles associated with the specialty services provided by Frac Tech and is being amortized over the estimated life of the intangibles.

Chaparral Energy, Inc. The carrying value of our investment in Chaparral is in excess of our underlying equity in net assets by approximately $61 million as of September 30, 2010. This excess is attributed to the natural gas and oil reserves held by Chaparral and is being amortized over the estimated life of these reserves based on a unit of production rate.

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As a result of an additional equity offering by Chaparral to a third party, we recognized a $31 million gain on our investment in the Current Quarter. This gain represented our proportionate share of the excess of offering proceeds over the carrying value of our investment in Chaparral.

10. Restructuring

In the Prior Period, we restructured our Charleston, West Virginia-based Eastern Division from a regional corporate headquarters to a regional field office consistent with the business model the company uses elsewhere in the country. As a result, we consolidated the management of our Eastern Division land, legal, accounting, information technology, geoscience and engineering departments into our corporate offices in Oklahoma City. The costs of the reorganization include termination benefits, consolidating or closing facilities and relocating employees. In addition, we had certain other workforce reductions that resulted in termination benefits. A summary of Chesapeake s restructuring cost is presented below:

	Nine Months Ended September 30, 2009 ($ in millions)
Termination and relocation costs	$ 22
Acceleration of restricted stock awards	9
Other associated costs	3
Total Restructuring Costs	$ 34

11. Fair Value Measurements

Certain financial instruments are reported at fair value on the condensed consolidated balance sheets. Under fair value measurement accounting guidance, fair value is defined as the amount that would be received from the sale of an asset or paid for the transfer of a liability in an orderly transaction between market participants, i.e., an exit price. To estimate an exit price, a three-level hierarchy is used. The fair value hierarchy prioritizes the inputs, which refer broadly to assumptions market participants would use in pricing an asset or a liability, into three levels. Level 1 inputs are unadjusted quoted prices in active markets for identical assets and liabilities and have the highest priority. Level 2 inputs are inputs other than quoted prices within Level 1 that are observable for the asset or liability, either directly or indirectly. Level 3 inputs are unobservable inputs for the financial asset or liability and have the lowest priority. Chesapeake uses a market valuation approach based on available inputs and the following methods and assumptions to measure the fair values of its assets and liabilities, which may or may not be observable in the market.

Cash Equivalents. The fair value of cash equivalents is based on quoted market prices.

Investments. The fair value of Chesapeake s investment in Gastar Exploration Ltd. (NYSE Amex: GST) common stock is based on a quoted market price.

Other Long-Term Assets and Liabilities. The fair value of other long-term assets and liabilities, consisting of obligations under our Deferred Compensation Plan, is based on quoted market prices.

Derivatives. The fair values of our commodity derivatives are based on a third-party pricing model which utilizes inputs that are either readily available in the public market, such as natural gas and oil forward curves and discount rates, or can be corroborated from active markets or broker quotes. These values are then compared to the values given by our counterparties for reasonableness. Since the commodity swaps do not have options and therefore no unobservable inputs, they are classified as Level 2. All other commodity derivatives have some level of unobservable input, such as volatility curves, and are therefore classified as Level 3. For interest rate and foreign currency derivatives, we use the fair value estimates provided by our respective counterparties, which are classified as Level 3 inputs. These values are reviewed internally for reasonableness using future interest rate curves and time to maturity. Derivatives are also subject to the risk that counterparties will be unable to meet their obligations. We factor in non-performance risk in the valuation of our derivatives using current published credit default swap rates. To date this has not had a material impact on the values of our derivatives.

Debt. The fair value of certain of our long-term debt is based on the face amount of that debt along with the value of related interest rate swaps.

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CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Continued)

(Unaudited)

The following table provides fair value measurement information for financial assets (liabilities) measured at fair value on a recurring basis as of September 30, 2010:

	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total Fair Value
		($ in millions)		
Financial Assets (Liabilities):				
Cash equivalents	$ 609	$	$	$ 609
Investments	27			27
Other long-term assets	42			42
Long-term debt			(816)	(816)
Other long-term liabilities	(42)			(42)
Derivatives:				
Commodity assets		1,387	255	1,642
Commodity liabilities			(1,445)	(1,445)
Interest rate assets			29	29
Interest rate liabilities			(68)	(68)
Foreign currency liabilities			(35)	(35)
Total derivatives		1,387	(1,264)	123
Total	$ 636	$ 1,387	$ (2,080)	$ (57)

The following table provides fair value measurement information for financial assets (liabilities) measured at fair value on a recurring basis as of December 31, 2009:

	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total Fair Value

		($ in millions)		
Financial Assets (Liabilities):				
Cash equivalents	$ 307	$	$	$ 307
Investments	32			32
Other long-term assets	34			34
Long-term debt			(1,398)	(1,398)
Other long-term liabilities	(34)			(34)
Derivatives:				
Commodity assets		693	143	836
Commodity liabilities		(1)	(809)	(810)
Interest rate liabilities			(132)	(132)
Foreign currency assets			43	43
Total derivatives		692	(755)	(63)
Total	$ 339	$ 692	$ (2,153)	$ (1,122)

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CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Continued)

(Unaudited)

A summary of the changes in Chesapeake s assets (liabilities) classified as Level 3 measurements during the Current Period and the Prior Period is presented below:

	Derivatives			
	Commodity	Interest Rate	Foreign Currency	Debt
	($ in millions)			
Balance of Level 3 as of January 1, 2010	$ (666)	$ (132)	$ 43	$ (1,398)
Total gains (losses) (realized/unrealized):				
Included in earnings (realized)[a]	305	(6)		
Included in earnings or change in net assets (unrealized)[a]	(669)	85	(44)	32
Included in other comprehensive income (loss)	(18)		(34)	
Purchases, issuances and settlements	(142)	14		550 [b]
Transfers in and out of Level 3				
Balance of Level 3 as of September 30, 2010	$ (1,190)	$ (39)	$ (35)	$ (816)
Balance of Level 3 as of January 1, 2009	$ 431	$ (63)	$ (76)	$ (1,470)
Total gains (losses) (realized/unrealized):				
Included in earnings (realized)[a]	778	20		(128)
Included in earnings or change in net assets (unrealized)[a]	(380)	106	42	
Included in other comprehensive income (loss)	45		78	
Purchases, issuances and settlements	(835)	(154)		(450)[b]
Transfers in and out of Level 3				
Balance of Level 3 as of September 30, 2009	$ 39	$ (91)	$ 44	$ (2,048)

(a) Amounts related to commodity derivatives are included in Natural Gas and Oil Sales, and amounts related to interest rate and foreign currency derivatives and debt are included in Interest Expense.

(b) Amount represents a(n) (increase)/decrease in debt recorded at fair value as a result of new or terminated interest rate swaps.

Fair Value of Other Financial Instruments

The following disclosure of the estimated fair value of financial instruments is made in accordance with accounting guidance for financial instruments. We have determined the estimated fair values by using available market information and valuation methodologies. Considerable judgment is required in interpreting market data to develop the estimates of fair value. The use of different market assumptions or valuation methodologies may have a material effect on the estimated fair value amounts.

The carrying values of financial instruments comprising current assets and current liabilities approximate fair values due to the short-term maturities of these instruments. We estimate the fair value of our long-term debt and our convertible preferred stock primarily using quoted market prices. Fair value is compared to the carrying value, excluding the impact of interest rate derivatives, in the table below.

	September 30, 2010		December 31, 2009	
	Carrying Amount	Estimated Fair Value	Carrying Amount	Estimated Fair Value
	($ in millions)			
Long-term debt	$ 11,409	$ 12,295	$ 12,226	$ 12,824
Convertible preferred stock	$ 3,065	$ 2,994	$ 466	$ 401

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CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Continued)

(Unaudited)

12. Condensed Consolidating Financial Information

Chesapeake Energy Corporation is a holding company and owns no operating assets and has no significant operations independent of its subsidiaries. Our obligations under our outstanding senior notes and contingent convertible notes listed in Note 6 are fully and unconditionally guaranteed, jointly and severally, by certain of our wholly owned subsidiaries on a senior unsecured basis. Our midstream subsidiary, CMD, is not a guarantor and is subject to covenants in the midstream revolving credit facility referred to in Note 6 that restricts it from paying dividends or distributions or making loans to Chesapeake.

Set forth below are condensed consolidating financial statements for Chesapeake Energy Corporation (parent) on a stand-alone, unconsolidated basis, and its combined guarantor and combined non-guarantor subsidiaries as of September 30, 2010 and December 31, 2009 and for the three and nine months ended September 30, 2010 and 2009. The financial information may not necessarily be indicative of results of operations, cash flows or financial position had the subsidiaries operated as independent entities.

CONDENSED CONSOLIDATING BALANCE SHEET

AS OF SEPTEMBER 30, 2010

	Parent	Guarantor Subsidiaries	Non-Guarantor Subsidiaries ($ in millions)	Eliminations	Consolidated
CURRENT ASSETS:					
Cash and cash equivalents	$	$ 587	$ 22	$	$ 609
Other	3	2,549	139	(27)	2,664
Total Current Assets	3	3,136	161	(27)	3,273
PROPERTY AND EQUIPMENT:					
Natural gas and oil properties, at cost based on full-cost accounting		24,649	216		24,865
Other property and equipment, net		3,029	1,586		4,615
Total Property and Equipment		27,678	1,802		29,480
Other assets	193	715	672		1,580
Investments in subsidiaries and intercompany advance	1,356	121		(1,477)	
TOTAL ASSETS	$ 1,552	$ 31,650	$ 2,635	$ (1,504)	$ 34,333
CURRENT LIABILITIES:					
Current liabilities	$ 226	$ 3,816	$ 110	$ (29)	$ 4,123
Intercompany payable (receivable) from parent	(23,340)	21,214	2,145	(19)	
Total Current Liabilities	(23,114)	25,030	2,255	(48)	4,123

LONG-TERM LIABILITIES:										
Long-term debt, net		8,958		2,237		250				11,445
Deferred income tax liabilities		392		1,418		8		21		1,839
Other liabilities		43		1,609		1				1,653
Total Long-Term Liabilities		9,393		5,264		259		21		14,937
EQUITY:										
Chesapeake stockholders equity		15,273		1,356		121		(1,477)		15,273
Noncontrolling interest										
Total Equity		15,273		1,356		121		(1,477)		15,273
TOTAL LIABILITIES AND EQUITY	$	1,552	$	31,650	$	2,635	$	(1,504)	$	34,333

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CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Continued)

(Unaudited)

CONDENSED CONSOLIDATING BALANCE SHEET

AS OF DECEMBER 31, 2009

	Parent	Guarantor Subsidiaries	Non-Guarantor Subsidiaries ($ in millions)	Eliminations	Consolidated
CURRENT ASSETS:					
Cash and cash equivalents	$	$ 293	$ 14	$	$ 307
Other	27	2,031	166	(85)	2,139
Total Current Assets	27	2,324	180	(85)	2,446
PROPERTY AND EQUIPMENT:					
Natural gas and oil properties, at cost based on full-cost accounting		20,788	4		20,792
Other property and equipment, net		2,903	3,015		5,918
Total Property and Equipment		23,691	3,019		26,710
Other assets	197	540	21		758
Investments in subsidiaries and intercompany advance	3,029	222		(3,251)	
TOTAL ASSETS	$ 3,253	$ 26,777	$ 3,220	$ (3,336)	$ 29,914
CURRENT LIABILITIES:					
Current liabilities	$ 277	$ 2,261	$ 235	$ (85)	$ 2,688
Intercompany payable (receivable) from parent	(19,388)	17,508	1,793	87	
Total Current Liabilities	(19,111)	19,769	2,028	2	2,688
LONG-TERM LIABILITIES:					
Long-term debt, net	10,359	1,892	44		12,295
Deferred income tax liabilities	393	727	26	(87)	1,059
Other liabilities	168	1,360	3		1,531
Total Long-Term Liabilities	10,920	3,979	73	(87)	14,885
EQUITY:					
Chesapeake stockholders equity	11,444	3,029	222	(3,251)	11,444
Noncontrolling interest			897		897

Total Equity		11,444		3,029		1,119		(3,251)		12,341
TOTAL LIABILITIES AND EQUITY	$	3,253	$	26,777	$	3,220	$	(3,336)	$	29,914

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CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Continued)

(Unaudited)

CONDENSED CONSOLIDATING STATEMENT OF OPERATIONS

THREE MONTHS ENDED SEPTEMBER 30, 2010

	Parent	Guarantor Subsidiaries	Non-Guarantor Subsidiaries ($ in millions)	Eliminations	Consolidated
REVENUES:					
Natural gas and oil sales	$	$ 1,639	$	$	$ 1,639
Marketing, gathering and compression sales		856	69	(42)	883
Service operations revenue		59			59
Total Revenues		2,554	69	(42)	2,581
OPERATING COSTS:					
Production expenses		231			231
Production taxes		34			34
General and administrative expenses	2	113	10		125
Marketing, gathering and compression expenses		838	37	(24)	851
Service operations expense		52			52
Natural gas and oil depreciation, depletion and amortization		378			378
Depreciation and amortization of other assets		43	13		56
Impairment or loss on sale of property and equipment		3	34		37
Total Operating Costs	2	1,692	94	(24)	1,764
INCOME (LOSS) FROM OPERATIONS	(2)	862	(25)	(18)	817
OTHER INCOME (EXPENSE):					
Interest (expense) income	(153)	(16)	(1)	167	(3)
Loss on redemptions or exchanges of Chesapeake debt	(59)				(59)
Impairment of investments		(16)			(16)
Other income (expense)	167	52	116	(167)	168
Equity in net earnings of subsidiary	587	44		(631)	
Total Other Income (Expense)	542	64	115	(631)	90
INCOME (LOSS) BEFORE INCOME TAXES	540	926	90	(649)	907
INCOME TAX EXPENSE (BENEFIT)	(18)	339	35	(7)	349
NET INCOME (LOSS)	558	587	55	(642)	558
Net income (loss) attributable to noncontrolling interest					

NET INCOME (LOSS) ATTRIBUTABLE TO CHESAPEAKE	$	558	$	587	$	55	$	(642)	$	558

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CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Continued)

(Unaudited)

CONDENSED CONSOLIDATING STATEMENT OF OPERATIONS

THREE MONTHS ENDED SEPTEMBER 30, 2009

	Parent	Guarantor Subsidiaries	Non-Guarantor Subsidiaries	Eliminations	Consolidated
			($ in millions)		
REVENUES:					
Natural gas and oil sales	$	$ 1,187	$	$	$ 1,187
Marketing, gathering and compression sales		504	126	(55)	575
Service operations revenue		49			49
Total Revenues		1,740	126	(55)	1,811
OPERATING COSTS:					
Production expenses		218			218
Production taxes		25			25
General and administrative expenses		86	9		95
Marketing, gathering and compression expenses		497	54	(5)	546
Service operations expense		49			49
Natural gas and oil depreciation, depletion and amortization		295			295
Depreciation and amortization of other assets	1	36	25		62
Loss on sale of other property and equipment			124		124
Total Operating Costs	1	1,206	212	(5)	1,414
INCOME (LOSS) FROM OPERATIONS	(1)	534	(86)	(50)	397
OTHER INCOME (EXPENSE):					
Interest (expense) income	(161)	(57)		175	(43)
Loss on redemptions or exchanges of Chesapeake debt	(17)				(17)
Other income (expense)	175	(24)	(6)	(175)	(30)
Equity in net earnings of subsidiary	194	(89)		(105)	
Total Other Income (Expense)	191	(170)	(6)	(105)	(90)
INCOME (LOSS) BEFORE INCOME TAXES	190	364	(92)	(155)	307
INCOME TAX EXPENSE (BENEFIT)	(2)	170	(34)	(19)	115

NET INCOME (LOSS)		192		194		(58)		(136)		192
Net income (loss) attributable to noncontrolling interest										
NET INCOME (LOSS) ATTRIBUTABLE TO CHESAPEAKE	$	192	$	194	$	(58)	$	(136)	$	192

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CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Continued)

(Unaudited)

CONDENSED CONSOLIDATING STATEMENT OF OPERATIONS

NINE MONTHS ENDED SEPTEMBER 30, 2010

	Parent	Guarantor Subsidiaries	Non-Guarantor Subsidiaries	Eliminations	Consolidated
			($ in millions)		
REVENUES:					
Natural gas and oil sales	$	$ 4,698	$	$	$ 4,698
Marketing, gathering and compression sales		2,437	179	(96)	2,520
Service operations revenue		173			173
Total Revenues		7,308	179	(96)	7,391
OPERATING COSTS:					
Production expenses		652			652
Production taxes		119			119
General and administrative expenses	2	315	23		340
Marketing, gathering and compression expenses		2,383	90	(44)	2,429
Service operations expense		154			154
Natural gas and oil depreciation, depletion and amortization		1,025			1,025
Depreciation and amortization of other assets		124	35		159
Impairment or loss on sale of property and equipment		3	34		37
Total Operating Costs	2	4,775	182	(44)	4,915
INCOME (LOSS) FROM OPERATIONS	(2)	2,533	(3)	(52)	2,476
OTHER INCOME (EXPENSE):					
Interest (expense) income	(451)	(107)	(3)	549	(12)
Loss on redemptions or exchanges of Chesapeake debt	(130)				(130)
Impairment of investments		(16)			(16)
Other income (expense)	549	52	150	(549)	202
Equity in net earnings of subsidiary	1,571	57		(1,628)	
Total Other Income (Expense)	1,539	(14)	147	(1,628)	44
	1,537	2,519	144	(1,680)	2,520

INCOME (LOSS) BEFORE INCOME TAXES					
INCOME TAX EXPENSE (BENEFIT)	(13)	948	55	(20)	970
NET INCOME (LOSS)	1,550	1,571	89	(1,660)	1,550
Net income (loss) attributable to noncontrolling interest					
NET INCOME (LOSS) ATTRIBUTABLE TO CHESAPEAKE	$ 1,550	$ 1,571	$ 89	$ (1,660)	$ 1,550

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CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Continued)

(Unaudited)

CONDENSED CONSOLIDATING STATEMENT OF OPERATIONS

NINE MONTHS ENDED SEPTEMBER 30, 2009

	Parent	Guarantor Subsidiaries	Non-Guarantor Subsidiaries	Eliminations	Consolidated
			($ in millions)		
REVENUES:					
Natural gas and oil sales	$	$ 3,681	$	$	$ 3,681
Marketing, gathering and compression sales		1,461	354	(155)	1,660
Service operations revenue		139			139
Total Revenues		5,281	354	(155)	5,480
OPERATING COSTS:					
Production expenses		670			670
Production taxes		71			71
General and administrative expenses		239	20		259
Marketing, gathering and compression expenses		1,436	148	(15)	1,569
Service operations expense		136			136
Natural gas and oil depreciation, depletion and amortization		1,037			1,037
Depreciation and amortization of other assets		110	67		177
Impairment of natural gas and oil properties		9,600			9,600
Impairment or loss on sale of other property and equipment		35	124		159
Restructuring costs		34			34
Total Operating Costs		13,368	359	(15)	13,712
INCOME (LOSS) FROM OPERATIONS		(8,087)	(5)	(140)	(8,232)
OTHER INCOME (EXPENSE):					
Interest (expense) income	(447)	(112)	(5)	512	(52)
Loss on redemptions or exchanges of Chesapeake debt	(19)				(19)
Impairment of investments		(148)	(14)		(162)
Other income (expense)	512	(21)	(4)	(512)	(25)
Equity in net earnings of subsidiary	(5,335)	(105)		5,440	
Total Other Income (Expense)	(5,289)	(386)	(23)	5,440	(258)
	(5,289)	(8,473)	(28)	5,300	(8,490)

INCOME (LOSS) BEFORE INCOME TAXES					
INCOME TAX EXPENSE (BENEFIT)	17	(3,138)	(11)	(52)	(3,184)
NET INCOME (LOSS)	(5,306)	(5,335)	(17)	5,352	(5,306)
Net income (loss) attributable to noncontrolling interest					
NET INCOME (LOSS) ATTRIBUTABLE TO CHESAPEAKE	$ (5,306)	$ (5,335)	$ (17)	$ 5,352	$ (5,306)

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CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Continued)

(Unaudited)

CONDENSED CONSOLIDATING STATEMENTS OF CASH FLOWS

NINE MONTHS ENDED SEPTEMBER 30, 2010

	Parent	Guarantor Subsidiaries	Non-Guarantor Subsidiaries ($ in millions)	Eliminations	Consolidated
CASH FLOWS FROM OPERATING ACTIVITIES	$	$ 3,774	$ 197	$	$ 3,971
CASH FLOWS FROM INVESTING ACTIVITIES:					
Additions to natural gas and oil properties		(7,723)	(212)		(7,935)
Additions to other property and equipment		(412)	(556)		(968)
Proceeds from divestitures of natural gas and oil properties		3,107			3,107
Other investing activities			131		131
Cash used in investing activities		(5,028)	(637)		(5,665)
CASH FLOWS FROM FINANCING ACTIVITIES:					
Proceeds from credit facilities borrowings		10,076	382		10,458
Payments on credit facilities borrowings		(9,736)	(127)		(9,863)
Proceeds from preferred stock, net of offering costs	2,562				2,562
Proceeds from issuance of senior notes, net of offering costs	1,967				1,967
Cash paid to redeem Chesapeake debt	(3,434)				(3,434)
Other financing activities	(243)	567	(18)		306
Intercompany advances, net	(852)	641	211		
Cash provided by (used in) financing activities		1,548	448		1,996
Net increase (decrease) in cash and cash equivalents		294	8		302
Cash and cash equivalents, beginning of period		293	14		307
Cash and cash equivalents, end of period	$	$ 587	$ 22	$	$ 609

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CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Continued)

(Unaudited)

CONDENSED CONSOLIDATING STATEMENTS OF CASH FLOWS

NINE MONTHS ENDED SEPTEMBER 30, 2009

	Parent	Guarantor Subsidiaries	Non-Guarantor Subsidiaries	Eliminations	Consolidated
			($ in millions)		
CASH FLOWS FROM OPERATING ACTIVITIES	$	$ 3,075	$ 56	$	$ 3,131
CASH FLOWS FROM INVESTING ACTIVITIES:					
Additions to natural gas and oil properties		(4,138)			(4,138)
Additions to other property and equipment		(661)	(701)		(1,362)
Proceeds from divestitures of natural gas and oil properties		1,729			1,729
Other investing activities		78	39		117
Cash used in investing activities		(2,992)	(662)		(3,654)
CASH FLOWS FROM FINANCING ACTIVITIES:					
Proceeds from credit facilities borrowings		4,894	669		5,563
Payments on credit facilities borrowings		(6,749)	(1,117)		(7,866)
Proceeds from issuance of senior notes, net of offering costs	1,346				1,346
Proceeds from sales of noncontrolling interest in midstream joint venture			588		588
Other financing activities	(153)	(167)	(17)		(337)
Intercompany advances, net	(1,193)	554	639		
Cash provided by (used in) financing activities		(1,468)	762		(706)
Net increase (decrease) in cash and cash equivalents		(1,385)	156		(1,229)
Cash and cash equivalents, beginning of period		1,749			1,749
Cash and cash equivalents, end of period	$	$ 364	$ 156	$	$ 520

CHESAPEAKE ENERGY CORPORATION AND SUBSIDIARIES

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (Continued)

(Unaudited)

13. Recently Issued and Proposed Accounting Standards

The Financial Accounting Standards Board (FASB) recently issued the following standards which we reviewed to determine the potential impact on our financial statements upon adoption.

In February 2010, the FASB amended its guidance on subsequent events to remove the requirement for SEC filers to disclose the date through which an entity has evaluated subsequent events. The guidance was effective upon issuance. We adopted this guidance in the Current Period.

The FASB also issued new guidance requiring additional disclosures about fair value measurements, adding a new requirement to disclose transfers in and out of Levels 1 and 2 measurements and gross presentation of activity within a Level 3 roll forward. The guidance also clarified existing disclosure requirements regarding the level of disaggregation of fair value measurements and disclosures regarding inputs and valuation techniques. We adopted this guidance in the Current Period. Adoption had no impact on our financial position or results of operations. Required disclosures for the reconciliation of purchases, sales, issuance and settlements of financial instruments valued with a Level 3 method are effective beginning on January 1, 2011, and we do not expect the implementation to have a material impact on our financial position or results of operations. See Note 11 for discussion regarding fair value measurements.

14. Subsequent Events

On October 10, 2010, we entered into an agreement whereby a wholly owned U.S. subsidiary of CNOOC Limited (CNOOC) agreed to purchase a 33.3% undivided interest in 600,000 net oil and natural gas leasehold acres we hold in the Eagle Ford Shale in South Texas. The consideration for the sale will be approximately $1.08 billion in cash at closing. In addition, CNOOC has agreed to fund 75% of our share of drilling and completion costs in the Eagle Ford Shale project until an additional $1.08 billion has been paid, which we expect to occur by year-end 2012. Closing of the transaction is anticipated in the fourth quarter of 2010.

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ITEM 2. ***Management s Discussion and Analysis of Financial Condition and Results of Operations***

Overview

The following table sets forth certain information regarding the production volumes, natural gas and oil sales, average sales prices received, other operating income and expenses for the three and nine months ended September 30, 2010 (the Current Quarter and the Current Period , respectively) and the three and nine months ended September 30, 2009 (the Prior Quarter and the Prior Period , respectively):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2010	**2009**	**2010**	**2009**
Net Production:				
Natural gas (bcf)	252.8	210.3	689.6	610.3
Oil (mmbbl)	4.5	3.0	12.8	9.1
Natural gas equivalent (bcfe)	280.0	228.5	766.6	664.6
Natural Gas and Oil Sales ($ in millions):				
Natural gas sales	$ 828	$ 596	$ 2,504	$ 1,819
Natural gas derivatives realized gains (losses)	487	675	1,418	1,771
Natural gas derivatives unrealized gains (losses)	315	(275)	534	(398)
Total natural gas sales	1,630	996	4,456	3,192
Oil sales	246	189	739	461
Oil derivatives realized gains (losses)	25	12	66	31
Oil derivatives unrealized gains (losses)	(262)	(10)	(563)	(3)
Total oil sales	9	191	242	489
Total natural gas and oil sales	$ 1,639	$ 1,187	$ 4,698	$ 3,681
Average Sales Price (excluding all gains (losses) on derivatives):				
Natural gas ($ per mcf)	$ 3.28	$ 2.84	$ 3.63	$ 2.98
Oil ($ per bbl)	$ 54.25	$ 62.47	$ 57.57	$ 50.97
Natural gas equivalent ($ per mcfe)	$ 3.84	$ 3.44	$ 4.23	$ 3.43
Average Sales Price (excluding unrealized gains (losses) on derivatives):				
Natural gas ($ per mcf)	$ 5.20	$ 6.04	$ 5.69	$ 5.88
Oil ($ per bbl)	$ 59.81	$ 66.42	$ 62.75	$ 54.37
Natural gas equivalent ($ per mcfe)	$ 5.67	$ 6.44	$ 6.17	$ 6.14

Other Operating Income[a] ($ in millions):				
Marketing, gathering and compression	$ 32	$ 29	$ 91	$ 91
Service operations	$ 7	$	$ 19	$ 3
Other Operating Income[a] ($ per mcfe):				
Marketing, gathering and compression	$ 0.12	$ 0.13	$ 0.12	$ 0.14
Service operations	$ 0.03	$	$ 0.03	$
Expenses ($ per mcfe):				
Production expenses	$ 0.83	$ 0.96	$ 0.85	$ 1.01
Production taxes	$ 0.12	$ 0.11	$ 0.16	$ 0.11
General and administrative expenses	$ 0.45	$ 0.42	$ 0.44	$ 0.39
Natural gas and oil depreciation, depletion and amortization	$ 1.35	$ 1.29	$ 1.34	$ 1.56
Depreciation and amortization of other assets	$ 0.20	$ 0.27	$ 0.21	$ 0.27
Interest expense[b]	$	$ 0.28	$ 0.11	$ 0.24
Interest Expense ($ in millions):				
Interest expense[c]	$ 3	$ 70	$ 93	$ 177
Interest rate derivatives realized (gains) losses	(2)	(7)	(6)	(19)
Interest rate derivatives unrealized (gains) losses	2	(20)	(75)	(106)
Total interest expense	$ 3	$ 43	$ 12	$ 52
Net Wells Drilled	281	224	794	700
Net Producing Wells as of the End of the Period	22,445	22,749	22,445	22,749

(a) Includes revenue and operating costs and excludes depreciation and amortization of other assets.

(b) Includes the effects of realized (gains) losses from interest rate derivatives, but excludes the effects of unrealized (gains) losses and is net of amounts capitalized.

(c) Net of amounts capitalized.

We are the second largest producer of natural gas and a Top 20 producer of oil and natural gas liquids in the U.S. We own interests in approximately 45,100 producing natural gas and oil wells that are currently producing approximately 2.8 bcfe per day, 88% of which is natural gas. Our strategy is focused on discovering and developing unconventional natural gas and oil fields onshore in the U.S., primarily in our Big 6 shale plays: the Barnett Shale in the Fort Worth Basin of north-central Texas, the Haynesville and Bossier Shales in the Ark-La-Tex area of northwestern Louisiana and East Texas, the Fayetteville Shale in the Arkoma Basin of central Arkansas, the Marcellus Shale in the northern Appalachian Basin of West Virginia, Pennsylvania and New York and the Eagle Ford Shale in South Texas. We also have substantial operations in the liquids-rich plays of the Granite Wash in western Oklahoma and the Texas Panhandle regions, the Niobrara Shale and Frontier Sand plays of the Powder River and DJ Basins of Wyoming and Colorado, as well as various other liquids-rich plays, both conventional and unconventional, in the Mid-Continent, Appalachian Basin, Permian Basin, Delaware Basin, South Texas, Texas Gulf Coast and Ark-La-Tex regions of the U.S. We have vertically integrated our operations and own substantial midstream, compression, drilling and oilfield service assets.

We announced earlier this year that we are extending our strategy to apply the horizontal drilling expertise we have gained in our natural gas plays to unconventional oil reservoirs. Our goal is to reach a balanced mix of natural gas and liquids revenue as quickly as possible through organic drilling, rather than through acquisitions. This transition is already apparent in the mix of natural gas and oil and natural gas liquids wells we are drilling. In 2010, we expect that approximately 31% of our drilling and completion capital expenditures will be allocated to liquids-rich plays, compared to 10% in 2009, and we are projecting that these expenditures will reach 65% in 2012. Our production of oil and natural gas liquids has been increasing in 2010 as we develop our new unconventional oil plays, particularly in the Granite Wash, Tonkawa, Cleveland and Mississippian plays of the Anadarko Basin; the Avalon, Bone Spring and Wolfcamp plays of the Permian Basin; and the Eagle Ford and Niobrara Shales. The company now owns approximately 3.1 million net leasehold acres in unconventional liquids-rich plays.

Chesapeake began 2010 with estimated proved reserves of 14.254 tcfe and ended the Current Period with 16.223 tcfe, an increase of 1.969 tcfe, or 14%. During the Current Period, we replaced 767 bcfe of production with an internally estimated 2.736 tcfe of new proved reserves, for a reserve replacement rate of 357%. The Current Period s proved reserve movement included 3.355 tcfe of extensions, 611 bcfe of positive performance revisions and 219 bcfe of positive revisions resulting from an increase in the twelve-month trailing average natural gas and oil prices between December 31, 2009 and September 30, 2010. During the Current Period, we acquired 50 bcfe of estimated proved reserves and divested 1.499 tcfe of estimated proved reserves.

During the Current Period, Chesapeake continued the industry s most active drilling program, drilling 1,041 gross operated wells (676 net wells with an average working interest of 65%) and participating in another 911 gross wells operated by other companies (118 net wells with an average working interest of 13%). The company s drilling success rate was 99% for company-operated wells and 98% for non-operated wells. Also during the Current Period, we invested $3.308 billion in operated wells (using an average of 127 operated rigs) and $545 million in non-operated wells (using an average of 111 non-operated rigs) for total drilling, completing and equipping costs of $3.853 billion (net of carries).

Our total Current Quarter production was 280.0 bcfe, comprised of 252.8 bcf of natural gas (90% on a natural gas equivalent basis) and 4.5 mmbbls of oil and natural gas liquids (10% on a natural gas equivalent basis). Daily production for the Current Quarter averaged 3.043 bcfe, an increase of 560 mmcfe, or 23%, over the 2.483 bcfe produced per day in the Prior Quarter.

Our total Current Period production was 766.6 bcfe, comprised of 689.6 bcf of natural gas (90% on a natural gas equivalent basis) and 12.8 mmbbls of oil and natural gas liquids (10% on a natural gas equivalent basis). Daily production for the Current Period averaged 2.808 bcfe, an increase of 373 mmcfe, or 15%, over the 2.435 bcfe produced per day in the Prior Period.

Since 2000, Chesapeake has built the largest combined inventories of onshore leasehold (13.8 million net acres) and 3-D seismic (27.4 million acres) in the U.S. and the largest inventory of U.S. natural gas shale play leasehold (2.8 million net acres). We now own the largest inventory of leasehold in two of the Top 3 new unconventional liquids-rich plays the Eagle Ford Shale and the Niobrara Shale. We are currently using 140 operated drilling rigs to further develop our inventory of approximately 40,000 net drillsites. Based on the level of drilling activity we have planned, we anticipate reporting full-year production growth of approximately 13% in 2010 and 18% in 2011.

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Business Strategy

In May 2010, we announced a strategic and financial plan designed to increase shareholder value, reduce long-term debt and achieve investment grade metrics for our debt securities. Since then, we have implemented multiple parts of the plan as noted below.

Debt Reduction

During the Current Period, we issued in private placements 2.6 million shares of two series of our 5.75% Cumulative Non-Voting Convertible Preferred Stock resulting in net proceeds to us of approximately $2.562 billion. We used the net proceeds of these preferred stock offerings to redeem in whole $1.934 billion in principal amount of four series of our outstanding senior notes. Additionally, through tender offers followed by redemptions, we purchased $1.5 billion aggregate principal amount of three additional series of senior notes. We funded the purchase of the notes tendered and redeemed with proceeds from a $2.0 billion public offering of two series of senior notes. Upon the completion of the redemptions and tender offers in the Current Quarter, we retired all series of our outstanding senior notes that were issued under our more restrictive indentures. Excess funds from our offerings were used to repay borrowings outstanding under our corporate revolving bank credit facility.

Increased Focus on Liquids

In recognition of the significant and persistent value gap that has developed between natural gas and oil prices, Chesapeake has accelerated its transition to a more liquids-rich asset base. We have redirected a significant portion of our technological, geo-scientific, leasehold acquisition and drilling expertise to identifying, securing and commercializing unconventional liquids-rich plays. This planned transition will result in a more balanced portfolio between natural gas and liquids, and we expect to increase our liquids production by 80% and 60% in 2011 and 2012, respectively.

During the Current Period, we invested heavily in new leasehold acquisitions in various liquids-rich plays, including the Anadarko Basin s Granite Wash, Cleveland, Tonkawa and Mississippian plays; the Permian Basin s Wolfcamp, Bone Spring and Avalon plays; the Eagle Ford Shale in South Texas; the Niobrara Shale in the Powder River and DJ Basins; the Frontier Sand in the Powder River Basin; and various other new plays the company is not yet ready to discuss because we could lose our competitive advantage in those areas. After this aggressive effort to capture leasehold in a large number of highly competitive liquids-rich unconventional plays, we expect to become a significant seller of leasehold through planned joint venture transactions.

Asset Sales

In January 2010, Chesapeake completed its fourth joint venture in its Big 6 shale plays. In this joint venture transaction in the Barnett Shale, Total E&P USA, Inc., a wholly owned subsidiary of Total S.A. (Total), paid $800 million in cash at closing (plus $78 million of drilling and completion carries due from the effective date of the transaction to the closing date) and agreed to pay a total of $1.45 billion in drilling and completion carries over time by funding 60% of our share of future drilling and completion expenditures. The following table provides information about our remaining joint venture drilling and completion carries as of September 30, 2010:

Shale Play	Joint Venture Partner	Joint Venture Date	Carries Remaining ($ in millions)
Marcellus	Statoil	November 2008	$ 1,566
Barnett	Total	January 2010	1,023
			$ 2,589

The drilling and completion carries in our joint ventures create a significant cost advantage for us that will allow us to continue to lower finding costs. During the Current Period and Prior Period, our drilling and completion costs included the benefit of approximately $745 million and

$959 million, respectively, of joint venture drilling and completion carries. Our drilling and completion costs for the remainder of 2010 and in 2011, 2012 and 2013 will continue to be partially offset by the use of our remaining drilling and completion carries associated with our joint ventures in the Barnett and Marcellus Shales.

In October 2010, we entered into an industry cooperation agreement whereby a wholly owned subsidiary of CNOOC Limited (CNOOC) agreed to purchase a 33.3% undivided interest in 600,000 net natural gas and oil leasehold acres we hold in the Eagle Ford Shale in South Texas. The consideration for the sale will be approximately $1.08 billion in cash at closing. In addition, CNOOC has agreed to fund 75% of our share of drilling and completion costs in the Eagle Ford Shale project until an additional $1.08 billion has been paid, which we expect to occur by year-end 2012. Closing of the transaction is anticipated in the fourth quarter of 2010.

We completed three volumetric production payments (VPPs) in the Current Period, bringing our total of such transactions to eight. The company s sixth VPP was completed in February 2010 for proceeds of approximately $180 million, or $3.95 per mcfe. In June 2010, we completed our seventh VPP for proceeds of approximately $335 million, or $8.73 per mcfe. Most recently, in September 2010, we completed our eighth VPP for proceeds of approximately $1.15 billion, or $2.93 per mcfe.

In the Current Period, we sold producing properties and gathering systems in Virginia and in the Permian Basin for proceeds of approximately $330 million. During the Current Period, as part of our joint venture arrangements with

Total, Statoil and Plains, we sold an interest in additional leasehold in the Barnett, Marcellus and Haynesville Shale plays for proceeds of approximately $395 million that had an estimated cost basis of $195 million. The cash proceeds from these transactions are reflected as a reduction of natural gas and oil properties with no gain or loss recognized.

Initial Public Offering of Chesapeake Midstream Partners, L.P.

On August 3, 2010, Chesapeake Midstream Partners, L.P. (NYSE: CHKM), which we and Global Infrastructure Partners (GIP) formed to own, operate, develop and acquire midstream assets, completed an initial public offering of 24,437,500 common units (including 3,187,500 common units issued pursuant to the exercise of the underwriters over-allotment option on August 3, 2010) representing limited partner interests and received gross offering proceeds of approximately $513 million at an initial offering price of $21.00 per unit less approximately $38 million for underwriting discounts and commissions, structuring fees and offering expenses. Pursuant to the terms of our contribution agreement with GIP, CHKM distributed the approximate $62 million of net proceeds from the exercise of the over-allotment option to GIP on August 3, 2010. In connection with the closing of the offering, Chesapeake and GIP contributed the interests of the midstream joint venture s operating subsidiary to CHKM, and CHKM is continuing the business that had been conducted by the joint venture. Common units owned by public security holders represent 17.7% of all outstanding limited partner interests, and Chesapeake and GIP hold 42.3% and 40.0%, respectively, of all outstanding limited partner interests. The limited partners, collectively, have a 98.0% interest in CHKM and the general partner, which is owned and controlled 50/50 by Chesapeake and GIP, has a 2.0% interest in CHKM.

On October 26, 2010, CHKM declared its first distribution for the period from the date of the closing of its initial public offering on August 3, 2010 through September 30, 2010. It corresponds to a full quarterly distribution of $0.3375 per unit, or $1.35 per unit on an annualized basis. At this distribution level, Chesapeake would receive quarterly distributions of approximately $20 million in respect of its limited partner and general partner interests. In the future, we plan to enter into drop down transactions with CHKM for some of the assets owned by our wholly owned midstream subsidiary, Chesapeake Midstream Development, L.P., whose gas gathering operations are located primarily in the Haynesville, Fayetteville, Marcellus and Eagle Ford Shales.

Budgeted Capital Expenditures

Our exploration, development and acquisition activities require us to make substantial capital expenditures. Our current budgeted drilling and completion capital expenditures, net of drilling and completion carries, are $4.8 - $5.0 billion in 2010, 2011 and 2012. We are also continuing to build an industry-leading unconventional liquids portfolio through new play identification systems and subsequent leasing programs. As of September 30, 2010, we had made commitments to acquire additional leasehold in various transactions during the next twelve months for approximately $1.7 billion, including the acquisition of a significant additional position in the Appalachian Basin from privately-held Anschutz Corporation. In this transaction, which is scheduled to close in November 2010, we have agreed to acquire approximately 500,000 net acres of Appalachian Basin leasehold and option rights for approximately $850 million. Approximately 25% of these assets will be immediately marketed for resale after closing while the remainder of the assets will be combined with our leasehold in a play in which the company expects to execute a new industry joint venture in the first half of 2011. As with all of Chesapeake s leasehold acquisitions in new plays, the company s goal remains to acquire an industry-leading leasehold position in a new play and then bring in a minority industry partner to help de-risk the play and to provide reimbursement of all or most of Chesapeake s leasehold costs in the new play.

Management believes that our planned leasehold and development joint ventures and various asset monetization programs benefit the company in several ways, including the creation of significant net asset value, improvement of our asset base through increasing the percentage of our assets that are oil and natural gas liquids, the reduction of financial risk, the reduction of our DD&A rate and the increase in our profitability per unit of production, thereby increasing our returns on capital and advancing future value creation to the present.

During the fourth quarter of 2010 and throughout 2011, the company will focus on recapturing a significant portion of new leasehold expenditures through joint ventures in several of our new liquids-rich plays. Additionally, we anticipate closing two additional VPP transactions, certain midstream asset sales and various other smaller planned sales. In total, Chesapeake is targeting to receive proceeds of approximately $1.3 - $1.5 billion in the fourth quarter of 2010 and approximately $3.0 - $3.5 billion in 2011 from asset sales. Each of the foregoing proposed sales, joint ventures and other transactions is subject to changes in market conditions and other factors, and there can be no assurance that we will complete any or all of these transactions on a timely basis or at all.

We plan to fund our 2010 and 2011 budgeted exploration and development capital expenditures, together with other capital expenditure requirements, from a combination of cash flow from operations, credit facility borrowings and asset monetizations.

In anticipation of the maturity of our existing credit facility in November 2012, Chesapeake is in the process of syndicating a new $4.0 billion senior secured revolving bank credit facility. The new facility will replace the company s existing $3.5 billion facility in its entirety and have a term of five years. The syndication of the new facility is anticipated to be completed in November 2010.

Liquidity and Capital Resources

Sources and Uses of Funds

Cash flow from operations is a significant source of liquidity used to fund capital expenditures, pay dividends and repay debt. Cash provided by operating activities was $3.971 billion in the Current Period compared to $3.131 billion in the Prior Period. Changes in cash flow from operations are largely due to the same factors that affect our net income, excluding non-cash items such as impairments of assets, depreciation, depletion and amortization, deferred income taxes and unrealized gains and (losses) on derivatives. See the discussion below under *Results of Operations*.

Changes in market prices for natural gas and oil directly impact the level of our cash flow from operations. To mitigate the risk of declines in natural gas and oil prices and to provide more predictable future cash flow from operations, we currently have hedged through swaps 53% and 28% of our expected remaining natural gas and oil production in 2010 at an average price of $7.66 per mcf and $89.94 per bbl, respectively. Additionally, we have hedged through swaps 60% and 3% of our expected natural gas and oil production in 2011 at an average price of $6.44 per mcf and $104.75 per bbl, respectively. Our natural gas and oil hedges as of September 30, 2010 are detailed in Item 3 of Part I of this report. Depending on changes in natural gas and oil futures markets and management s view of underlying natural gas and oil supply and demand trends, we may increase or decrease our current hedging positions.

Our $3.5 billion corporate revolving bank credit facility, our $300 million midstream revolving bank credit facility and cash and cash equivalents are other sources of liquidity. We use the credit facilities and cash on hand to fund daily operating activities and capital expenditures as needed. We borrowed $10.458 billion and repaid $9.863 billion in the Current Period, and we borrowed $5.563 billion and repaid $7.866 billion in the Prior Period from our revolving credit facilities. A significant portion of our natural gas and oil properties is currently unencumbered and therefore available to be pledged as additional collateral under our corporate revolving bank credit facility if needed based on our periodic borrowing base and collateral redeterminations. Accordingly, we believe our borrowing capacity under this facility will not be reduced as a result of any such future periodic redeterminations. Our midstream facility is secured by substantially all of our wholly owned midstream assets and is not subject to periodic borrowing base redeterminations.

On May 17, 2010, we issued 600,000 shares of 5.75% Cumulative Convertible Non-Voting Preferred Stock, par value $0.01 per share and liquidation preference $1,000 per share, in a private placement for net proceeds of approximately $594 million. We issued an additional 900,000 shares of 5.75% Cumulative Convertible Non-Voting Preferred Stock on June 18, 2010 for net proceeds of approximately $877 million.

On May 17, 2010, we issued 1,100,000 shares of 5.75% Cumulative Convertible Non-Voting Preferred Stock (Series A), par value $0.01 per share and liquidation preference $1,000 per share, in a private placement for net proceeds of approximately $1.091 billion.

On August 17, 2010, we completed a public offering of $2.0 billion aggregate principal amount of senior notes. The offering consisted of $600 million of 6.875% Senior Notes due 2018 and $1.4 billion of 6.625% Senior Notes due 2020. Both series were priced at par. Net proceeds received were $1.967 billion.

In the Current Period and Prior Period, we received $436 million and $19 million, respectively, for settlements of derivatives which were classified as cash flows from financing activities.

In the Current Period, we received a $75 million cash distribution from our midstream joint venture which was accounted for as a return on investment and reflected as cash flows from operating activities.

On February 2, 2009, we completed a public offering of $1.0 billion aggregate principal amount of senior notes due 2015, which have a stated coupon rate of 9.5% per annum. The senior notes were priced at 95.071% of par to yield 10.625%. On February 17, 2009, we completed an offering of an additional $425 million aggregate principal amount of the 9.5% Senior Notes due 2015. The additional senior notes were priced at 97.75% of par plus accrued interest from February 2 to February 17, 2009 to yield 10.0% per annum. Net proceeds of $1.346 billion from these two offerings were used to repay outstanding indebtedness under our corporate revolving bank credit facility, which we reborrow from time to time to fund drilling and leasehold acquisition initiatives and for general corporate purposes.

Our primary use of funds is for capital expenditures related to exploration, development and acquisition of natural gas and oil properties. We refer you to the table under *Investing Activities* below, which sets forth the components of our natural gas and oil investing activities and our other investing activities for the Current Period and the Prior Period. We retain a significant degree of control over the timing of our capital expenditures which permits us to defer or accelerate certain capital expenditures if necessary to address any potential liquidity issues. In addition, changes in drilling and field operating costs, drilling results that alter planned development schedules, acquisitions or other factors could cause us to revise our drilling program, which is largely discretionary.

We paid dividends on our common stock of $142 million and $135 million in the Current Period and the Prior Period, respectively. We paid dividends on our preferred stock of $49 million in the Current Period and $18 million in the Prior Period.

On June 21, 2010, we redeemed in whole for an aggregate redemption price of approximately $1.366 billion, plus accrued interest, approximately $364 million in principal amount of our outstanding 7.50% Senior Notes due 2013, $300 million in principal amount of our 7.50% Senior Notes due 2014 and approximately $670 million in principal amount of our 6.875% Senior Notes due 2016. Associated with these redemptions, we recognized a loss of $69 million in the Current Period.

On July 22, 2010, we redeemed in whole for a redemption price of approximately $619 million, plus accrued interest, $600 million in principal amount of our 6.375% Senior Notes due 2015. Associated with the redemption, we recognized a loss of $19 million in the Current Period.

On August 30, 2010, we completed tender offers to purchase for cash $245 million of 7.00% Senior Notes due 2014, $567 million of 6.625% Senior Notes due 2016 and $582 million of 6.25% Senior Notes due 2018. On September 16, 2010, we redeemed the remaining $55 million of 7.00% Senior Notes due 2014, $33 million of 6.625% Senior Notes due 2016 and $18 million of 6.25% Senior Notes due 2018 based on the redemption provisions in the indentures. Associated with the tender offers and redemptions, we recognized a loss of $40 million in the Current Period.

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Credit Risk

A significant portion of our credit risk is concentrated in derivative instruments that enable us to hedge a portion of our exposure to natural gas and oil prices and interest rate volatility. These arrangements expose us to credit risk from our counterparties. To mitigate this risk, we enter into derivative contracts only with investment-grade rated counterparties deemed by management to be competent and competitive market makers, and we attempt to limit our exposure to non-performance by any single counterparty. During the more than 15 years we have engaged in hedging activities, we have experienced a counterparty default only once (Lehman Brothers in September 2008), and the total loss recorded in that instance was immaterial. On September 30, 2010, our commodity and interest rate derivative instruments were spread among 14 counterparties. Our multi-counterparty secured hedging facility includes 13 of our counterparties which are required to secure their natural gas and oil hedging obligations in excess of defined thresholds. We now use this facility for all of our commodity hedging.

Our accounts receivable are primarily from purchasers of natural gas and oil ($675 million at September 30, 2010) and exploration and production companies which own interests in properties we operate ($635 million at September 30, 2010). This industry concentration has the potential to impact our overall exposure to credit risk, either positively or negatively, in that our customers and joint working interest owners may be similarly affected by changes in economic, industry or other conditions. We generally require letters of credit or parent guarantees for receivables from parties which are judged to have sub-standard credit, unless the credit risk can otherwise be mitigated. During the Current Quarter, the Prior Quarter and the Current Period, we recognized nominal amounts of bad debt expense related to potentially uncollectible receivables. During the Prior Period, we recognized $13 million of bad debt expense related to potentially uncollectible receivables.

Investing Activities

Cash used in investing activities increased to $5.665 billion during the Current Period, compared to $3.654 billion during the Prior Period. The majority of our $2.011 billion increase in investing activities was the result of our increased acquisition of unproved properties and exploration and development activities. The following table shows our cash used in (provided by) investing activities during these periods:

	Nine Months Ended September 30,	
	2010	2009
	($ in millions)	
Natural Gas and Oil Investing Activities:		
Acquisitions of natural gas and oil proved properties	$ 139	$ 17
Acquisition of leasehold and unproved properties	3,575	890
Exploration and development of natural gas and oil properties	3,576	2,647
Geological and geophysical costs[(a)]	142	143
Interest capitalized on unproved properties	503	441
Proceeds from divestitures of proved and unproved properties	(3,107)	(1,729)
Deposits for acquisitions	95	
Total natural gas and oil investing activities	4,923	2,409
Other Investing Activities:		
Additions to other property and equipment	968	1,362
Additions to investments	113	40
Proceeds from sales of other assets	(328)	(157)
Other	(11)	
Total other investing activities	742	1,245
Total cash used in investing activities	$ 5,665	$ 3,654

(a) Including related capitalized interest.

In the Prior Period, pursuant to an acquisition shelf registration statement, we issued 24,822,832 shares of common stock valued at $429 million for the purchase of proved and unproved properties.

Bank Credit Facilities

We utilize two bank credit facilities, described below, as sources of liquidity.

	Corporate Credit Facility[(a)]	Midstream Credit Facility[(b)]
	($ in millions)	
Borrowing capacity	$ 3,500	$ 300
Maturity date	November 2012	July 2015
Facility structure	Senior secured revolving	Senior secured revolving
Amount outstanding as of September 30, 2010	$ 2,237	$ 250
Letters of credit outstanding as of September 30, 2010	$ 13	$

(a) Borrowers are Chesapeake Exploration, L.L.C. and Chesapeake Appalachia, L.L.C.

(b) Borrower is Chesapeake Midstream Operating, L.L.C., a wholly owned subsidiary of Chesapeake Midstream Development, L.P.

Our credit facilities do not contain material adverse change or adequate assurance covenants. Although the applicable interest rates under our corporate credit facility fluctuate slightly based on our long-term senior unsecured credit ratings, neither of our credit facilities contains provisions which would trigger an acceleration of amounts due under the facilities or a requirement to post additional collateral in the event of a downgrade of our credit ratings.

Corporate Credit Facility

Our $3.5 billion syndicated revolving bank credit facility is used for general corporate purposes. Borrowings under the facility are secured by natural gas and oil proved reserves and bear interest at our option at either (i) the greater of the reference rate of Union Bank, N.A., or the federal funds effective rate plus 0.50%, both of which are subject to a margin that varies from 0.00% to 0.75% per annum according to our senior unsecured long-term debt ratings, or (ii) the London Interbank Offered Rate (LIBOR), plus a margin that varies costs and legal fees. The increase in stock-based compensation expense resulted from additional stock option grants to employees as well as the vesting of restricted stock units granted to G&A executive officers. The increase in other G&A operating expenses was primarily the result of an increase in payroll and related costs associated with G&A personnel, partially offset by a decrease in rent, utilities and related costs.

For the year ended December 31, 2017 compared to the year ended December 31, 2016, the increase in professional fees and public/investor relations was due primarily to an increase in public/investor relations costs. The increase in stock-based compensation primarily resulted from increased employee headcount, including our current Chief Financial Officer, the acceleration of vesting of outstanding stock option awards upon the retirement of our former Chief Financial Officer, and stock option awards granted to non-employee consultants, which are marked to market each quarter, and resulted from an increase in the market price of our common stock. The decrease in depreciation and amortization expense reflects the acceleration of amortization of our leasehold improvements at our Shelton, Connecticut facility related to general and administrative activities prior to the relocation of our corporate headquarters in May 2016. The increase in other G&A operating expenses was primarily the result of an increase in personnel-related costs, partially offset by a decrease in rent expense, primarily due to the recognition in 2016 of all of the remaining rent expense allocable to general and administrative activities due during the remaining term of the

Shelton operating lease.

Other Income

	Year Ended December 31,				
	2018		2017		2016
	Dollar amounts in thousands				
		% change		% change	
Other income	$2,980	158 %	$1,156	77 %	$652

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During the year ended December 31, 2018 compared to the year ended December 31, 2017, the increase in other income was primarily due to an increase in dividend and interest income resulting from a higher average balance of our portfolio of investments in the 2018 period.

For the year ended December 31, 2017 compared to the year ended December 31, 2016, the increase in other income was primarily due to an increase in dividend and interest income resulting from higher interest rates on a higher average balance of our portfolio of investments in the 2017 period.

Benefit from Income Taxes

For the years ended December 31, 2018, 2017 and 2016, pre-tax losses were $74.4 million, $58.3 million and $57.7 million, respectively, and we recognized a benefit from income taxes of $389 thousand, $204 thousand and $468 thousand, respectively.

The benefit from income taxes relates to state R&D tax credits exchanged for cash pursuant to the Connecticut R&D Tax Credit Exchange Program, as discussed above. We recognized a full valuation allowance against deferred tax assets at December 31, 2018, 2017 and 2016.

Liquidity and Capital Resources

Sources of Liquidity

Since our inception and through December 31, 2018, we have raised an aggregate of approximately $486.6 million to fund our operations, including (1) net proceeds of $309.8 million from the sale of shares of our common stock in four public offerings, including our initial public offering; (2) proceeds of $73.3 million from the sale of shares of our convertible preferred stock and from debt financings prior to our initial public offering; (3) payments of $88.9 million under our license agreements, primarily with VFMCRP, Maruishi, CKDP and an earlier product candidate for which development efforts ceased in 2007; and (4) net proceeds of $14.6 million from the purchase of our common stock in relation to the license agreement with VFMCRP (see Note 11 of Notes to Financial Statements, Collaboration and Licensing Agreements, in this Annual Report on Form 10-K).

In order to fund future operations, including our planned clinical trials, we filed a shelf registration statement on Form S-3 (File No. 333-216657), which the Securities and Exchange Commission, or SEC, declared effective on March 24, 2017. The shelf registration statement provides for aggregate offerings of up to $250 million of common stock, preferred stock, debt securities, warrants or any combination thereof. The securities registered under this shelf registration statement include unsold securities that had been registered under our previous shelf registration statement (File No. 333-203072) that was declared effective on May 13, 2015.

On April 5, 2017, we completed a public offering of 5,117,500 shares of our common stock, including 667,500 shares sold upon the full exercise by the underwriters of their option to buy additional shares pursuant to our shelf registration statement. We received net proceeds of $86.2 million after deducting the underwriting discounts and commissions and offering expenses paid by us. The proceeds of the offering are/were being used to fund our clinical and research development activities, including the ongoing Phase 3 program for I.V. KORSUVA (CR845/difelikefalin) in CKD-aP or uremic pruritus, additional trials of Oral CR845/difelikefalin in other diseases associated with pruritus, the recently completed Phase 2/3 I.V. CR845/difelikefalin adaptive clinical trial in postoperative pain, as well as for working capital and general corporate purposes.

On July 18, 2018, we entered into an underwriting agreement with Jefferies LLC and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representatives of the several underwriters named therein, relating to the issuance and sale by us of up to 5,175,000 shares of our common stock, including 675,000 shares of common stock the underwriters had the option to purchase, at a public offering price of $19.00 per share. This offering was made by pursuant to our Registration Statement on Form S-3 (File No. 333-216657), filed with the SEC on March 13, 2017 and declared effective on March 24, 2017, and a related prospectus dated March 24, 2017 and a prospectus supplement dated July 18, 2018, which was filed with the SEC on July 20, 2018.

On July 23, 2018, we closed the offering, including the full exercise of the underwriters' option to purchase 675,000 additional shares of common stock. We received net proceeds of approximately $92.1 million, after deducting $6.3 million relating to underwriting discounts and commissions and offering expenses.

We intend to use the net proceeds from this most recent underwritten offering to fund our clinical and research development activities, including the completion of our Phase 3 programs and submission of a new drug application to the FDA for KORSUVA (CR845/difelikefalin) injection for the treatment of CKD-aP in hemodialysis patients, the advancement of Oral KORSUVA (CR845/difelikefalin) into Phase 2 trials for the treatment of CKD-aP in Stage III-V patients and CLD patients, the expansion of our Oral KORSUVA program into certain dermatologic conditions and the exploration of further development of CR845/difelikefalin injection in the post-operative setting after consultation with the FDA, as well as for working capital and other general corporate purposes.

We may offer additional securities under our shelf registration statement from time to time in response to market conditions or other circumstances if we believe such a plan of financing is in the best interests of our stockholders. We believe that the use of a shelf registration statement provides us with the flexibility to raise additional capital to finance our operations as needed.

As of December 31, 2018, we had $182.8 million in unrestricted cash and cash equivalents and available-for-sale marketable securities. We believe our current unrestricted cash and cash equivalents and available-for-sale marketable securities will be sufficient to fund our currently anticipated operating expenses and capital expenditures into 2021, without giving effect to any potential milestone payments we may receive under our licensing and collaboration agreements with VFMCRP, Maruishi and CKDP. Our anticipated operating expenses include contractually committed costs as well as non-contractually committed clinical trial costs for trials that may be delayed or not initiated and other non-committed controllable costs.

Under the VFMCRP Agreement, we are eligible to receive regulatory and commercial milestone payments in the aggregate of up to $470 million, consisting of up to $30 million in regulatory milestones and up to $440 million in tiered commercial milestones, all of which are sales-related. We are also eligible to receive tiered double-digit royalty payments based on annual net sales, as defined in the VFMCRP Agreement, of CR845/difelikefalin injection in the Licensed Territories.

Under the Maruishi Agreement, we are also potentially eligible to earn up to an aggregate of $6.0 million in clinical development milestones and $4.5 million in regulatory milestones, before any foreign exchange adjustment, as well as tiered royalties, with percentages ranging from the low double digits to the low twenties, based on net sales of products containing CR845/difelikefalin in Japan, if any, and share in any sub-license fees. As of December 31, 2018, we have received milestone payments of $2.5 million before contractual foreign currency exchange adjustments.

During the first quarter of 2017, Maruishi entered into a sub-license agreement with another Japanese pharmaceutical company for the development and sales/marketing of CR845/difelikefalin in patients with uremic pruritus in Japan, as a result of which we received a payment of $843 thousand.

Under the CKDP Agreement, we are potentially eligible to earn up to an aggregate of $2.3 million in clinical development milestones and $1.5 million in regulatory milestones, before South Korean withholding tax, as well as tiered royalties with percentages ranging from the high single digits to the high teens, based on net sales of products containing CR845/difelikefalin in South Korea, if any, and share in any sub-license fees. As of December 31, 2018, we have received milestone payments of $1.5 million before South Korean withholding tax.

The next potential milestone that could result in us receiving payment under the CKDP Agreement will be for a clinical development milestone for the completion by us in the United States of a Phase 3 trial of CR845/difelikefalin in uremic pruritus. If achieved, this milestone will result in a payment of $750 thousand, before South Korean withholding tax, being due to us.

Our ability to earn these payments and their timing is dependent upon the outcome of I.V. and Oral CR845/difelikefalin development activities and, potentially, commercialization. However, our receipt of any further such amounts is uncertain at this time and we may never receive any more of these amounts.

Funding Requirements

Our primary uses of capital have been, and we expect will continue to be, compensation and related expenses, third-party clinical R&D services and clinical costs. In the past, we have also previously used capital for laboratory and related supplies.

Since inception, we have incurred significant operating and net losses. Our net losses were $74.0 million, $58.1 million and $57.3 million for the years ended December 31, 2018, 2017 and 2016, respectively. As of December 31, 2018, we had an accumulated deficit of $294.4 million. We expect to continue to incur significant expenses and operating and net losses in the near future. Our net losses may fluctuate significantly from quarter to quarter and year to year, depending on the timing of our clinical trials, the receipt of additional milestone payments, if any, under our licensing and collaborations with VFMCRP, Maruishi and CKDP, the receipt of payments under any future collaborations and/or licensing agreements we may enter into, and our expenditures on other R&D activities.

We anticipate that our expenses will increase as we:

- continue the development of KORSUVA (CR845/difelikefalin) injection for CKD-aP in dialysis patients;
- continue the development of Oral KORSUVA (CR845/difelikefalin) for CKD-aP and other diseases associated with pruritus, such as CLD-aP;
- explore the potential to further develop I.V. CR845/difelikefalin in the post-operative setting;
- conduct R&D of any potential future product candidates;
- seek regulatory approvals for I.V. CR845/difelikefalin and any product candidates that successfully complete clinical trials;
- establish a sales, marketing and distribution infrastructure and scale up external manufacturing capabilities to commercialize any products for which we may obtain regulatory approval;
- maintain, expand and protect our global intellectual property portfolio;
- hire additional clinical, quality control and scientific personnel; and
- add operational, financial and management information systems and personnel, including personnel to support our drug development and potential future commercialization efforts.

The successful development of any of our product candidates is highly uncertain. As such, at this time, we cannot reasonably estimate or know the nature, timing and costs of the efforts that will be necessary to complete the development of I.V. CR845/difelikefalin, Oral CR845/difelikefalin or our other current and future programs. We are also unable to predict when, if ever, we will generate any further material net cash inflows from CR845/difelikefalin. This is due to the numerous risks and uncertainties associated with developing medicines, including the uncertainty of:

- successful enrollment in, and completion of clinical trials;
- receipt of marketing approvals from applicable regulatory authorities;

- establishing commercial manufacturing capabilities or making arrangements with third-party manufacturers;
- obtaining and maintaining patent and trade secret protection and regulatory exclusivity for our product candidates;
- launching commercial sales of the products, if and when approved, whether alone or in collaboration with others;
- achieving meaningful penetration in the markets which we seek to serve; and
- obtaining adequate coverage or reimbursement by third parties, such as commercial payers and government healthcare programs, including Medicare and Medicaid.

A change in the outcome of any of these variables with respect to the development of I.V. CR845/difelikefalin, Oral CR845/difelikefalin or any of our future product candidates would significantly change the costs and timing associated with the development of that product candidate.

Because our product candidates are still in clinical development and the outcome of these efforts is uncertain, we cannot estimate the actual amounts necessary to successfully complete the development and commercialization of all our product candidates or whether, or when, we may achieve profitability. Until such time, if ever, as we can generate substantial product revenues, we expect to finance our cash needs through a combination of equity or debt financings and collaboration arrangements, including our existing licensing and collaboration agreements with VFMCRP, Maruishi and CKDP.

We will require additional capital beyond our current balances of cash and cash equivalents and available-for-sale marketable securities and anticipated amounts as described above, and this additional capital may not be available when needed, on reasonable terms, or at all. In particular, because we do not have sufficient financial resources to meet all of our development objectives, especially the completion of our planned development of I.V. and Oral CR845/difelikefalin for the treatment of pruritus, we will need to raise additional capital. If we are not able to do so, we could be required to postpone, scale back or eliminate some, or all, of these objectives. To the extent that we raise additional capital through the future sale of equity or convertible debt, the ownership interest of our stockholders will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our existing common stockholders. If we raise additional funds through the issuance of debt securities, these securities could contain covenants that would restrict our operations. If we raise additional funds through collaboration arrangements in the future, we may have to relinquish valuable rights to our technologies, future revenue streams or product candidates or grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds through equity or debt financings when needed, we may be required to delay, limit, reduce or terminate our drug development or future commercialization efforts or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves.

Outlook

Based on timing expectations and projected costs for our current clinical development plans, which include completing our Phase 3 trials of KORSUVA (CR845/difelikefalin) injection in hemodialysis patients suffering from moderate-to-severe CKD-aP to enable an NDA submission, and conducting Phase 1 and Phase 2 trials of Oral (CR845/difelikefalin) in patients with CKD-aP, CLD-aP and certain dermatologic conditions, we expect that our existing cash and cash equivalents and available-for-sale marketable securities as of December 31, 2018 will be sufficient for us to fund our currently anticipated operating expenses and capital expenditures into 2021, without giving effect to any potential milestone payments we may receive under our collaboration agreements with VFMCRP, Maruishi and CKDP. Our anticipated operating expenses include contractually committed costs as well as non-contractually committed clinical trial costs for trials that may be delayed or not initiated and other non-committed controllable costs. Because the process of testing product candidates in clinical trials is costly and the timing of progress in these trials is uncertain, it is possible that the assumptions upon which we have based this estimate may prove to be wrong, and we could use our capital resources sooner than we presently expect.

The Tax Cuts and Jobs Act of 2017

On December 22, 2017, the Tax Cuts and Jobs Act of 2017, or the Act, was enacted in the United States. Under generally accepted accounting principles in the United States, or GAAP, the effect of a change in tax rates and tax law is recorded discretely as a component of the income tax provision related to continuing operations in the period of enactment. Under the Act, among other provisions, the maximum Federal corporate tax rate is reduced from 35% to 21% for tax years beginning after December 31, 2017.

Accounting Standards Codification, or ASC, section 740, Income Taxes, requires deferred tax assets and liabilities to be measured at the enacted tax rate expected to apply when temporary differences are to be realized or settled. Therefore, at the date of enactment, we reduced deferred tax assets by $25.9 million based on the revised tax rate, which required a re-assessment of the related valuation allowance. Based on expected net losses into the foreseeable future, we will currently continue to record a 100% valuation allowance against our deferred tax assets. The corresponding reduction in the valuation allowance as a result of the re-measurement of deferred tax assets and liabilities was also recorded to continuing operations in the tax provision.

In addition, net operating losses, or NOLs, arising after December 31, 2017, can be carried forward indefinitely but carryback is generally prohibited. The use of such NOL carryforwards is limited to 80% of taxable income. NOLs generated before January 1, 2018 will not be subject to the taxable income limitation and will continue to have a two-year carryback and 20-year carryforward period.

Cash Flows

The following is a summary of the net cash flows provided by (used in) our operating, investing and financing activities for the years ended December 31, 2018, 2017 and 2016:

	Year Ended December 31,		
	2018	2017	2016
	Amounts in thousands		
Net cash used in operating activities	$(22,301)	$(54,827)	$(47,381)
Net cash (used in) provided by investing activities	(82,819)	(36,500)	45,018
Net cash provided by financing activities	110,813	87,923	123
Net increase (decrease) in cash, cash equivalents and restricted cash	$5,693	$(3,404)	$(2,240)

Net cash used in operating activities

Net cash used in operating activities for the year ended December 31, 2018 consisted primarily of a net loss of $74.0 million, partially offset by a $50.5 million cash inflow from net non-cash charges and a $1.2 million inflow from net changes in operating assets and liabilities. Net non-cash charges primarily consisted of an increase in deferred revenue of $42.0 million related to the VFMCRP Agreement and stock-based compensation expense of $10.1 million (which includes $1.7 million related to the vesting of restricted stock units), partially offset by $1.8 million related to amortization/accretion of available-for-sale securities. The net change in operating assets and liabilities primarily consisted of a cash inflow of $5.1 million from an increase in accounts payable and accrued expenses, partially offset by cash outflows of $3.2 million from an increase in prepaid expense, primarily related to an increase in prepaid clinical costs, and cash outflows of $0.8 million related to an increase in other receivables.

Net cash used in operating activities for the year ended December 31, 2017 consisted primarily of a net loss of $58.1 million, a $3.0 million outflow from net changes in operating assets and liabilities and a $6.3 million cash inflow from net non-cash charges. The net change in operating assets and liabilities primarily consisted of cash outflows of $3.0 million from a decrease in accounts payable and accrued expenses. Net non-cash charges primarily consisted of stock-based compensation expense of $6.3 million and depreciation and amortization expense of $0.5 million, partially offset by accretion/amortization on available-for-sale securities of $0.6 million.

Net cash used in operating activities for the year ended December 31, 2016 consisted primarily of a net loss of $57.3 million, a $6.0 million inflow from net changes in operating assets and liabilities and a $3.9 million cash inflow from net non-cash charges. The net change in operating assets and liabilities primarily consisted of cash inflows of $6.3 million from an increase in accounts payable and accrued expenses and $0.2 million from a decrease in prepaid expense, primarily related to a decrease in prepaid clinical costs. Those cash inflows were partially offset by cash outflows of $0.5 million due to an increase in income tax receivable from the State of Connecticut under the Connecticut R&D Tax Credit Exchange Program. Net non-cash charges primarily consisted of depreciation and amortization expense of $1.5 million and stock-based compensation expense of $2.8 million, partially offset by deferred rent costs of $0.1 million and accretion/amortization on available-for-sale marketable securities of $0.2 million.

Net cash (used in) provided by investing activities

Net cash used in investing activities was $82.8 million for the year ended December 31, 2018, which primarily included cash outflows of $337.9 million for the purchase of available-for-sale marketable securities, partially offset by cash inflows of $175.3 million from maturities of available-for-sale marketable securities and $79.8 million from the sale of available-for-sale marketable securities.

Net cash used in investing activities for the year ended December 31, 2017, primarily included cash outflows of $127.4 million from the purchase of available-for-sale securities. Those cash outflows were partially offset by cash inflows of $82.2 million from maturities of available-for-sale securities and $8.8 million from the sale of available-for-sale securities.

Net cash provided by investing activities for the year ended December 31, 2016, primarily included cash inflows of $80.4 million from maturities of available-for-sale marketable securities and $34.0 million from the sale of available-for-sale marketable securities. Those cash inflows were partially offset by cash outflows of $68.6 million from the purchase of available-for-sale marketable securities and $0.7 million of cash paid for purchase of property and equipment.

Net cash provided by financing activities

Net cash provided by financing activities for the year ended December 31, 2018 consisted of gross proceeds of $98.3 million from our issuance and sale of our common stock in July 2018, partially offset by $6.3 million of underwriting discounts and commissions and offering expenses paid by us during the year ended December 31, 2018, proceeds of $14.6 million from the sale of our common stock relating to the VFMCRP Agreement and $4.2 million received from the exercise of stock options.

Net cash provided by financing activities for the year ended December 31, 2017 consisted primarily of gross proceeds of $92.1 million from our follow-on offering of common stock, partially offset by $5.9 million of underwriting discounts and commissions and offering expenses paid by us during the year ended December 31, 2017, and proceeds of $1.7 million received from stock option exercises.

Net cash provided by financing activities for the year ended December 31, 2016 consisted primarily of proceeds of $123 thousand received from the exercise of stock options.

Contractual Obligations

The following table summarizes our significant contractual obligations as of December 31, 2018 (in thousands):

	Payment Due for the Year Ending December 31,					
	2019	2020	2021	2022	2023	Total
Stamford operating lease	$1,215	$1,240	$1,264	$1,288	$1,164	$6,171

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See Note 17 of Notes to Financial Statements, Commitments and Contingencies, in this Annual Report on Form 10-K for details about our operating lease obligations.

We have no material non-cancelable purchase commitments with contract manufacturers or service providers, as we have generally contracted on a cancelable purchase order basis.

Off-Balance Sheet Arrangements

We did not have during the periods presented, and we do not currently have, any off-balance sheet arrangements, as defined under SEC rules.

Critical Accounting Policies and Significant Judgments and Estimates

Our management’s discussion and analysis of financial condition and results of operations is based upon our financial statements, which have been prepared in accordance with GAAP. The preparation of these financial statements requires us to make estimates, judgments and assumptions that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities as of the date of the balance sheets and the reported amounts of revenues and expenses during the reporting periods. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances at the time such estimates are made. Actual results and outcomes may differ materially from our estimates, judgments and assumptions. We periodically review our estimates in light of changes in circumstances, facts and experience. The effects of material revisions in estimates are reflected in the financial statements prospectively from the date of the change in estimate.

We define our critical accounting policies as those accounting principles generally accepted in the United States that require us to make subjective estimates and judgments about matters that are uncertain and are likely to have a material impact on our financial condition and results of operations as well as the specific manner in which we apply those principles. We believe the critical accounting policies used in the preparation of our financial statements which require significant estimates and judgments are as follows:

Revenue Recognition

On January 1, 2018, we adopted Accounting Standards Update, or ASU, 2014-09, Revenue from Contracts with Customers (Topic 606), or ASC 606, as amended by ASU 2016-08, 2016-10, 2016-12 and 2016-20 using the full retrospective method. Under ASC 606, we recognize revenue in an amount that reflects the consideration to which we expect to be entitled in exchange for the transfer of promised goods or services to customers. To determine revenue recognition for contracts with customers that are within the scope of ASC 606, we perform the following steps: (1) identify the contract with the customer, (2) identify the performance obligations in the contract, (3) determine the transaction price, (4) allocate the transaction price to the performance obligations in the contract, and (5) recognize revenue when (or as) the entity satisfies a performance obligation. We have concluded that upon adoption of ASC 606, as amended, there was no impact on our results of operations, financial position or cash flows for any period presented from our only two revenue-related contracts, which were in effect at that time: the CKDP Agreement or the Maruishi Agreement.

We have entered into agreements to license our intellectual property, or IP, related to CR845/difelikefalin to develop, manufacture and/or commercialize drug products. These agreements typically contain multiple performance obligations, including licenses of IP and R&D services. Payments to us under these agreements may include nonrefundable license fees, payments for research activities, payments based upon the achievement of certain milestones and royalties on any resulting net product sales.

We identify agreements as contracts that create enforceable rights and obligations when the agreement is approved by the parties, identifies the rights of the parties and the payment terms, has commercial substance and it is probable that we will collect the consideration to which we will be entitled in exchange for the goods and services that will be transferred to the customer. The counterparty is considered to be a customer when it has contracted with us to obtain goods and services that are the output of our ordinary activities (i.e., development of pharmaceutical products) in exchange for consideration.

A performance obligation is a promise to transfer distinct goods or services to a customer. Performance obligations that are both capable of being distinct and distinct within the context of the contract are considered to be separate performance obligations. Performance obligations are capable of being distinct if the counterparty is able to benefit from the good or service on its own or together with other resources that are readily available to it. Performance obligations are distinct within the context of the contract when each performance obligation is separately identifiable from each other; i.e., we are not using the goods or services as inputs to produce or deliver the combined output or outputs specified by the customer; one or more of the goods or services does not significantly modify or customize one of the other goods or services in the contract; and goods or services are not highly interdependent or not highly interrelated. Performance obligations that are not distinct are accounted for as a single performance obligation over the period that goods or services are transferred to the customer. The determination of whether performance obligations in a contract are distinct may require significant judgment.

The transaction price is the amount of consideration that we expect to be entitled to in exchange for transferring promised goods or services to the customer based on the contract terms at inception of a contract. There is a constraint on inclusion of variable consideration related to licenses of IP, such as milestone payments or sales-based royalty payments, in the transaction price if there is uncertainty at inception of the contract as to whether such consideration will be recognized in the future because it is probable that there will be a significant reversal of revenue in the future when the uncertainty is resolved. The determination of whether or not it is probable that a significant reversal of revenue will occur in the future depends on the likelihood and magnitude of the reversal. Factors that could increase the likelihood or magnitude of a reversal of revenue include (a) the susceptibility of the amount of consideration to factors outside the entity's influence, such as the outcome of clinical trials, the timing of initiation of clinical trials by the counterparty and the approval of drug product candidates by regulatory agencies, (b) situations in which the uncertainty is not expected to be resolved for a long period of time, and (c) level of our experience in the field. When it becomes probable that events will occur, for which variable consideration was constrained at inception of the contract, we allocate the related consideration to the separate performance obligations in the same manner as described below.

At inception of a contract, we allocate the transaction price to the distinct performance obligations based upon their relative standalone selling prices. Standalone selling price is the price at which an entity would sell a promised good or service separately to a customer. The best evidence of standalone selling price is an observable price of a good or service when sold separately by an entity in similar circumstances to similar customers. Since we typically do not have such evidence, we estimate standalone selling price so that the amount that is allocated to each performance obligation equals the amount that we expect to receive for transferring goods or services. The methods that we use to make such estimates include (1) the adjusted market assessment approach, under which we forecast and analyze CR845/difelikefalin in the appropriate market, the phase of clinical development as well as considering recent similar license arrangements within the same phase of clinical development, therapeutic area, type of agreement, etc. and (2) the expected cost of satisfying the performance obligations plus a margin, or the expected cost plus a margin approach.

We recognize revenue when, or as, we satisfy a performance obligation by transferring a promised good or service to a customer and the customer obtains control of the good or service. Revenue related to the grant of a license that is a distinct performance obligation and that is deemed to be functional IP is recognized at the point in time that we have the right to payment for the license, the customer has legal title to the license and can direct the use of the license (for example, to grant sublicenses), the customer has the significant risks and rewards of ownership of the license and the customer has accepted the asset (license) by signing the license agreement.

Recognition of revenue related to R&D services that are a distinct performance obligation or that are combined with granting of a license as a single performance obligation is deferred at inception of a contract and is recognized as those services are performed based on the costs incurred as a percentage of the estimated total costs to be incurred to complete the performance obligation.

Milestone payments are considered to be variable consideration and are not included in the transaction price at inception of the contract if it is uncertain that the milestone will be achieved. Rather, when it becomes probable that the milestone will be achieved and, therefore, there will not be a significant reversal of revenue in future periods, the respective amount to be earned is included in the transaction price, allocated to the distinct performance obligations based on their relative standalone selling price and recognized as revenue, as described above. Sales milestones and sales-based royalty payments related to a license of IP are recognized as revenue when the respective sales occur.

Stock-Based Compensation

We grant stock options to employees, non-employee directors and non-employee consultants as compensation for services performed. Employee and non-employee members of the Board of Directors' awards of stock-based compensation are accounted for in accordance with ASC 718, Compensation - Stock Compensation, or ASC 718. ASC 718 requires all share-based payments to employees and non-employee directors, including grants of stock options, to be recognized in the Statements of Comprehensive Loss based on their grant date fair values. The grant date fair value of stock options is estimated using the Black-Scholes option valuation model.

Using this model, fair value is calculated based on assumptions with respect to (i) the fair value or market price of our common stock on the grant date; (ii) expected volatility of our common stock price, (iii) the periods of time over which employees and non-employee directors are expected to hold their options prior to exercise (expected term), (iv) expected dividend yield on our common stock, and (v) risk-free interest rates.

Our common stock has been traded on a public exchange only since January 31, 2014. Since that time, exercises of stock options have been limited due to various factors, including fluctuations in our stock price to below the exercise prices of awards, blackout periods during which exercises are not allowed, among others. Therefore, we believe that as of December 31, 2018, we do not have sufficient company-specific information available to determine the expected term based on our historical data. As a result, the expected term of stock options granted to employees and members of our Board of Directors is determined using the average of the vesting period and term (6.25 years), an accepted method for our option grants under the SEC's Staff Accounting Bulletin No. 110, Share-Based Payment.

Similarly, because we do not have sufficient company-specific information available to calculate the volatility of our common stock during the periods of the expected term of stock option grants (as noted above), expected volatility is based on an analysis of guideline companies in accordance with ASC 718. Volatility calculated in this manner has been in the range of 83% - 93% and 75% - 85% during the years ended December 31, 2018 and 2017, respectively. The actual volatility of our common stock from January 31, 2014 to December 31, 2018 and 2017 was 75% and 79%, respectively. A higher volatility input to the Black-Scholes option valuation model increases the resulting compensation expense, while a shorter expected term would result in a lower compensation expense.

The expected dividend yield is zero as we have never paid dividends and do not currently anticipate paying any in the foreseeable future. Risk-free interest rates are based on quoted U.S. Treasury rates for securities with maturities approximating the option's expected term. For all share-based payments granted to employees and non-employees, compensation cost relating to awards with service-based graded vesting schedules is recognized using the straight-line method over the requisite service period.

On the grant date of each stock option award prior to January 1, 2017, we applied a forfeiture rate in order to accrue share-based compensation expense based on an estimate of the number of stock options that are expected to vest. Estimated forfeiture rates were based upon historical data of awards that were cancelled prior to vesting. We adjusted the total amount of compensation cost recognized for each award, in the period in which each award vested, to reflect the actual forfeitures related to that award. To the extent that the actual forfeiture rate for an award was lower than the estimated forfeiture rate, additional compensation expense was recorded in the period that the award vested. Changes in our estimated forfeiture rate resulted in changes in the rate at which compensation cost for an award was recognized over its vesting period. As of January 1, 2017, we adopted ASU 2016-09, Improvements to Employee Share-Based Payment Accounting, or ASU 2016-09. On the date of adoption of ASU 2016-09, we began to account for forfeitures of unvested stock options as they occur rather than estimate forfeiture rates that were applied to unvested stock option awards, as under the previous accounting guidance. Accordingly, on the date of adoption, we recorded a cumulative effect adjustment to stockholders' equity of $45 thousand for all stock option awards that were unvested as of that date.

We account for stock options issued to non-employee consultants under ASC 505, Equity-Based Payments to Non-Employees. As such, we estimate the fair value of each such option using the Black-Scholes model, with the expected term of stock options granted to non-employees initially equal to the options' maximum contractual life of ten years, at issuance, and then revalue the stock option on each reporting date until performance is complete. Under ASC 505-50, upon re-measurement of each award, income or expense is recognized during its vesting term.

On January 1, 2019, we will adopt ASU No. 2018-07, Compensation – Stock Compensation (Topic 718), Improvements to Non-employee Share-Based Payment Accounting, or ASU 2018-07, which expands the scope of ASC 718 to include share-based payment transactions for acquiring goods and services from non-employees. As a result, the fair value of all outstanding unvested stock options that had been granted to non-employees as of January 1, 2019 will be remeasured through a cumulative-effect adjustment to equity (see Note 2 of Notes to Financial Statements, Summary of Significant Accounting Policies, in this Annual Report on Form 10-K).

The assumptions used in computing the fair value of option awards reflect our best estimates but involve uncertainties related to market and other conditions, many of which are outside of our control. Changes in any of these assumptions may materially affect the fair value of stock options granted and the amount of stock-based compensation recognized in future periods.

Marketable Securities

We invest our excess cash in various types of securities, including money market funds, corporate bonds, commercial paper, municipal bonds and obligations of the U.S. government and U.S. government-sponsored entities. We deem certain of those investments to be marketable securities if the investment, or in the case of money market funds, the securities underlying the money market fund, meets the definition of a debt security in ASC section 320-10-20. We consider our marketable securities to be available-for-sale and, accordingly, these investments are recorded at fair value with unrealized gains and losses generally recorded in Accumulated other comprehensive income (loss) as a separate component of stockholders' equity. All available-for-sale marketable securities are reported in Marketable securities in the Balance Sheets.

We review each of our available-for-sale marketable securities for other-than-temporary impairment declines in fair value below its amortized cost basis each quarter and whenever events or changes in circumstances indicate that the cost basis of an asset may not be recoverable. This evaluation is based on a number of factors, including the length of time and the extent to which the fair value has been below its cost basis and adverse conditions related specifically to the security, including any changes to the credit rating of the security, and the intent to sell, or whether we will more likely than not be required to sell, the security before recovery of its amortized cost basis. Our assessment of whether a security is other-than-temporarily impaired could change in the future due to new developments or changes in assumptions related to any particular security.

If a decline in the fair value of an available-for-sale marketable debt security in our investment portfolio is deemed to be other-than-temporary, we write down the security to its current fair value. If we intend to sell the security or it is more likely than not that we will be forced to sell the security before recovery of the amortized cost of the security, the loss is recognized in net income. Otherwise, the loss is separated into a portion representing a credit loss, which is recorded in net income, and the remainder is recorded in Other Comprehensive Income (Loss), net of taxes. Credit losses are identified where we do not expect to receive cash flows sufficient to recover the amortized cost basis of a security.

Fair Value of Financial Instruments

We apply fair value accounting for all financial assets and liabilities that are recognized or disclosed at fair value in the financial statements on a recurring basis. We define fair value as the price that would be received from selling an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. When determining the fair value measurements for assets and liabilities which are required to be recorded at fair value, we consider the principal or most advantageous market in which it would transact and the market-based risk measurements or assumptions that market participants would use in pricing the asset or liability, such as risks inherent in valuation techniques, transfer restrictions and credit risks.

Our financial instruments consist of cash, cash equivalents, available-for-sale marketable securities, prepaid expenses, restricted cash, accounts payable and accrued liabilities. The fair values of cash and cash equivalents, restricted cash, accounts payable and accrued liabilities approximate their carrying values due to the short-term nature of these financial instruments. Marketable securities are reported at their fair values, based upon pricing of securities with the same or similar investment characteristics as provided by pricing services, as described below.

In accordance with the accounting standard for fair value measurements, we have classified our financial instruments as level 1 or level 2 within the fair value hierarchy that is intended to increase consistency and comparability in fair value measurements and related disclosures. Fair values determined by Level 1 inputs utilize quoted prices in active markets for identical assets and liabilities. Fair values determined by Level 2 inputs use observable inputs other than the quoted prices in active markets for identical assets and liabilities – such as quoted prices for similar instruments, quoted prices for identical or similar instruments in inactive markets, or other inputs that are observable or can be corroborated by observable market data. We did not have any financial instruments classified as Level 3 during the years ended December 31, 2018, 2017 or 2016.

We estimate the fair values of our financial instruments categorized as level 2 in the fair value hierarchy, including U.S. Treasury securities, U.S. government agency obligations, corporate bonds, municipal bonds and commercial paper by taking into consideration valuations obtained from third-party pricing services. The pricing services use industry standard valuation models, including both income- and market-based approaches, for which all significant inputs are observable, either directly or indirectly, to estimate fair value. These inputs include reported trades of and broker/dealer quotes on the same or similar securities, benchmark yields, issuer credit spreads, benchmark securities, and other observable inputs. We obtain a single price for each financial instrument and do not adjust the prices obtained from the pricing service.

We validate the prices provided by our third-party pricing services by reviewing their pricing methods, obtaining market values from other pricing sources and comparing them to the share prices presented by the pricing service. After completing our validation procedures, we did not adjust or override any fair value measurements provided by our pricing services as of December 31, 2018 or 2017. While we believe that the valuation methodologies are appropriate, the use of valuation methodologies is highly judgmental and changes in methodologies can have a material impact on our results of operations.

R&D Expenses

Our R&D expenses relate primarily to the development of CR845/difelikefalin. R&D expenses consist of expenses incurred in performing R&D activities, including compensation and benefits for full-time R&D employees, clinical trial and related clinical manufacturing expenses, third-party formulation expenses, fees paid to CROs and other consultants, stock-based compensation for R&D employees and consultants and other outside expenses. Some expenses are based on estimates regarding the percentage of completion of a project. Our R&D expenses also included expenses related to preclinical activities for our earlier stage programs in prior periods and may include such expenses in the future.

R&D costs are expensed as incurred. Non-refundable advance payments for goods or services to be received in the future for use in R&D activities are deferred and capitalized. The capitalized amounts are expensed as the related goods are delivered or the services are performed. Most of our R&D costs have been external costs, which we track on a program-by program basis. Our internal R&D costs are primarily compensation expenses for our full-time R&D employees. We do not track internal R&D costs on a program-by-program basis.

Accounting Pronouncements Recently Adopted; Recent Accounting Pronouncements Not Yet Adopted

Please refer to Note 2 of Notes to Financial Statements, Summary of Significant Accounting Policies, in this Annual Report on Form 10-K.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

Interest Rate Risk

We invest a majority of our cash reserves in a variety of available-for-sale marketable securities, including money market funds and investment-grade debt instruments, principally corporate bonds, commercial paper, municipal bonds and direct obligations of the U.S. government and U.S. government-sponsored entities, and in cash equivalents. See Note 3 of Notes to Financial Statements, Available-for-Sale Marketable Securities, in this Annual Report on Form 10-K for details about our available-for-sale marketable securities.

As of December 31, 2018, we had invested $167.7 million of our cash reserves in such marketable securities. Those marketable securities include $167.7 million of investment grade debt instruments with a yield of approximately 2.64% and maturities through November 2020. As of December 31, 2017, we have invested $83.2 million of our cash reserves in such marketable securities. Those marketable securities include $43.2 million of investment grade debt instruments with a yield of approximately 1.70% and maturities through July 2018 and $40.0 million of money market funds with an average annual return of 1.32%.

We maintain an investment portfolio in accordance with our investment policy, which includes guidelines on acceptable investment securities, minimum credit quality, maturity parameters, and concentration and diversification. The primary objectives of our investment policy are to preserve principal, maintain proper liquidity and to meet operating needs. Our investments are subject to interest rate risk and will decrease in value if market interest rates increase. However, due to the conservative nature of our investments and relatively short duration, interest rate risk is mitigated.

Duration is a sensitivity measure that can be used to approximate the change in the fair value of a security that will result from a change in interest rates. Applying the duration model, a hypothetical 1% increase in interest rates as of December 31, 2018 and 2017, would have resulted in immaterial decreases in the fair values of our portfolio of marketable securities at those dates. We do not currently use interest rate derivative instruments to manage exposure to interest rate changes.

Credit Quality Risk

Although our investments are subject to credit risk, our investment policy specifies credit quality standards for our investments and limits the amount of credit exposure from any single issue, issuer or type of investment. Nonetheless, deterioration of the credit quality of an investment security subsequent to purchase may subject us to the risk of not being able to recover the full principal value of the security.

Item 8. Financial Statements and Supplementary Data.

The information required by this Item 8 of Part II is incorporated by reference to the Financial Statements filed with this Annual Report on Form 10-K. See Item 15. Exhibits, Financial Statement Schedules in this Annual Report on Form 10-K.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.

None.

Item 9A. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, has evaluated the effectiveness of our disclosure controls and procedures (as such term is defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) as of December 31, 2018. Based on such evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that, as of December 31, 2018, our disclosure controls and procedures were effective to provide reasonable assurance that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is (1) recorded, processed, summarized, and reported within the time periods specified in the rules and forms of the SEC, and (2) accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate to allow timely decisions regarding required disclosures.

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act. Our internal control over financial reporting is a process designed 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. Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Our management utilized the criteria established in the Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) to conduct an assessment of the effectiveness of our internal control over financial reporting as of December 31, 2018. Based on the assessment, management has concluded that, as of December 31, 2018, our internal control over financial reporting was effective.

This Annual Report on Form 10-K does not include an audit or attestation report from our registered public accounting firm regarding our internal control over financial reporting. Our management's report was not subject to audit or attestation by our registered public accounting firm pursuant to rules of the SEC that permit us to provide only management's report in this annual report for so long as we remain an "emerging growth company" under the Jumpstart Our Business Startups Act.

Changes in Internal Control Over Financial Reporting

There was no change in our internal control over financial reporting identified in connection with the evaluation required by Rule 13a-15(f) and 15d-15(f) of the Exchange Act that occurred during the quarter ended December 31, 2018 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Limitations on Controls and Procedures

Management, including our Chief Executive Officer and Chief Financial Officer, recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost benefit relationship of possible controls and procedures. Because of the inherent limitations in all control systems, no evaluation of controls and procedures can provide absolute assurance that all control issues and instances of fraud, if any, within Cara have been detected.

Item 9B. Other Information.

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

The following table sets forth information concerning our executive officers as of March 1, 2019.

Name	Age	Position(s)
Derek Chalmers, Ph.D., D.Sc.	54	President, Chief Executive Officer and Director
Mani Mohindru, Ph.D.	47	Chief Financial Officer and Chief Strategy Officer
Frédérique Menzaghi, Ph.D.	52	Chief Scientific Officer and Senior Vice President, R&D
Joana Goncalves, M.D.	45	Chief Medical Officer
Scott Terrillion	56	General Counsel, Secretary and Chief Compliance Officer

Derek Chalmers, Ph.D., D.Sc. Dr. Chalmers, one of our founders, has served as our President and Chief Executive Officer since September 2004 and has served as a member of our Board of Directors since July 2004. Dr. Chalmers has over 25 years' experience in the biotechnology industry with increasing levels of corporate and business responsibilities. Prior to founding Cara, Dr. Chalmers co-founded Arena Pharmaceuticals, Inc. (Nasdaq: ARNA), a drug discovery and development company, and served as its Vice President and Executive Director from June 1997 until May 2004. Dr. Chalmers holds a D.Sc. and Ph.D. in Pharmacology from the University of Glasgow.
Dr. Chalmers' qualifications to sit on our Board of Directors include his leadership, executive, managerial and business experience, historical knowledge of our company and his background and experience in the biotechnology industry, including having been a founder of a prior biotechnology company.

Mani Mohindru, Ph.D. Dr. Mohindru has served as our Chief Financial Officer and Chief Strategy Officer since August 2017. Prior to joining Cara, Dr. Mohindru served as Senior Vice President and Chief Strategy Officer at Curis, Inc., a biotechnology company, from March 2016 to July 2017. From April 2015 to February 2016, Dr. Mohindru served as Senior Vice President of Corporate Strategy and Investor Relations and from June 2013 to March 2015, Dr. Mohindru served as Vice President of Corporate Strategy and Investor Relations, each at Curis, Inc. From October 2012 to March 2016, Dr. Mohindru was the co-founder of ImmTox, Inc., a biotechnology company. From June 2011 to September 2012, Dr. Mohindru was a Senior Biotechnology Analyst at ThinkEquity, LLC, a research and investment banking firm. Previously, from June 2009 to May 2011, Dr. Mohindru was a Partner at Axon Healthcare Company, a strategic pharmaceutical and biotechnology consultancy firm that she co-founded. Dr. Mohindru was also a Managing Director at Capstone Investments in its investment banking division, a Vice President at Credit Suisse, and an Associate Research Analyst at global financial services firm, UBS. Dr. Mohindru completed her Ph.D. in Neurosciences at Northwestern University and she received both her B.S. in Human Biology and Masters in Biotechnology from the All India Institute of Medical Sciences, New Delhi, India.

Frédérique Menzaghi, Ph.D. Dr. Menzaghi, one of our founders, has led our preclinical research and pruritic clinical program since 2004. Since 2017, she has served as our Senior Vice President, Research and Development and was promoted to Chief Scientific Officer on March 6, 2019. Dr. Menzaghi has over 25 years of drug development and management experience in biotechnology in the field of ion channels and G protein-coupled receptors. Her expertise ranges from exploratory non-clinical research through clinical development. From 2003 to 2004, she served as Vice

President, Pharmacology and Business Development at Psychogenics Inc., a preclinical contract research organization. From 1999 to 2003, she was the Research Director of In Vivo Pharmacology at Arena Pharmaceuticals, Inc. (Nasdaq: ARNA), leading a multidisciplinary research team. Prior to that, Dr. Menzaghi established and directed a preclinical research laboratory at SIBIA Neurosciences (acquired by Merck). Her research expertise ranged from the development of small molecules to small peptides. She has extensive experience with corporate partnering with large U.S. and Asian pharmaceutical companies including Eli Lilly, Merck and J&J. Dr. Menzaghi received her Ph.D. in Neurosciences from the University of Louis Pasteur, Strasbourg, France and her M.Sc. in clinical psychology from the University of Nancy, France, after which she conducted her post-doctoral research at the Scripps Research Institute, San Diego, California. She has over 55 peer-reviewed publications and book chapters, 100 international meeting presentations and is listed as an inventor on numerous patents.

Joana Goncalves, M.D. Dr. Goncalves has served as our Chief Medical Officer since October 2018. Prior to joining Cara, Dr. Goncalves worked at Celgene Corporation from April 2014 to October 2018, where she most recently served as Vice President, Medical Affairs for Dermatology and Neurology and was instrumental in planning and executing medical support activities for a number of programs, including OTEZLA® for psoriasis. Previously, Dr. Goncalves held the position of Vice President, Medical Strategy and Scientific Affairs at LEO Pharma Inc., the U.S. subsidiary of LEO Pharma A/S, a global healthcare company specializing in dermatology and critical care, from February 2012 to April 2014. She began her pharmaceutical career at Novartis Pharmaceuticals, working on a range of products across various therapeutic areas from 2001 to 2012. Dr. Goncalves received her M.D. from the University of Cape Town, South Africa.

Scott M. Terrillion. Mr. Terrillion has served as our General Counsel, Secretary and Chief Compliance Officer since November 2016. Mr. Terrillion brings over 20 years of diverse pharmaceutical industry experience from varying legal and business roles in the public, private and not-for-profit sectors. Mr. Terrillion spent 15 years at Boehringer Ingelheim Pharmaceuticals, Inc., a research-driven pharmaceutical company, where he served as Vice President, Associate General Counsel. At Boehringer, Mr. Terrillion built and led the legal team supporting the global company's U.S. human pharmaceutical business during a period of rapid, industry-leading growth. Mr. Terrillion also spent two years at Mesoblast, Inc., a publicly traded emerging biotech, as the company's Vice President, Associate General Counsel and Head of Compliance. Mr. Terrillion began his legal career at Nixon, Hargrave, Devans & Doyle (now Nixon Peabody LLP), a large general practice law firm, where he was an associate in the Health Care and Technology/Intellectual Property Practice groups. A licensed pharmacist, Mr. Terrillion began his professional career as a community pharmacist and later served as Director of Pharmacy for Preferred Care, Inc., an HMO insurance provider. Mr. Terrillion received his B.S. in Pharmacy from the Albany College of Pharmacy and Health Sciences, where he serves on the Board of Trustees, and a Juris Doctor, magna cum laude, from Albany Law School. He is a member of the New York bar and authorized house counsel in Connecticut.

The following table sets forth certain information with respect to our non-employee directors as of March 1, 2019:

Name	Age	Position
Martin Vogelbaum	55	Director
Harrison M. Bains, Jr.	75	Director
Jeffrey Ives, Ph.D.	68	Director
Christopher Posner	49	Director

Martin Vogelbaum. Mr. Vogelbaum has served as a member of our Board of Directors since July 2010. He currently serves as Managing Partner of Inning One Ventures, a life science venture capital fund. Previously, Mr. Vogelbaum served as Corporate Vice President, Business Development at Celgene Corporation from 2015 to 2017.
Mr. Vogelbaum served as a partner of Rho Ventures from 2005 until 2015 and again from 2017 to 2018, where he focused on investments in biotechnology, biopharmaceuticals and medical devices. He has more than 25 years of experience investing in the life sciences sector, having been involved with companies at all stages of development, including co-founding more than a half dozen companies. Prior to his venture capital career, he was a research associate in the bone marrow transplantation unit at Memorial-Sloan Kettering Hospital, where he conducted research in graft-versus-host-disease. Mr. Vogelbaum previously served as a director of Inotek Pharmaceuticals Corporation

(Nasdaq: ITEK) from 2010 to 2016 and NephroGenex, Inc. (Nasdaq: NRX) from 2013 to 2014. He currently serves on the Healthcare Advisory Board for the Partnership Fund for New York City as well as the Scientific Advisory Committee for Weill Cornell Medical College's Daedalus Fund for Innovation. Mr. Vogelbaum received his A.B. in biology and history from Columbia University. Mr. Vogelbaum's experience in the life sciences industry as a venture capitalist provides him with the qualifications and skills to serve on our Board of Directors.

Harrison M. Bains, Jr. Mr. Bains has served as a member of our Board of Directors since July 2014. Mr. Bains served in multiple roles at Bristol Myers Squibb Company, including Vice President, Treasurer and acting Chief Financial Officer from 1988 through his retirement in 2004. Mr. Bains's career also includes serving as Senior Vice President of the Primary Industries group at Chase Manhattan Bank and 11 years with RJR Nabisco and two of its predecessor companies as Senior Vice President and Treasurer. He currently serves as a director and chair of the Audit Committee of the Mercer Funds, Inc., a registered investment company. He has served as a member of the board of trustees of the Park Avenue Armory since October 2007 and the Civil War Trust since September 2007, and previously served as a member of the board of trustees of the University of Redlands from October 1989 to May 2013, as a member of the board of directors of BG Medicine, Inc. from 2007 to 2015, and as a member of the Board of Directors of Bank of America Funds from 2010 to 2016. Mr. Bains earned an M.B.A from the University of California, Berkeley and a B.A. in economics from the University of Redlands. He also completed the Advanced Management Program at Harvard Business School. His extensive experience in the biotechnology industry provides him with the qualifications to serve on our Board of Directors.

Jeffrey L. Ives, Ph.D. Dr. Ives has served as a member of our Board of Directors since July 2014. Dr. Ives currently is a Venture Partner at New Leaf Venture Partners, healthcare technology venture firm, and a Principal at NeuroPharma Advisors, LLC., an advisory group focused on companies developing therapeutics for the CNS. Dr. Ives is also currently a director at private pharmaceutical and biotechnology companies, Astrocyte Pharmaceuticals Inc., Acumen Pharmaceuticals, Inc., Pinteon Therapeutics Inc. and Orthogonal Neurosciences, private. Previously, Dr. Ives served as the Chief Executive Officer of Satori Pharmaceuticals, Inc., a neurodegenerative disease company focused on discovery and development of breakthrough therapies for the treatment and prevention of Alzheimer's disease from 2008 until 2013. Prior to Satori, Dr. Ives led the CNS, pain and oncology research teams at Pfizer for over two decades and, from 2001 to 2007, he served as a Senior Vice President leading the global Pharmacokinetics, Dynamics and Metabolism organization. Dr. Ives received his doctorate and master degrees from Yale University and received his bachelor of arts degree from Colgate University. His extensive experience leading research and drug development provides him with the qualifications to serve on our Board of Directors.

Christopher Posner. Mr. Posner has served as a member of our Board of Directors since August 2018. Mr. Posner has broad experience in commercial and marketing operations and product management at both large and specialty pharmaceutical companies, where he has focused on products for autoimmune, inflammatory and pain conditions, including Xeljanz® and Enbrel®. Since July 2017, he has been the Chief Executive Officer of LEO Pharma, Inc. US, a subsidiary of LEO Pharma A/S, a global healthcare company specializing in dermatology and critical care, including such conditions as psoriasis and atopic dermatitis. Prior to joining LEO, he was the Head of Worldwide Commercial Operations at R-Pharma-US, LLC, a specialty pharmaceutical company focused on oncology and chronic immune disorders, from 2014 until 2017. Previously, Mr. Posner held a variety of senior management positions in commercial and marketing operations at Bristol-Myers Squibb Company, Pfizer Inc., Wyeth Pharmaceuticals, Inc. and Endo Pharmaceuticals plc. Mr. Posner holds an M.B.A. from Fuqua School of Business, Duke University and a B.A. in Economics from Villanova University. Mr. Posner's extensive experience in the pharmaceutical industry, including in commercial and marketing operations, provides him with the qualifications to serve on our Board of Directors.

Audit Committee

The Audit Committee of the Board of Directors was established by the Board in accordance with Section 3(a)(58)(A) of the Exchange Act, to oversee our corporate accounting and financial reporting processes and audits of our financial statements. For this purpose, the Audit Committee performs several functions. The Audit Committee evaluates the performance of and assesses the qualifications of the independent auditors; determines and approves the engagement of the independent auditors; determines whether to retain or terminate the existing independent auditors or to appoint and engage new independent auditors; reviews and approves the retention of the independent auditors to perform any proposed permissible non-audit services; monitors the rotation of partners of the independent auditors on our audit engagement team as required by law; reviews and approves or rejects transactions between us and any related persons; confers with management and the independent auditors regarding the effectiveness of internal controls over financial reporting, the objectivity of our financial reporting and our accounting policies and practices; establishes procedures, as required under applicable law, for the receipt, retention and treatment of complaints received by us regarding accounting, internal accounting controls or auditing matters and the confidential and anonymous submission by employees of concerns regarding questionable accounting or auditing matters; and meets to review our annual audited financial statements and quarterly financial statements with management and the independent auditor, including a review of our disclosures under “Management’s Discussion and Analysis of Financial Condition and Results of Operations.”

The Audit Committee is composed of three directors: Mr. Vogelbaum, Mr. Bains and Mr. Posner. In 2018, Dr. Ives also served on the Audit Committee from January through August. Upon joining our Board of Directors in August 2018, Mr. Posner was appointed and replaced Dr. Ives as a member of the Audit Committee. The Audit Committee met four times during the fiscal year ended December 31, 2018.

The Board of Directors reviews the Nasdaq listing standards definition of independence for Audit Committee members on an annual basis and has determined that all members of our Audit Committee are independent, as defined in Rule 5605(c)(2)(A)(i) and (ii) of the Nasdaq listing standards and Rule 10A-3 of the Exchange Act, and that each such member meets the financial literacy requirements of Nasdaq.

The Board of Directors has also determined that Mr. Bains qualifies as an "audit committee financial expert," as defined in applicable SEC rules. The Board made a qualitative assessment of Mr. Bains's level of knowledge and experience based on a number of factors, including his formal education and experience as acting chief financial officer for a public reporting company.

Code of Ethics and Business Conduct

Our Board of Directors has adopted a Code of Business Conduct and Ethics that applies to all officers, directors and employees. The Code of Business Conduct and Ethics is available on our website at www.caratherapeutics.com in the News & Investors section under Corporate Governance. If we make any substantive amendments to the Code of Business Conduct and Ethics or grant any waiver from a provision of the Code to any executive officer or director, we will promptly disclose the nature of the amendment or waiver on our website.

Section 16(a) Beneficial Ownership Reporting Compliance

Section 16(a) of the Exchange Act requires our directors and executive officers, and persons who own more than ten percent of a registered class of our equity securities, to file with the SEC initial reports of ownership and reports of changes in ownership of our common stock and other equity securities. Officers, directors and greater than ten percent stockholders are required by SEC regulation to furnish us with copies of all Section 16(a) forms they file.

To our knowledge, based solely on a review of the copies of such reports furnished to us and written representations that no other reports were required, during the fiscal year ended December 31, 2018, all Section 16(a) filing requirements applicable to our officers, directors and greater than ten percent beneficial owners were complied with.

Item 11. Executive Compensation.

Cara is an "emerging growth company," as defined in Section 101(a)(19)(C) of the JOBS Act. As an emerging growth company, under SEC rules, we are not required to include a Compensation Discussion and Analysis section in this Item 11 and have elected to comply with reduced compensation disclosure requirements, as permitted under the JOBS Act.

2018 Summary Compensation Table

The following table shows for the fiscal years ended December 31, 2018, 2017 and 2016, compensation awarded to or paid to, or earned by, our Chief Executive Officer, our two other most highly compensated executive officers at December 31, 2018 and our former Chief Medical Officer. We refer to these individuals as our Named Executive Officers.

Name and Principal Position	Year	Salary	Bonus [1]	Stock Awards [2]	Option Awards [3]	Non-Equity Incentive Plan Compensation	All Other Compensation [4]	Total Compensation [5]
Derek Chalmers, Ph.D., D.Sc. [6]	2018	$542,100	$—	$ —	$1,997,623	$ 238,524	$ 10,799	$ 2,789,046
President and Chief Executive Officer	2017	526,300	—	—	2,753,848	233,400	8,100	$ 3,521,648
	2016	511,000	—	—	736,837	204,400	7,950	1,460,187
Joana Goncalves, M.D. [7]	2018	82,639	60,000	—	3,560,536	32,603	413	3,736,191
Chief Medical Officer								
Frédérique Menzaghi, Ph.D.	2018	400,000	—	—	615,428	212,000	10,799	1,238,227
Chief Scientific Officer and Senior Vice President, R&D	2017	379,935	—	—	917,949	200,000	8,100	1,505,984
	2016	357,000	—	—	246,878	168,682	7,950	780,510
Joseph Stauffer, D.O. [8]	2018	368,900	141,895	—	615,428	—	567,627	1,693,850
Former Chief Medical Officer	2017	426,000	—	—	917,949	170,400	8,875	1,523,224
	2016	414,000	—	—	250,676	223,560	8,199	896,435

(1) The amount disclosed in this column represent a one-time bonus, payable on the first regularly scheduled payroll date following the executive officer's start date.

(2) In accordance with SEC rules, these amounts reflect the grant date fair values of the restricted stock units, or RSUs, granted to each of Drs. Chalmers, Menzaghi and Stauffer in 2018, calculated in accordance with ASC Topic 718 for stock-based compensation transactions, based on the probable outcome of the vesting conditions of these RSUs as of the grant date. Each RSU represented the contingent right to receive one share of our common stock upon the achievement of certain performance targets through the first quarter of 2019, subject to the recipient's continuous service through the vesting events. As of the grant date, the performance vesting condition was considered not probable of occurring and, as a result, the grant date fair value of the RSUs, for purposes of this table, is $0. Assuming that the performance vesting condition of these RSUs was met as of the grant date, the value of these

RSUs would have been $772,446 for Dr. Chalmers and $238,054 for each of Drs. Menzaghi and Stauffer. The performance vesting condition for these RSUs was met in December 2018, and the actual value of these RSUs upon vesting in full was $495,344 for Dr. Chalmers and $152,656 for each of Drs. Menzaghi and Stauffer. See Note 13 to our financial statements included in this Annual Report on Form 10-K for a further description of our valuation methodology for equity awards.

(3) The amounts disclosed in this column are the fair value on the grant date of each award granted under our 2014 Plan, computed in accordance with ASC 718, using the valuation methodology for equity awards set forth in Note 13 of our financial statements included in this Annual Report on Form 10-K. All of the options awards reported in the table above were granted under our 2014 Plan and have a term of ten years from the date of grant. Stock options granted to officers and employees in 2018, 2017 and 2016, who had previously been granted stock options, vest monthly over a four-year period from the grant date. The initial grant of stock options to officers and employees vests 25% after the first year and ratably thereafter during the following 36 months.

(4) The amounts disclosed in this column represent the annual cash incentive bonus earned by the named executive officer for services performed in 2018, 2017 and 2016. The 2018 annual incentive bonus will be paid in March 2019. The 2017 annual incentive bonus was paid in February 2018. The 2016 annual incentive bonus was paid in March 2017. The annual cash incentive bonus for each executive officer is based on the Board's assessment of each such officer's individual performance and our overall performance against objectives determined by our Board and communicated to such officer. For the fiscal years ended December 31, 2018, 2017 and 2016, the annual cash incentive bonuses were based on our achievement of clinical, regulatory, financial and operational objectives. See "—Executive Employment Arrangements and Potential Payments upon Termination or Change in Control" below for additional information regarding assigned bonus targets, expressed as a percentage of each executive officer's base salary.

(5) All other compensation for 2017 and 2016 includes $8,100 and $7,950, respectively, for 401(k) Employee Benefit Plan contributions we made to the account of each of Drs. Chalmers, Menzaghi and Stauffer under the ERISA Safe Harbor Rules, representing the same percentage of salary as contributed to all employee accounts, up to a maximum amount of salary. For 2017 and 2016, all other compensation also includes $775 and $249 for tax gross-ups for Dr. Stauffer related to hotel accomodations close to our headquarters for 2017 and 2016. For our named executive officers other than Dr. Stauffer, this column also includes the following for 2018: (i) $8,250 for 401(k) Employee Benefit Plan contributions we made to the account of each of Drs. Chalmers and Menzaghi under the ERISA Safe Harbor Rules; (ii) $1,800 for parking for each of Dr. Chalmers and Dr. Menzaghi; (iii) $300 for parking for Dr. Goncalves; (iv) $749 for life insurance payments for each of Dr. Chalmers and Dr. Menzaghi; and (v) $113 for life insurance payments for Dr. Goncalves.

(6) Dr. Chalmers is also a member of our Board of Directors but does not receive any additional compensation in his capacity as a director.

(7) Dr. Goncalves joined Cara on October 22, 2018. For the year ended December 31, 2018, the amounts reported as salary and non-equity incentive plan compensation, represents Dr. Goncalves's base salary paid from October 22, 2018 to December 31, 2018 and her prorated annual cash incentive bonus.

(8) Dr. Stauffer served as our Chief Medical Officer until October 22, 2018 (the "Separation Date"). Salary reported for Dr. Stauffer for 2018 represents his salary earned through the Separation Date. Bonus reported for Dr. Stauffer for 2018 represents the prorated amount of his 2018 target bonus, which was payable pursuant to the Separation and Consulting Agreement we entered into with Dr. Stauffer as of the Separation Date. All other compensation for Dr. Stauffer for 2018 includes: (i) the intrinsic value of stock options for which vesting was accelerated to the Separation Date in the amount of $465,432; (ii) $85,000 of consulting fees payable to Dr. Stauffer for services provided to us from the Separation Date through December 31, 2018; (iii) $5,968 of COBRA insurance premium reimbursements; (iv) $8,250 for 401(k) Employee Benefit Plan contributions we made to the account of Dr. Stauffer under the ERISA Safe Harbor Rules; (v) $1,500 for parking; (vi) $624 for life insurance payments and (vii) $853 for tax gross-ups for Dr. Stauffer related to hotel accommodations close to our headquarters for 2018.

Outstanding Equity Awards at December 31, 2018

The following table shows certain information regarding outstanding equity awards held by our Named Executive Officers at December 31, 2018.

Name	Number of Securities Underlying Unexercised Options Exercisable	Number of Securities Underlying Unexercised Options Unexercisable		Option Exercise Price	Option Expiration Date
Derek Chalmers, Ph.D., D.Sc.	80,000	—	(1)	$ 11.00	1/30/2024
President and Chief Executive Officer	158,125	6,875	(2)	10.82	6/15/2025
	130,375	60,625	(2)	6.00	3/30/2026
	98,437	126,563	(2)	17.41	3/8/2027
	35,156	152,344	(2)	14.39	3/9/2028
Joana Goncalves, M.D.	—	250,000	(1)	19.27	10/22/2028
Chief Medical Officer					
Frédérique Menzaghi, Ph.D.					
Chief Scientific Officer and Senior Vice President, R&D	40,000	—	(1)	11.00	1/30/2024
	57,500	2,500	(2)	10.82	6/15/2025
	44,687	20,313	(2)	6.00	3/30/2026
	32,812	42,188	(2)	17.41	3/8/2027
	10,828	46,922	(2)	14.39	3/9/2028
Joseph Stauffer, D.O.	180,000	—		8.74	12/1/2024(4)
Former Chief Medical Officer	66,000	—		6.00	3/30/2026(4)
	64,008	10,992	(3)	17.41	3/8/2027(4)
	10,827	46,923	(3)	14.39	3/9/2028(4)

(1) Shares underlying these stock options vest over a four-year period as follows: 25% of the shares underlying the option vest on the first anniversary of the date of grant, with the remainder vesting in equal monthly installments over the 36 months thereafter.

(2) Shares underlying these stock options vest monthly over a four-year period from the grant date.

(3) The exercisable shares give effect to the acceleration of vesting of certain stock options in connection with Dr. Stauffer's separation as our Chief Medical Officer during 2018. The remaining unvested shares underlying these options continue vesting during the term of Dr. Stauffer's consulting agreement with us, which we expect will end on July 22, 2019, in accordance with the original vesting terms of the award, with 1/48th of the total shares subject

to each grant vesting on a monthly basis through the termination of Dr. Stauffer's consulting term. See "--Executive Employment Arrangements and Potential Payments upon Termination or Change in Control—Separation With Dr. Stauffer."

(4) Based on the term of Dr. Stauffer's consulting agreement, it is expected that these awards will expire on October 22, 2019, three months after the expected conclusion of his consulting term, if not previously exercised.

Executive Employment Arrangements and Potential Payments upon Termination or Change in Control

We have entered into employment agreements with each of Drs. Chalmers, Goncalves and Menzaghi. Under these employment agreements, the executive officers' respective initial annual salaries and target annual bonuses are subject to review and adjustment from time to time by the Board of Directors in its sole discretion.

For the year ended December 31, 2018, our Named Executive Officers' respective annual salaries and target annual bonuses were:

Executive Officer	2018 Base Salary	Target Bonus (as a % of Base Salary)
Dr. Chalmers	$ 542,100	55%
Dr. Goncalves	425,000	40%
Dr. Menzaghi	400,000	40%
Dr. Stauffer	439,200	40%

Under these employment agreements, each executive officer is eligible for severance benefits in specified circumstances. Under the terms of the agreements, upon execution and effectiveness of a general release of claims, each executive officer will be entitled to severance payments if we terminate his or her employment without cause, or in the case of Dr. Chalmers, the employee terminates employment with us for good reason. The following definitions have been adopted in these employment agreements:

- "cause" means that we have determined in our sole discretion that any of the following occurred: (a) the executive officer's commission of a felony; (b) the executive officer's act or omission constituting dishonesty, fraud, immoral, or disreputable conduct that causes material harm to us; (c) the executive officer's violation of a company policy that causes material harm to us; (d) the executive officer's material breach of the employment agreement, or of any provision of any other agreement between the executive officer and us which, if curable, is not cured within 30 days after notice thereof is given to the executive officer, or (e) the executive officer's breach of fiduciary duty;
- "good reason" means any of the following without the executive officer's prior written consent: (a) the assignment to the executive officer of duties or responsibilities that would result in the material diminution of the executive officer's then-current position, with the exception of certain situations involving the acquisition of us; (b) a reduction of the executive officer's annual base salary by greater than 30%, except in a situation in which the base salaries of other similarly situated employees are accordingly reduced; or (c) any request that the executive officer relocate to a new principal base of operations that would increase the executive officer's one-way commute distance by more than 100 miles, unless the executive officer accepts the relocation opportunity.
- "change in control" means any of the following: (a) any person becomes the owner, directly or indirectly, of securities representing more than 50% of our combined voting power other than through a merger, consolidation or similar transaction, subject to specified exceptions; (b) a merger or consolidation, unless the holders of our outstanding voting stock immediately prior to such transaction own, immediately after such transaction, securities representing more than 50% of our voting power or other entity surviving such transaction, subject to specified exceptions; (c) a sale, lease, exclusive license or other disposition of all or substantially all of our assets, other than the transfer of our assets to an entity of which our stockholders own more than 50% of the voting power, subject to specified

exceptions; or (d) the directors at the time of our initial public offering, or the incumbent board, cease to constitute at least a majority of the Board of Directors, provided, that new directors that are approved or recommended by the majority of the incumbent board will be considered to be a member of the incumbent board for this purpose.

The following table summarizes the schedule of severance payments and acceleration of unvested equity awards our Named Executive Officers would receive in the event of a qualifying termination:

Scenario and Executive	Salary [1]	Payment of Employer Health Insurance Continuation [1]	Bonus [1]	Acceleration of Unvested Equity Awards
Other Than Within 12 Months Following a Change in Control:				
Dr. Chalmers	12 months	12 months	Prorated Target Bonus	None
Dr. Goncalves	9 months	9 months	50% of Target Bonus	None
Dr. Menzaghi	6 months	6 months	Prorated Target Bonus	None
Within 12 Months Following a Change in Control:				
Dr. Chalmers	12 months	12 months	Prorated Target Bonus	100% Acceleration [2]
Dr. Goncalves	9 months	9 months	50% of Target Bonus	50%-100% Acceleration [3]
Dr. Menzaghi	6 months	6 months	Prorated Target Bonus	100% Acceleration [2]

(1) Subject to the execution of a general release by the relevant executive officer, on the 60th day following termination without cause or, in the case of Dr. Chalmers, resignation for good reason, we will pay such payments relating to base salary, target bonus and health insurance premiums in a lump sum that this executive officer would have received on or prior to such date under the original schedule (less applicable withholdings and deductions), with the balance of such payments being paid as originally scheduled.
(2) The executive officer will receive accelerated vesting of 100% of his or her then unvested equity awards, if any, upon a qualifying termination that occurs within 12 months of the change in control.
(3) The executive officer will receive accelerated vesting of (a) 50% of her then unvested equity awards, if any, upon a qualifying termination that occurs within six months following the change in control and (b) 100% of her then unvested equity awards, if any, upon a qualifying termination that occurs between six and twelve months of the change in control.

Separation With Dr. Stauffer

We entered into a Separation and Consulting Agreement with Dr. Stauffer, effective October 22, 2018, in connection with his separation as Chief Medical Officer. Pursuant to the terms of our separation with Dr. Stauffer, he received a prorated target bonus for 2018 and accelerated vesting of 63,446 stock options (representing 50% of his outstanding unvested stock options as of October 22, 2018). We also engaged Dr. Stauffer as a consultant for a nine-month period, during which he is providing consulting services related to our programs in postoperative pain and PONV in return for a consulting fee of $36,600 per month. Pursuant to our separation agreement with Dr. Stauffer, we also agreed to reimburse COBRA insurance premium payments made by Dr. Stauffer for up to nine months.

2014 Equity Incentive Plan

Our Board of Directors and our stockholders approved and adopted our 2014 Equity Incentive Plan, or the 2014 Plan, in January 2014. The 2014 Plan provides for the grant of incentive stock options, non-statutory stock options, restricted stock awards, restricted stock unit awards, stock appreciation rights, performance stock awards and other forms of equity compensation, or collectively, stock awards. Additionally, the 2014 Plan provides for the grant of performance cash awards. Incentive stock options may be granted only to employees. All other awards may be granted to employees, including officers, non-employee directors and consultants.

Initially, the aggregate number of shares of our common stock that may be issued pursuant to stock awards under the 2014 Plan was 1,600,000 shares. Additionally, the number of shares of our common stock reserved for issuance under the 2014 Plan has automatically increased on January 1 of each year, beginning on January 1, 2015 and continuing through and including January 1, 2024, by 3% of the total number of shares of our capital stock outstanding on December 31 of the preceding calendar year, or a lesser number of shares determined by our Board of Directors. On January 1, 2019, the aggregate number of shares of common stock that may be issued pursuant to stock awards under our 2014 Equity Incentive Plan automatically increased to 6,086,907. The maximum number of shares that may be issued pursuant to the exercise of incentive stock options under the 2014 Plan is 30,000,000 shares.

2004 Stock Incentive Plan

Our Board of Directors adopted, and our stockholders subsequently approved, the Cara Therapeutics 2004 Stock Incentive Plan, or the 2004 Plan, in September 2004. The 2004 Plan provides for the grant to our officers, directors, employees, consultants and advisors of incentive and nonqualified stock options to purchase our common stock, and also provides for the outright issuance of our common stock through restricted share awards. Since the effectiveness of the 2014 Plan in January 2014, no further awards have been allowed to be granted under the 2004 Plan.

401(k) Plan

We maintain the Cara Therapeutics Savings and Retirement 401(k) Plan, or the 401(k) Plan, a tax-qualified retirement plan that provides eligible U.S. employees with an opportunity to save for retirement on a tax advantaged basis. All employees over the age of 21 are eligible to participate in the plan at the beginning of the calendar quarter after three consecutive months of service. Employees are able to defer a portion of their pay into the plan on the first day of the quarter on or after the day all age and service requirements have been met. All eligible employees receive an employer contribution equal to 3% of their salary up to the annual Internal Revenue Code limit. Pre-tax contributions are allocated to each participant’s individual account and are then invested in selected investment alternatives according to the participant’s directions. Contributions that we may make are subject to a vesting schedule; employees are immediately and fully vested in their contributions. The 401(k) Plan is intended to qualify under Sections 401(a) and 501(a) of the Code. As a tax-qualified retirement plan, contributions to the 401(k) Plan and earnings on those contributions are not taxable to the employees until distributed from the 401(k) Plan and all contributions are deductible by us when made.

Director Compensation

The following table shows certain information with respect to the compensation of all of our non-employee directors for the fiscal year ended December 31, 2018:

Director	Fees paid in cash [1]	Option awards [2]	Total
Martin Vogelbaum	$108,000	$224,261	$332,261
Harrison M. Bains, Jr.	$60,000	$224,261	$284,261
Jeffrey Ives, Ph.D.	$57,000	$224,261	$281,261

Christopher Posner (3)	$24,000	$470,289	$494,289
Dean Slagel (4)	$10,000	$—	$10,000

(1) This column includes the annual fees paid to all non-employee directors for their service on the Board of Directors as well as for their committee membership and chairmanship.

(2) The amounts disclosed in this column represent the aggregate grant date fair value of the stock options granted, computed in accordance with FASB ASC Topic 718, using the valuation methodology for equity awards set forth in Note 13 of our financial statements included in this Annual Report on Form 10-K. The options granted to Mr. Vogelbaum, Mr. Bains and Dr. Ives have an exercise price per share of $16.07 and were granted on June 6, 2018 in connection with our 2018 Annual Meeting of Stockholders. The options granted to Mr. Posner have an exercise price of $17.94 and were granted on August 2, 2018 in connection with his appointment to our Board of Directors.

(3) Mr. Posner was appointed to the Board of Directors, effective August 2, 2018.

(4) Mr. Slagel resigned from the Board of Directors, effective March 7, 2018.

The options for Mr. Vogelbaum, Mr. Bains and Dr. Ives described in the table above vest on the one-year anniversary of the grant date, subject to the director's continued service as a director through such date. The options for Mr. Posner described in the table above vest over a three-year period in equal installments from the date of the grant, subject to Mr. Posner's continued service as a director through each such vesting date. As of December 31, 2018, options to purchase 81,500 shares of common stock were held by Mr. Vogelbaum, Mr. Bains and Dr. Ives, of which 63,500 underlying shares were vested and immediately exercisable, and an option to purchase 35,000 shares of common stock was held by Mr. Posner, of which none of the underlying shares were vested or immediately exercisable.

Directors who are also full-time officers or employees of Cara do not receive any additional compensation for serving as directors. Therefore, Dr. Chalmers, our Chief Executive Officer and one of our directors, does not receive any additional compensation for his service as a director. Dr. Chalmers' compensation as an executive officer is set forth above under "2018 Summary Compensation Table."

Our Board of Directors has adopted a non-employee director compensation policy. Under our director compensation policy, we will pay each of our non-employee directors a cash retainer for service on our Board of Directors and for service on each committee on which the director is a member. These retainers are payable in arrears in four equal quarterly installments on the last day of each quarter, provided that the amount of such payment will be prorated for any portion of such quarter that the director is not serving on our Board of Directors. The retainers paid during 2018 to non-employee directors for service on our Board of Directors and for service on each committee of our Board of Directors on which the director is a member were as follows:

	Member Annual Service Retainer	Chairman Additional Annual Service Retainer	
Board of Directors	$ 40,000	$ 35,000	(1)
Audit Committee	$ 10,000	$ 10,000	
Compensation Committee	$ 7,500	$ 7,500	
Nominating and Corporate Governance Committee	$ 4,000	$ 4,000	

(1) During the year ended December 31, 2018, our Board of Directors had a Lead Independent Director rather than a Chairman. For the year ended December 31, 2018, the Lead Independent Director received an additional retainer of

$35,000.

We also reimburse our non-employee directors for reasonable travel and out-of-pocket expenses incurred in connection with attending our Board of Directors and committee meetings. In addition, under our director compensation policy, upon initial election to the Board of Directors, each non-employee director will receive an option to purchase 35,000 shares with an exercise price equal to the fair market value of our common stock on the date of grant. Such option vests over three years in equal annual installments, subject to the director's continued service as a director through each such vesting date. Further, on the date of each annual meeting of stockholders, each non-employee director that continues to serve as a non-employee member on our Board of Directors will receive an option to purchase 18,000 shares of our common stock with an exercise price equal to the fair market value of our common stock on the date of grant. Such option will vest on the earlier of the first-year anniversary of the date of grant and our next annual meeting of stockholders, subject to the director's continued service as a director through such vesting date.

This policy is intended to provide a total compensation package that enables us to attract and retain qualified and experienced individuals to serve as directors and to align our directors' interests with those of our stockholders.

Compensation Committee Interlocks and Insider Participation

The Compensation Committee is composed of three directors: Mr. Vogelbaum, Dr. Ives and Mr. Posner. None of the current members of the Compensation Committee has at any time during the past three years been one of our officers or employees. None of our executive officers currently serves or in the prior three years has served as a member of the board of directors or compensation committee of any entity that has one or more executive officers serving on the Board or Compensation Committee.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.

The following table sets forth certain information regarding the ownership of our common stock as of March 1, 2019 by: (i) each director; (ii) each of the individuals named in the 2018 Summary Compensation Table; (iii) all of our current executive officers and directors as a group; and (iv) all those known by us to be beneficial owners of more than five percent of our common stock.

Name of beneficial owner	Number of Shares Beneficially Owned	Percentage of Shares Beneficially Owned	
5% stockholders:			
Rho Ventures VI, LP [(1)]	3,568,057	9.0	%
Blackrock, Inc. [(2)]	2,800,605	7.1	
T. Rowe Price [(3)]	2,415,491	6.1	
State Street Corporation [(4)]	2,123,225	5.4	
Directors and named executive officers:			
Derek Chalmers, Ph.D., D.Sc. [(5)]	1,513,297	3.8	
Joana Goncalves, M.D.	—	*	
Frédérique Menzaghi, Ph.D [(6)]	349,085	*	

Joseph Stauffer, D.O. (7)	371,378	*	
Martin Vogelbaum (8)	63,500	*	
Harrison M. Bains, Jr. (8)	63,500	*	
Jeffrey Ives, Ph.D. (8)	63,500	*	
Christopher Posner	—	*	
All current executive officers and directors as a group (9 persons) (9)	2,289,781	5.6	%

*Less than one percent.

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This table is based upon information supplied by officers, directors and principal stockholders and Schedules 13G filed with the SEC. Unless otherwise indicated in the footnotes to this table and subject to community property laws where applicable, we believe that each of the stockholders named in this table has sole voting and investment power with respect to the shares indicated as beneficially owned. Applicable percentages are based on 39,547,558 shares outstanding on March 1, 2019. In computing the number of shares of common stock beneficially owned by a person and the percentage ownership of that person, we have deemed outstanding shares of common stock subject to options held by that person that are exercisable within 60 days after March 1, 2019. We have not deemed these shares outstanding, however, for the purpose of computing the percentage ownership of any other person.

Except as otherwise noted below, the address for each person or entity listed in the table is c/o Cara Therapeutics, Inc., 4 Stamford Plaza, 107 Elm Street, Stamford, Connecticut 06902.

(1) Based solely on Schedule 13G filed on February 9, 2018 by Rho Ventures VI, L.P. The general partner of Rho Ventures VI, L.P. ("RV VI") is RMV VI, L.L.C., a Delaware limited liability company, and the managing member of RMV VI, L.L.C. is Rho Capital Partners LLC, a Delaware limited liability company ("RCP LLC"). Each of Habib Kairouz, Mark Leschly and Joshua Ruch is a managing member of RCP LLC, and in their capacity as such may be deemed to exercise voting and investment power over the shares held by the Rho Funds. Martin Vogelbaum is one of our directors and is a non-managing member of RMV VI, L.L.C. The address of Rho Capital Partners, LLC, RMV VI, L.L.C. and RV VI is 152 West 57th Street, 23rd Floor, New York, NY 10019.

(2) Based solely on Schedule 13G filed by BlackRock, Inc. on February 4, 2019. BlackRock, Inc. has sole voting power as to 2,733,548 of the shares and sole dispositive power as to all of the shares. The address of BlackRock, Inc. is 55 East 52nd Street, New York, NY 10055.

(3) Based solely on Schedule 13G filed by T. Rowe Price Associates, Inc. on February 14, 2019. T. Rowe Price Associates, Inc. has sole voting power as to 323,875 of the shares and sole dispositive power as to all of the shares. The address of T. Rowe Price Associates, Inc. is 100 E. Pratt Street, Baltimore, MD 21202.

(4) Based solely on Schedule 13G filed by State Street Corporation on February 14, 2019. State Street Corporation has sole voting power as to none of the shares and sole dispositive power as to none of the shares. The address of State Street Corporation is State Street Financial Center, One Lincoln Street, Boston, MA 02111.

(5) Consists of 953,788 shares held directly by Dr. Chalmers and 559,509 shares of common stock underlying options that are vested and exercisable within 60 days of March 1, 2019.

(6) Consists of 144,279 shares held directly by Dr. Menzaghi and 204,806 shares of common stock underlying options that are vested and exercisable within 60 days of March 1, 2019.

(7) Consists of 13,779 shares of common stock held directly by Dr. Stauffer and 357,599 shares of common stock underlying options that are vested and exercisable within 60 days of March 1, 2019.

(8) Consists of 63,500 shares of common stock underlying options that are vested and exercisable within 60 days of March 1, 2019.

(9) Consists of the shares listed in footnotes (5), (6) and (8); also includes (i) 8,026 shares held directly by Mani Mohindru, Ph.D., our Chief Financial Officer and 128,332 shares of common stock underlying options held by Dr. Mohindru that are vested and exercisable within 60 days of March 1, 2019 and (ii) 6,386 shares held directly by Scott Terrillion, our General Counsel, Secretary and Chief Compliance Officer, and 94,155 shares of common stock underlying options held by Mr. Terrillion that are vested and exercisable within 60 days of March 1, 2019.

Securities Authorized for Issuance under Equity Compensation Plans

The following table summarizes our equity compensation plan information as of December 31, 2018. Information is included for equity compensation plans approved by our stockholders. We do not have any equity compensation plans not approved by our stockholders.

Plan Category	Number of shares of common stock to be issued upon exercise of outstanding options (a)(1)	Weighted-average exercise price of outstanding options (b)(2)	Number of shares of common stock remaining available for future issuance under equity compensation plans (excluding shares of common stock reflected in column (a)) (c)(3)
Equity compensation plans approved by stockholders [(1)] [(2)]	4,004,422	$ 13.34	236,182
Equity compensation plans not approved by stockholders	—	—	—
Total	4,004,422		236,182

(1) Columns (a) and (b) relate to options granted under the 2014 Plan and the 2004 Plan. Since the effectiveness of the 2014 Plan in January 2014, no further awards have been allowed to be granted under the 2004 Plan. The number of securities in column (c) relates only to the 2014 Plan.

(2) The weighted average exercise price is calculated based solely on outstanding stock options, and does not take into account stock underlying restricted stock units, which have no exercise price.

(3) The aggregate number of shares of common stock reserved for issuance under the 2014 Plan has automatically increased on January 1 of each year, beginning on January 1, 2015 and will continue to increase on January 1 of each year through and including January 1, 2024, by 3% of the total number of shares of our capital stock outstanding on December 31 of the preceding calendar year, or a lesser number of shares determined by our Board

of Directors. Accordingly, on January 1, 2019, the number of shares of common stock available for issuance under our 2014 Plan increased by 1,186,426 shares pursuant to this provision. This increase is not reflected in the table above.

Item 13. Certain Relationships and Related Transactions and Director Independence.

Related Person Transactions Policy and Procedures

In 2014, we adopted a written Related-Person Transactions Policy that sets forth our policies and procedures regarding the identification, review, consideration and approval or ratification of “related-persons transactions.” For purposes of our policy only, a “related-person transaction” is a transaction, arrangement or relationship (or any series of similar transactions, arrangements or relationships) in which we and any “related person” are participants involving an amount that exceeds $120,000. Transactions involving compensation for services provided to us as an employee, director, consultant or similar capacity by a related person are not covered by this policy. A related person is any of our executive officers, directors, or more than 5% stockholders, including any of their immediate family members, and any entity owned or controlled by such persons.

Under the policy, where a transaction has been identified as a related-person transaction, management must present information regarding the proposed related-person transaction to the Audit Committee (or, where Audit Committee approval would be inappropriate, to another independent body of the Board) for consideration and approval or ratification. The presentation must include a description of, among other things, the material facts, the interests, direct and indirect, of the related persons, the benefits to us of the transaction and whether any alternative transactions were available. To identify related-person transactions in advance, we rely on information supplied by our executive officers, directors and certain significant stockholders. In considering related-person transactions, the Committee takes into account the relevant available facts and circumstances including, but not limited to (a) the risks, costs and benefits to us, (b) the impact on a director's independence in the event the related person is a director, immediate family member of a director or an entity with which a director is affiliated, (c) the terms of the transaction, (d) the availability of other sources for comparable services or products and (e) the terms available to or from, as the case may be, unrelated third parties or to or from employees generally. In the event a director has an interest in the proposed transaction, the director must recuse himself or herself from the deliberations and approval. The policy requires that, in determining whether to approve, ratify or reject a related-person transaction, the Committee consider, in light of known circumstances, whether the transaction is in, or is not inconsistent with, our best interests and our stockholders, as the Committee determines in the good faith exercise of its discretion.

Certain Related Person Transactions

There were no transactions since January 1, 2017 in which we have participated in which the amount exceeded or will exceed $120,000, and in which any of our directors, executive officers or holders of more than 5% of our capital stock or any members of their immediate family had or will have a direct or indirect material interest, other than compensation arrangements which are described under "Executive Compensation" and "Director Compensation."

Indemnification Agreements

Our amended and restated certificate of incorporation limits the liability of directors to the maximum extent permitted by Delaware law. Delaware law provides that directors of a corporation will not be personally liable for monetary damages for breach of their fiduciary duties as directors, except for liability for any:

- breach of their duty of loyalty to the corporation or its stockholders;
- act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;
- unlawful payments of dividends or unlawful stock repurchases or redemptions as provided in Section 174 of the Delaware General Corporation Law; or
- transaction from which the directors derived an improper personal benefit.

Our amended and restated certificate of incorporation does not eliminate a director's duty of care and, in appropriate circumstances, equitable remedies, such as injunctive or other forms of non-monetary relief, remain available under Delaware law. These limitations also do not affect a director's responsibilities under any other laws, such as the federal securities laws or other state or federal laws. Our amended and restated bylaws provide that we will indemnify our directors and executive officers, and may indemnify other officers, employees and other agents, to the fullest extent permitted by law. Our amended and restated bylaws also provide that we are obligated to advance expenses incurred by a director or officer in advance of the final disposition of any action or proceeding and also permit us to secure insurance on behalf of any officer, director, employee or other agent for any liability arising out of his or her actions in connection with their services to us, regardless of whether our amended and restated bylaws permit such indemnification. We have obtained a directors' and officers' liability insurance policy.

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We have entered, and intend to continue to enter, into separate indemnification agreements with our directors and executive officers, in addition to the indemnification provided for in our amended and restated bylaws. These agreements, among other things, require us to indemnify our directors and executive officers for certain expenses, including attorneys' fees, judgments, fines and settlement amounts incurred by a director or executive officer in any action or proceeding arising out of their services as one of our directors or executive officers, or any of our subsidiaries or any other company or enterprise to which the person provides services at our request. We believe that these bylaw provisions and indemnification agreements are necessary to attract and retain qualified persons as directors and officers.

The limitation of liability and indemnification provisions in our amended and restated certificate of incorporation and amended and restated bylaws may discourage stockholders from bringing a lawsuit against directors for breach of their fiduciary duties. They may also reduce the likelihood of derivative litigation against directors and officers, even though an action, if successful, might benefit us and our stockholders. A Stockholder's investment may be harmed to the extent we pay the costs of settlement and damage awards against directors and officers pursuant to these indemnification provisions.

At present, there is no pending litigation or proceeding involving any of our directors or executive officers as to which indemnification is required or permitted, and we are not aware of any threatened litigation or proceeding that may result in a claim for indemnification.

Independence of the Board of Directors

As required under the Nasdaq listing standards, a majority of the members of our Board of Directors must qualify as "independent," as affirmatively determined by the Board of Directors. The Board of Directors consults with our counsel to ensure that the Board's determinations are consistent with relevant securities and other laws and regulations regarding the definition of "independent," including those set forth in pertinent listing standards of Nasdaq, as in effect from time to time.

Consistent with these considerations, after review of all relevant identified transactions or relationships between each director, or any of his or her family members, and us, our senior management and our independent auditors, the Board of Directors has affirmatively determined that the following four directors are independent directors within the meaning of the applicable Nasdaq listing standards: Mr. Vogelbaum, Mr. Bains, Dr. Ives and Mr. Posner. In making this determination, the Board of Directors found that none of these directors or nominees for director had a material or other disqualifying relationship with us.

Item 14. Principal Accountant Fees and Services.

The following table represents aggregate fees billed to us for the fiscal years ended December 31, 2018 and 2017, by Ernst & Young LLP, our principal accountant:

	Year Ended December 31,	
	2018	2017
	(Dollars in thousands)	

Audit fees	$361	(a)	$348	(a)
Audit-related fees	35	(b)	15	(b)
Tax fees	—		—	
All other fees	—		—	
Total	$396		$363	

(a) Audit fees for the years ended December 31, 2018 and 2017 consist of the aggregate fees billed for professional services rendered for (i) the audit of our Annual Report on Form 10-K for that year; (ii) the review of our Quarterly Reports on Form 10-Q for each of the first three quarters of that year; (iii) accounting consultations and (iv) procedures in connection with the filing of Form S-3 with the Securities and Exchange Commission for our follow-on offering of our common stock. See "Equity Compensation Plan Compensation" above.

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(b) Audit-related fees for the year ended December 31, 2018 include fees billed for review of the accounting for the VFMCRP license agreement. Audit-related fees for the year ended December 31, 2017 include fees billed for review of the preparation and disclosure of our adoption of Accounting Standards Codification Topic 606, Revenue from Contracts with Customers.

All fees described above for the years ended December 31, 2018 and 2017 were pre-approved by the Audit Committee.

Pre-Approval Policies and Procedures

The Audit Committee has adopted a policy and procedures for the pre-approval of audit and non-audit services rendered by our independent registered public accounting firm, Ernst & Young LLP. The policy generally pre-approves specified services in the defined categories of audit services, audit-related services and tax services up to specified amounts. Pre-approval may also be given as part of the Audit Committee's approval of the scope of the engagement of the independent auditor or on an individual, explicit, case-by-case basis before the independent auditor is engaged to provide each service. The pre-approval of services may be delegated to one or more of the Audit Committee's members, but the decision must be reported to the full Audit Committee at its next scheduled meeting.

The Audit Committee has determined that the rendering of services other than audit services by Ernst & Young LLP is compatible with maintaining the principal accountant's independence.

PART IV

Item 15. Exhibits, Financial Statement Schedules.

(a)(1) The Financial Statements of Cara Therapeutics, Inc.

(a)(2) Financial Statement Schedules.

All schedules for which provision is made in the applicable accounting regulations of the SEC which are not included with this additional financial data have been omitted because they are not applicable or the required information is shown in the Financial Statements or Notes thereto.

(a)(3) List of Exhibits

Exhibit No.	Description of Exhibit
3.1[(1)]	Amended and Restated Certificate of Incorporation.
3.2[(2)]	Amended and Restated Bylaws.
4.1[(3)]	Form of Common Stock Certificate.
10.1+[(3)]	Form of Indemnity Agreement.
10.2+[(4)]	2004 Stock Incentive Plan, as amended, and forms of Stock Option Agreement thereunder.
10.3+[(3)]	2014 Equity Incentive Plan.
10.3.1[(3)]	Form of Stock Option Agreement under 2014 Equity Incentive Plan.

10.3.2(3)	Form of Restricted Stock Unit Award under 2014 Equity Incentive Plan.
10.4(4)	Fourth Amended and Restated Investors Rights Agreement dated April 25, 2013 among the Registrant and certain of its stockholders, as amended.
10.5(4)	Lease Agreement dated September 18, 2006 between the Registrant and Shelton Parrott Associates, L.L.C., as amended.
10.6*(4)	License Agreement dated April 4, 2013 by and between the Registrant and Maruishi Pharmaceutical Co., Ltd.
10.7*(4)	License and API Supply Agreement effective as of April 16, 2012 by and between the Registrant and Chong Kun Dang Pharmaceutical Corp.
10.8(4)	Amendment to License and API Supply Agreement effective as of May 1, 2012 by and between the Registrant and Chong Kun Dang Pharmaceutical Corp.
10.9+(5)	Employment Agreement with Derek Chalmers.

Exhibit No.	Description of Exhibit
10.10+[(6)]	Employment Agreement with Frédérique Menzaghi.
10.11+†	Employment Agreement with Joana Goncalves.
10.12+[(3)]	Non-Employee Director Compensation Policy.
10.13+[(8)]	Employment Agreement with Joseph Stauffer.
10.14+**†	Separation and Consulting Agreement with Joseph Stauffer.
10.15 [(9)]	Lease Agreement dated December 21, 2015 between the Registrant and Four Stamford Plaza Owner L.L.C.
10.16 [(10)]	Employment Agreement with Mani Mohindru, Ph.D.
10.17*[(11)]	License Agreement by and between Cara Therapeutics, Inc. and Vifor Fresenius Medical Care Renal Pharma Ltd.
23.1†	Consent of Ernst & Young, LLP, independent registered public accounting firm.
31.1†	Certification of Chief Executive Officer of Cara Therapeutics, Inc. pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934.
31.2†	Certification of Chief Financial Officer of Cara Therapeutics, Inc. pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934.
32.1	Certifications of Chief Executive Officer and Chief Financial Officer of Cara Therapeutics, Inc. pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. (furnished herewith).
101.CAL	XBRL Taxonomy Extension Calculation Linkbase.
101.INS	XBRL Instance Document.
101.LAB	XBRL Taxonomy Extension Label Linkbase
101.PRE	XBRL Taxonomy Extension Presentation Linkbase.
101.SCH	XBRL Taxonomy Extension Schema Linkbase
101.DEF	XBRL Definition Linkbase Document.

+indicates management contract or compensatory plan.
*

Confidential treatment has been granted with respect to certain portions of this exhibit. Omitted portions have been filed separately with the Securities and Exchange Commission.

** Confidential treatment has been requested with respect to certain portions of this exhibit. Omitted portions have been filed separately with the Securities and Exchange Commission.

† Filed herewith

(1) Filed as exhibit 3.1 to the Registrant's Current Report on Form 8-K (File No. 001-36279) filed with the Securities and Exchange Commission on February 7, 2014 and incorporated herein by reference.

(2) Filed as exhibit 3.2 to the Registrant's Current Report on Form 8-K (File No. 001-36279) filed with the Securities and Exchange Commission on February 7, 2014 and incorporated herein by reference.

(3) Filed as an exhibit (having the same exhibit number) to Pre-effective Amendment No. 2 to the Registrant's Registration Statement on Form S-1 (Registration No. 333-192230) filed with the Securities and Exchange Commission on January 17, 2014 and incorporated herein by reference.

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(4) Filed as an exhibit (having the same exhibit number) to the Registration Statement on Form S-1 Registration No. 333-192230) filed with the Securities and Exchange Commission on November 8, 2013 and incorporated herein by reference.
(5) Filed as exhibit 10.1 to the Registrant’s Current Report on Form 8-K (File No. 001-36279) filed with the Securities and Exchange Commission on February 7, 2014 and incorporated herein by reference.
(6) Filed as exhibit 10.2 to the Registrant’s Current Report on Form 8-K (File No. 001-36279) filed with the Securities and Exchange Commission on February 7, 2014 and incorporated herein by reference.
(7) Filed as exhibit 10.3 to the Registrant’s Current Report on Form 8-K (File No. 001-36279) filed with the Securities and Exchange Commission on February 7, 2014 and incorporated herein by reference.
(8) Filed as exhibit 10.14 to the Registrant’s Annual Report on Form 10-K (File No. 001-36279) filed with the Securities and Exchange Commission on March 27, 2015 and incorporated herein by reference.
(9) Filed as exhibit 10.1 to the Registrant’s Current Report on Form 8-K (File No. 001-36279) filed with the Securities and Exchange Commission on December 23, 2015 and incorporated herein by reference.
(10) Filed as exhibit 10.1 to the Registrant’s Current Report on Form 8-K (File No. 001-36279) filed with the Securities and Exchange Commission on August 4, 2017 and incorporated herein by reference.
(11) Filed as exhibit 10.1 to the Registrant’s Quarterly Report on Form 10-Q (File No. 001-36279) filed with the Securities and Exchange Commission on August 7, 2018 and incorporated herein by reference.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized on this 12th day of March 2019.

CARA THERAPEUTICS, INC.

By:	/s/ DEREK CHALMERS
Name:	Derek Chalmers, Ph.D., D.Sc.
Title:	President and Chief Executive Officer

Signature	Title	Date
/s/ DEREK CHALMERS Derek Chalmers, Ph.D., D.Sc.	President, Chief Executive Officer and Director (Principal Executive Officer)	March 12, 2019
/s/ MANI MOHINDRU Mani Mohindru, Ph.D.	Chief Financial Officer (Principal Financial and Accounting Officer)	March 12, 2019
/s/ MARTIN VOGELBAUM Martin Vogelbaum	Director	March 12, 2019
/s/ HARRISON M. BAINS, JR. Harrison M. Bains, Jr.	Director	March 12, 2019
/s/ JEFFREY IVES Jeffrey Ives, Ph.D.	Director	March 12, 2019
/s/ CHRISTOPHER POSNER Christopher Posner	Director	March 12, 2019

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Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of Cara Therapeutics Inc.

Opinion on the Financial Statements

We have audited the accompanying balance sheets of Cara Therapeutics Inc. (the "Company") as of December 31, 2018 and 2017, and the related statements of comprehensive loss, and stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2018, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018, in conformity with U.S. generally accepted accounting principles.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to fraud or error. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2006.

Stamford, Connecticut

March 12, 2019

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Cara Therapeutics, Inc.

Balance Sheets

(amounts in thousands, except share and per share data)

	December 31, 2018	December 31, 2017
Assets		
Current assets:		
Cash and cash equivalents	$15,081	$9,388
Marketable securities	146,302	83,181
Income tax receivable	664	731
Other receivables	926	123
Prepaid expenses	4,805	1,635
Restricted cash, current	361	—
Total current assets	168,139	95,058
Marketable securities, non-current	21,396	—
Property and equipment, net	880	1,177
Restricted cash	408	769
Total assets	$190,823	$97,004
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable and accrued expenses	$13,622	$8,506
Current portion of deferred revenue	26,825	—
Total current liabilities	40,447	8,506
Deferred revenue, non-current	15,184	—
Deferred lease obligation	1,562	1,718
Commitments and contingencies (Note 17)	—	—
Stockholders' equity:		
Preferred stock; $0.001 par value; 5,000,000 shares authorized at December 31, 2018 and December 31, 2017; zero shares issued and outstanding at December 31, 2018 and December 31, 2017	—	—
Common stock; $0.001 par value; 100,000,000 shares authorized at December 31, 2018 and December 31, 2017; 39,547,558 shares and 32,662,255 shares issued and outstanding at December 31, 2018 and December 31, 2017, respectively	39	33
Additional paid-in capital	428,059	307,158
Accumulated deficit	(294,354)	(220,341)
Accumulated other comprehensive loss	(114)	(70)
Total stockholders' equity	133,630	86,780

Total liabilities and stockholders’ equity	$190,823	$97,004

See Notes to Financial Statements.

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Cara Therapeutics, Inc.

Statements of COMPREHENSIVE LOSS

(amounts in thousands, except share and per share data)

	Year Ended December 31,		
	2018	2017	2016
Revenue:			
License and milestone fees	$13,436	$530	$—
Collaborative revenue	—	313	—
Clinical compound revenue	33	68	86
Total revenue	13,469	911	86
Operating expenses:			
Research and development	75,531	48,524	49,253
General and administrative	15,320	11,872	9,233
Total operating expenses	90,851	60,396	58,486
Operating loss	(77,382)	(59,485)	(58,400)
Other income	2,980	1,156	652
Loss before benefit from income taxes	(74,402)	(58,329)	(57,748)
Benefit from income taxes	389	204	468
Net loss	$(74,013)	$(58,125)	$(57,280)
Net loss per share:			
Basic and Diluted	$(2.06)	$(1.86)	$(2.10)
Weighted average shares:			
Basic and Diluted	35,892,786	31,202,842	27,279,008
Other comprehensive income (loss), net of tax of $0:			
Change in unrealized gains (losses) on available for sale marketable securities	(44)	(73)	38
Total comprehensive loss	$(74,057)	$(58,198)	$(57,242)

See Notes to Financial Statements.

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Cara Therapeutics, Inc.

Statements of Stockholders' EQUITY

(amounts in thousands, except share and per share data)

	Common Stock		Additional Paid-in	Accumulated	Accumulated Other Comprehensive Income (Loss)	Total Stockholders'
	Shares	Amount	Capital	Deficit		Equity
Balance at December 31, 2015	27,254,863	$ 27	$ 209,943	$ (104,891)	$ (35)	$ 105,044
Stock-based compensation expense	—	—	2,800	—	—	2,800
Shares issued upon exercise of stock options	42,000	—	123	—	—	123
Net loss	—	—	—	(57,280)	—	(57,280)
Other comprehensive income	—	—	—	—	38	38
Balance at December 31, 2016	27,296,863	27	212,866	(162,171)	3	50,725
Sale of common stock in a follow-on public offering ($18.00 per share), net of underwriting discounts and commissions and offering expenses of $5,891	5,117,500	5	86,219	—	—	86,224
Stock-based compensation expense	—	—	5,793	—	—	5,793
Modification of equity awards	—	—	537	—	—	537
Shares issued upon exercise of stock options	247,892	1	1,698	—	—	1,699
Cumulative effect adjustment upon adoption of ASU 2016-09	—	—	45	(45)	—	—
Net loss	—	—	—	(58,125)	—	(58,125)
Other comprehensive loss	—	—	—	—	(73)	(73)
Balance at December 31, 2017	32,662,255	33	307,158	(220,341)	(70)	86,780
Sale of common stock under license agreement	1,174,827	1	14,555	—	—	14,556
Sale of common stock in a follow-on public offering ($19.00 per share), net	5,175,000	5	92,058	—	—	92,063

of underwriting discounts and commissions and offering expenses of $6,262						
Stock-based compensation expense	—	—	7,785	—	—	7,785
Modification of equity awards	—	—	616	—	—	616
Shares issued upon vesting of performance-based restricted stock units	83,791	—	1,693	—	—	1,693
Shares issued upon exercise of stock options	451,685	—	4,194	—	—	4,194
Net loss	—	—	—	(74,013)	—	(74,013)
Other comprehensive loss	—	—	—	—	(44)	(44)
Balance at December 31, 2018	39,547,558	$ 39	$ 428,059	$ (294,354)	$ (114)	$ 133,630

See Notes to Financial Statements.

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Cara Therapeutics, Inc.

STATEMENTS OF CASH FLOWS

(in thousands)

	Year Ended December 31,		
	2018	2017	2016
Operating activities			
Net loss	$(74,013)	$(58,125)	$(57,280)
Adjustments to reconcile net loss to net cash used in operating activities:			
Stock-based compensation expense	9,478	5,793	2,800
Modification of equity awards	616	537	—
Depreciation & amortization	370	495	1,465
Amortization/accretion of available-for-sale marketable securities	(1,820)	(582)	(218)
Realized gain on sale of available-for-sale marketable securities	5	(5)	(23)
Realized gain on sale of property and equipment	—	(41)	—
Deferred rent costs	(156)	148	(114)
Deferred revenue	42,009	—	—
Changes in operating assets and liabilities:			
Income tax receivable	67	121	(468)
Other receivables	(803)	(36)	(7)
Prepaid expenses	(3,170)	(105)	199
Accounts payable and accrued expenses	5,116	(3,027)	6,265
Net cash used in operating activities	(22,301)	(54,827)	(47,381)
Investing activities			
Proceeds from maturities of available-for-sale marketable securities	175,300	82,156	80,380
Proceeds from sale of available-for-sale marketable securities	79,808	8,755	34,003
Purchase of available-for-sale marketable securities	(337,854)	(127,394)	(68,648)
Purchases of property and equipment	(73)	(58)	(717)
Proceeds from sale of property and equipment	—	41	—
Net cash (used in) provided by investing activities	(82,819)	(36,500)	45,018
Financing activities			
Proceeds from sale of common stock in a follow-on public offering, net of issuance costs	92,063	86,224	—
Proceeds from the sale of common stock under license agreement	14,556	—	—
Proceeds from the exercise of stock options	4,194	1,699	123
Net cash provided by financing activities	110,813	87,923	123
Net increase (decrease) in cash, cash equivalents and restricted cash	5,693	(3,404)	(2,240)
Cash, cash equivalents and restricted cash at beginning of period	10,157	13,561	15,801
Cash, cash equivalents and restricted cash at end of period	$15,850	$10,157	$13,561
Noncash financing activities			
Tenant improvements paid by landlord	$—	$—	$1,094

See Notes to Financial Statements.

CARA THERAPEUTICS, INC.

NOTES TO FINANCIAL STATEMENTS

(amounts in thousands, except share and per share data)

1. Business

Cara Therapeutics, Inc., or the Company, is a clinical-stage biopharmaceutical corporation formed on July 2, 2004. The Company is focused on developing and commercializing new chemical entities with a primary focus on pruritus as well as pain by selectively targeting peripheral kappa opioid receptors. The Company's primary activities to date have been organizing and staffing the Company, developing its product candidates, including conducting preclinical studies and clinical trials of CR845/difelikefalin-based product candidates and raising capital.

As of December 31, 2018, the Company has raised aggregate net proceeds of $383,200 from several rounds of equity financing, including its initial public offering, or IPO, which closed in February 2014 and three follow-on public offerings of common stock, which closed in July 2018, April 2017 and August 2015, respectively, and the issuance of convertible preferred stock and debt prior to the IPO. The Company had also received $88,900 under its license agreements for CR845/difelikefalin, primarily with Vifor Fresenius Medical Care Renal Pharma Ltd., or VFMCRP, Maruishi Pharmaceutical Co. Ltd., or Maruishi, and Chong Kun Dang Pharmaceutical Corp., or CKDP, and an earlier product candidate for which development efforts ceased in 2007. Additionally, in May 2018, the Company received net proceeds of $14,556 from the issuance and sale of 1,174,827 shares of the Company's common stock to Vifor (International) Ltd., or Vifor, in connection with the Company's license agreement with VFMCRP (see Note 11, Collaboration and Licensing Agreements).

As of December 31, 2018, the Company had unrestricted cash and cash equivalents and marketable securities of $182,779 and an accumulated deficit of $294,354. The Company has incurred substantial net losses and negative cash flows from operating activities in nearly every fiscal period since inception and expects this trend to continue for the foreseeable future. The Company recognized a net loss of $74,013 and had net cash used in operating activities of $22,301 for the year ended December 31, 2018.

The Company is subject to risks common to other life science companies including, but not limited to, uncertainty of product development and commercialization, lack of marketing and sales history, development by its competitors of new technological innovations, dependence on key personnel, market acceptance of products, product liability, protection of proprietary technology, ability to raise additional financing, and compliance with Food and Drug Administration, or FDA, and other government regulations. If the Company does not successfully commercialize any of its product candidates, it will be unable to generate recurring product revenue or achieve profitability.

2. Summary of Significant Accounting Policies

Basis of Presentation

Certain amounts in the prior years' financial statements have been reclassified to conform to the current-year presentation due to the adoption of certain accounting standards (see Note 2, Other Accounting Pronouncements Recently Adopted: ASU 2016-18, Statement of Cash Flows (Topic 230), Restricted Cash).

CARA THERAPEUTICS, INC.

NOTES TO FINANCIAL STATEMENTS

(amounts in thousands, except share and per share data)

Use of Estimates

The preparation of financial statements in conformity with generally-accepted accounting principles in the United States or GAAP, requires the Company to make estimates and assumptions that affect the reported amounts of assets and liabilities, and disclosure of contingent assets and liabilities, as of the date of the financial statements as well as the reported amounts of revenues and expenses during the reporting period. Actual results could differ materially from the Company’s estimates and assumptions. Estimates include the fair value of marketable securities that are classified as level 2 of the fair value hierarchy, useful lives of fixed assets, the periods over which certain revenues will be recognized, including licensing and collaborative revenue recognized from non-refundable up-front and milestone payments, the determination of prepaid research and development, or R&D, clinical costs and accrued research projects, the amount of non-cash compensation costs related to share-based payments to employees and non-employees and the periods over which those costs are expensed and the likelihood of realization of deferred tax assets.

Concentrations of Credit Risk

Financial instruments, which potentially subject the Company to significant concentrations of credit risk consist primarily of cash equivalents and marketable securities. The Company invests its cash reserves in money market funds or high-quality marketable securities in accordance with its investment policy. The stated objectives of its investment policy are to preserve capital, provide liquidity consistent with forecasted cash flow requirements, maintain appropriate diversification and generate returns relative to these investment objectives and prevailing market conditions. The Company’s investment policy includes guidelines on acceptable investment securities, limits interest-bearing security investments to certain types of debt and money market instruments issued by the U.S. government and institutions with investment grade credit ratings and places restrictions on maturities and concentration by asset class and issuer. The Company's cash and cash equivalents and marketable securities are held by three major financial institutions. In accordance with the Company's policies, the Company monitors exposure with its counterparties. The Company also maintains deposits in federally insured financial institutions in excess of federally insured limits. The Company has not experienced any losses in such accounts and management believes that the Company is not exposed to significant credit risk due to the financial position of the depository institutions in which those deposits are held.

Cash and Cash Equivalents

Cash and cash equivalents include cash on hand, demand deposits, deposits with banks and highly liquid money market funds with holdings of cash and other investments with original maturities of three months or less.

Marketable Securities

The Company deems certain of its investments to be marketable securities if the investment, or in the case of money market funds, the securities underlying the money market fund, meet the definition of a debt security in Accounting Standards Codification, or ASC, section 320-10-20. The Company considers its marketable securities to be available-for-sale and, accordingly, these investments are recorded at fair value with unrealized gains and losses recorded in Accumulated other comprehensive income (loss), or AOCI, as a separate component of stockholders' equity. Available-for-sale marketable securities are reported as Marketable securities, current and Marketable Securities, noncurrent in the Balance Sheets. Other income includes interest and dividends, realized gains and losses on sales of securities and other-than-temporary impairment, or OTTI, declines in the fair value of securities, if any. The cost of securities sold is based on the specific identification method.

CARA THERAPEUTICS, INC.

NOTES TO FINANCIAL STATEMENTS

(amounts in thousands, except share and per share data)

The Company reviews its available-for-sale marketable securities for OTTI declines in fair value below its cost basis each quarter and whenever events or changes in circumstances indicate that the cost basis of an asset may not be recoverable. This evaluation is based on a number of factors, including the length of time and the extent to which the fair value has been below its cost basis and adverse conditions related specifically to the security, including any changes to the credit rating of the security, and the intent to sell, or whether the Company will more likely than not be required to sell, the security before recovery of its amortized cost basis. The Company's assessment of whether a security is other-than-temporarily impaired could change in the future due to new developments or changes in assumptions related to any particular security.

If a decline in the fair value of an available-for-sale marketable debt security in the Company's investment portfolio is deemed to be other-than-temporary, the Company writes down the security to its current fair value. If the Company intends to sell the security or it is more likely than not that the Company will be forced to sell the security before recovery of the amortized cost of the security, the loss is recognized in net income. Otherwise, the loss is separated into a portion representing a credit loss, which is recorded in net income, and the remainder is recorded in Other comprehensive income, or OCI, net of taxes. See Note 3, Available-for-Sale Marketable Securities, and Note 10, Fair Value Measurements.

Fair Value of Financial Instruments

The Company applies fair value accounting for all financial assets and liabilities that are recognized or disclosed at fair value in the financial statements on a recurring basis. The Company defines fair value as the price that would be received from selling an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. When determining the fair value measurements for assets and liabilities which are required to be recorded at fair value, the Company considers the principal or most advantageous market in which it would transact and the market-based risk measurements or assumptions that market participants would use in pricing the asset or liability, such as risks inherent in valuation techniques, transfer restrictions and credit risks.

The Company's financial instruments consist of cash, cash equivalents, available-for-sale marketable securities, prepaid expenses, restricted cash, accounts payable and accrued liabilities. The fair values of cash and cash equivalents, restricted cash, accounts payable and accrued liabilities approximate their carrying values due to the short-term nature of these financial instruments. Marketable securities are reported at their fair values, based upon pricing of securities with the same or similar investment characteristics as provided by pricing services, as described below.

Current accounting guidance defines fair value, establishes a framework for measuring fair value in accordance with ASC section 820, and requires certain disclosures about fair value measurements. The valuation techniques included in the guidance are based on observable and unobservable inputs. Observable inputs reflect readily obtainable data from independent sources, while unobservable inputs reflect the Company's assumptions about the inputs that market participants would use in pricing the asset or liability and are developed based on the best information available in the circumstances.

The Company classifies its investments in a fair value hierarchy that is intended to increase consistency and comparability in fair value measurements and related disclosures. The fair value hierarchy is divided into three levels based on the source of inputs as follows:

- Level 1 – Observable inputs – quoted prices in active markets for identical assets and liabilities.
- Level 2 – Observable inputs other than the quoted prices in active markets for identical assets and liabilities – such as quoted prices for similar instruments, quoted prices for identical or similar instruments in inactive markets, or other inputs that are observable or can be corroborated by observable market data.
- Level 3 – Unobservable inputs – includes amounts derived from valuation models where one or more significant inputs are unobservable and require the Company to develop relevant assumptions.

CARA THERAPEUTICS, INC.

NOTES TO FINANCIAL STATEMENTS

(amounts in thousands, except share and per share data)

The Company records transfers between levels in the hierarchy by assuming that the transfer occurred at the end of the quarter or year-to-date period.

Valuation Techniques - Level 2 Inputs

The Company estimates the fair values of its financial instruments categorized as level 2 in the fair value hierarchy, including U.S. Treasury securities, U.S. government agency obligations, corporate bonds, municipal bonds, commercial paper and money market funds with similar underlying investments by taking into consideration valuations obtained from third-party pricing services. The pricing services use industry standard valuation models, including both income- and market-based approaches, for which all significant inputs are observable, either directly or indirectly, to estimate fair value. These inputs include reported trades of and broker/dealer quotes on the same or similar securities, benchmark yields, issuer credit spreads, benchmark securities, and other observable inputs. The Company obtains a single price for each financial instrument and does not adjust the prices obtained from the pricing service.

The Company validates the prices provided by its third-party pricing services by reviewing their pricing methods, obtaining market values from other pricing sources and comparing them to the share prices presented by the third-party pricing services. After completing its validation procedures, the Company did not adjust or override any fair value measurements provided by its pricing services as of December 31, 2018 or December 31, 2017.

Property and Equipment

Property and equipment (consisting of computer, office and laboratory equipment, furniture and fixtures and leasehold improvements) are stated at cost, net of accumulated depreciation and amortization of leasehold improvements. Depreciation and amortization are calculated using the straight-line method over the estimated useful lives of the respective assets. Leasehold improvements are amortized over the lesser of their useful lives or the life of the lease.

Asset Category	Useful Lives
Computer and office equipment	5 years
Short-term laboratory equipment	2 years
Furniture and fixtures	7 years
Leasehold improvements	lesser of useful life of asset or life of lease (Stamford - 7 years)

ASC 360, Property, Plant and Equipment, addresses the financial accounting and reporting for impairment or disposal of long-lived assets. The Company reviews the recorded values of property and equipment for impairment whenever events or changes in business circumstances indicate that the carrying amount of an asset or group of assets may not be fully recoverable.

Revenue Recognition

On January 1, 2018, the Company adopted Accounting Standards Update, or ASU, 2014-09, Revenue from Contracts with Customers (Topic 606), or ASC 606, as amended by ASU 2016-08, 2016-10, 2016-12 and 2016-20 using the full retrospective method. Under ASC 606, the Company recognizes revenue in an amount that reflects the consideration to which it expects to be entitled in exchange for the transfer of promised goods or services to customers. To determine revenue recognition for contracts with customers that are within the scope of ASC 606, the Company performs the following steps: (1) identifies the contract with the customer, (2) identifies the performance obligations in the contract, (3) determines the transaction price, (4) allocates the transaction price to the performance obligations in the contract, and (5) recognizes revenue when (or as) the entity satisfies a performance obligation. The Company has concluded that upon adoption of ASC 606, as amended, there was no impact on its results of operations, financial position or cash flows for any period presented from its only two revenue-related contracts, which were in effect at that time: the CKDP Agreement or the Maruishi Agreement (see Note 11, Collaboration and Licensing Agreements and Note 12, Revenue Recognition).

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The Company has entered into agreements to license its intellectual property, or IP, related to CR845/difelikefalin to develop, manufacture and/or commercialize drug products. These agreements typically contain multiple performance obligations, including licenses of IP and R&D services. Payments to the Company under these agreements may include nonrefundable license fees, payments for research activities, payments based upon the achievement of certain milestones and royalties on any resulting net product sales.

The Company identifies agreements as contracts that create enforceable rights and obligations when the agreement is approved by the parties, identifies the rights of the parties and the payment terms, has commercial substance and it is probable that the Company will collect the consideration to which it will be entitled in exchange for the goods and services that will be transferred to the customer. The counterparty is considered to be a customer when it has contracted with the Company to obtain goods and services that are the output of the Company's ordinary activities (i.e., development of pharmaceutical products) in exchange for consideration.

A performance obligation is a promise to transfer distinct goods or services to a customer. Performance obligations that are both capable of being distinct and distinct within the context of the contract are considered to be separate performance obligations. Performance obligations are capable of being distinct if the counterparty is able to benefit from the good or service on its own or together with other resources that are readily available to it. Performance obligations are distinct within the context of the contract when each performance obligation is separately identifiable from each other; i.e., the Company is not using the goods or services as inputs to produce or deliver the combined output or outputs specified by the customer; one or more of the goods or services does not significantly modify or customize one of the other goods or services in the contract; and goods or services are not highly interdependent or not highly interrelated. Performance obligations that are not distinct are accounted for as a single performance obligation over the period that goods or services are transferred to the customer. The determination of whether performance obligations in a contract are distinct may require significant judgment.

The transaction price is the amount of consideration that the Company expects to be entitled to in exchange for transferring promised goods or services to the customer based on the contract terms at inception of a contract. There is a constraint on inclusion of variable consideration related to licenses of IP, such as milestone payments or sales-based royalty payments, in the transaction price if there is uncertainty at inception of the contract as to whether such consideration will be recognized in the future because it is probable that there will be a significant reversal of revenue in the future when the uncertainty is resolved. The determination of whether or not it is probable that a significant reversal of revenue will occur in the future depends on the likelihood and magnitude of the reversal. Factors that could increase the likelihood or magnitude of a reversal of revenue include (a) the susceptibility of the amount of consideration to factors outside the entity's influence, such as the outcome of clinical trials, the timing of initiation of clinical trials by the counterparty and the approval of drug product candidates by regulatory agencies, (b) situations in which the uncertainty is not expected to be resolved for a long period of time, and (c) level of the Company's experience in the field. When it becomes probable that events will occur, for which variable consideration was constrained at inception of the contract, the Company allocates the related consideration to the separate performance obligations in the same manner as described below.

At inception of a contract, the Company allocates the transaction price to the distinct performance obligations based upon their relative standalone selling prices. Standalone selling price is the price at which an entity would sell a promised good or service separately to a customer. The best evidence of standalone selling price is an observable price of a good or service when sold separately by an entity in similar circumstances to similar customers. Since the Company typically does not have such evidence, it estimates standalone selling price so that the amount that is allocated to each performance obligation equals the amount that the Company expects to receive for transferring goods or services. The methods that the Company uses to make such estimates include (1) the adjusted market assessment approach, under which the Company forecasts and analyzes CR845/difelikefalin in the appropriate market, the phase of clinical development as well as considering recent similar license arrangements within the same phase of clinical development, therapeutic area, type of agreement, etc. and (2) the expected cost of satisfying the performance obligations plus a margin, or the expected cost plus a margin approach.

The Company recognizes revenue when, or as, it satisfies a performance obligation by transferring a promised good or service to a customer and the customer obtains control of the good or service. Revenue related to the grant of a license that is a distinct performance obligation and that is deemed to be functional IP is recognized at the point in time that the Company has the right to payment for the license, the customer has legal title to the license and can direct the use of the license (for example, to grant sublicenses), the customer has the significant risks and rewards of ownership of the license and the customer has accepted the asset (license) by signing the license agreement.

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Recognition of revenue related to R&D services that are a distinct performance obligation or that are combined with granting of a license as a single performance obligation is deferred at inception of a contract and is recognized as those services are performed based on the costs incurred as a percentage of the estimated total costs to be incurred to complete the performance obligation.

Milestone payments are considered to be variable consideration and are not included in the transaction price at inception of the contract if it is uncertain that the milestone will be achieved. Rather, when it becomes probable that the milestone will be achieved and, therefore, there will not be a significant reversal of revenue in future periods, the respective amount to be earned is included in the transaction price, allocated to the distinct performance obligations based on their relative standalone selling price and recognized as revenue, as described above. Sales milestones and sales-based royalty payments related to a license of IP are recognized as revenue when the respective sales occur.

Research and Development Expenses

Research and development, or R&D, costs are charged to expense as incurred. Costs incurred under agreements with third parties are charged to expense as incurred in accordance with the specific contractual performance terms of such agreements. R&D expenses include, among other costs, compensation and other personnel-related costs, including consultant costs, and costs to conduct clinical trials using Clinical Research Organizations, or CRO's, which include upfront, milestone and monthly expenses as well as reimbursement for pass through costs. The amount of clinical trial expense recognized in any period varies depending on the duration and progress of each clinical trial, including the required level of patient enrollment, the rate at which patients actually enroll in and drop-out of the clinical trial, and the number of sites involved in the trial as well as the activities to be performed by the sites each period. R&D costs also include costs to manufacture product candidates and clinical supplies, laboratory supplies costs, facility-related costs and stock-based compensation for R&D personnel. Non-refundable R&D advance payments are deferred and capitalized as prepaid R&D expense. The capitalized amounts are expensed as the related goods are delivered or services are performed. As of December 31, 2018 and 2017, the Company recorded \$4,377 and \$1,287 as prepaid R&D expense, respectively.

Income Taxes

The Company accounts for income taxes using the asset and liability method. Under this method, deferred tax assets and liabilities are determined based on differences between the financial reporting and tax bases of assets and liabilities and are measured using the enacted tax rates and laws that will be in effect when the differences are expected to reverse. Deferred income tax assets are reduced, as necessary, by a valuation allowance when management determines it is more likely than not that some or all of the tax benefits will not be realized.

The Company applies the provisions of ASC 740, Income Taxes, which prescribes a comprehensive model for how a company should recognize, measure, present and disclose in its financial statements uncertain tax positions that it has taken or expects to take on a tax return. There were no material uncertain tax positions taken as of December 31, 2018 and December 31, 2017. The Company does not have any interest or penalties accrued related to tax positions as it does not have any unrecognized tax benefits. In the event the Company determines that accrual of interest or penalties are necessary in the future, the amount will be presented as a component of interest expense.

Stock-Based Compensation

The Company grants stock options to employees, non-employee members of the Company's Board of Directors and non-employee consultants as compensation for services performed. Employee and non-employee members of the Board of Directors' awards of stock-based compensation are accounted for in accordance with ASC 718, Compensation - Stock Compensation or ASC 718. ASC 718 requires all share-based payments to employees and non-employee directors, including grants of stock options, to be recognized based on their grant date fair values. The grant date fair value of stock options is estimated using the Black-Scholes option valuation model.

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Using this model, fair value is calculated based on assumptions with respect to (i) the fair value or market price of the Company's common stock on the grant date; (ii) expected volatility of the Company's common stock price, (iii) the periods of time over which employees and members of the Company's Board of Directors are expected to hold their options prior to exercise (expected term), (iv) expected dividend yield on the Company's common stock, and (v) risk-free interest rates.

The Company's common stock has been traded on a public exchange only since January 31, 2014. Since that time, exercises of stock options have been limited due to various factors, including fluctuations in the Company's stock price to below the exercise prices of awards and blackout periods during which exercises are not allowed, among others. Therefore, the Company believes that as of December 31, 2018, it does not have sufficient company-specific information available to determine the expected term based on its historical data. As a result, the expected term of stock options granted to employees and members of the Company's Board of Directors is determined using the average of the vesting period and term (6.25 years), an accepted method for the Company's option grants under the SEC's Staff Accounting Bulletin No. 110, Share-Based Payment.

Similarly, because the Company does not have sufficient company-specific information available to calculate the volatility of its common stock during the periods of the expected term of stock option grants (as noted above), expected volatility is based on an analysis of guideline companies, in accordance with ASC 718.

The expected dividend yield is zero as the Company has never paid dividends and does not currently anticipate paying any in the foreseeable future. Risk-free interest rates are based on quoted U.S. Treasury rates for securities with maturities approximating the option's expected term.

On the grant date of each stock option award prior to January 1, 2017, the Company applied a forfeiture rate in order to accrue share-based compensation expense based on an estimate of the number of stock options that are expected to vest. Estimated forfeiture rates were based upon historical data of awards that were cancelled prior to vesting. The Company adjusted the total amount of compensation cost recognized for each award, in the period in which each award vested, to reflect the actual forfeitures related to that award. To the extent that the actual forfeiture rate for an award was lower than the estimated forfeiture rate, additional compensation expense was recorded in the period that the award vested. Changes in the Company's estimated forfeiture rate resulted in changes in the rate at which compensation cost for an award was recognized over its vesting period. As of January 1, 2017, the Company adopted ASU 2016-09, Improvements to Employee Share-Based Payment Accounting. On the date of adoption of ASU 2016-09, the Company began to account for forfeitures of unvested stock options as they occur rather than estimate forfeiture rates that were applied to unvested stock option awards, as under the previous accounting guidance (see Note 13, Stock-Based Compensation).

The Company accounts for options granted to non-employee consultants under ASC 505-50, Equity-Based Payments to Non-Employees. As such, the Company estimates the fair value of each option to non-employees using the Black-Scholes model, with the expected term of stock options granted to non-employees initially equal to the options' maximum contractual life of ten years, at issuance. On each subsequent reporting date until performance is complete, the Company revalues all outstanding options granted to non-employee consultants during the vesting period of each tranche. Under ASC 505-50, upon re-measurement of each award, income or expense is recognized during its vesting term. As of January 1, 2019, the Company will adopt ASU 2018-07, Compensation – Stock Compensation (Topic 718), Improvements to Non-employee Share-Based Payment Accounting, which expands the scope of ASC 718 to include share-based payment transactions for acquiring goods and services from non-employees. As a result, the fair value of all outstanding unvested stock options that had been granted to non-employees as of January 1, 2019 will be remeasured under ASC 718 (see Note 2, Recent Accounting Pronouncements Not Yet Adopted). For all share-based payments granted to employees and non-employees, compensation cost relating to awards with service-based graded vesting schedules is recognized using the straight-line method over the requisite service period.

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Income (Loss) Per Share

The Company computes basic net income (loss) per share by dividing net income (loss) by the weighted average number of shares of common stock outstanding. Diluted net income per share includes the potential dilutive effect of common stock equivalents as if such securities were exercised during the period, when the effect is dilutive. Common stock equivalents may include outstanding stock options, which are included under the treasury stock method when dilutive. For each of the years ended December 31, 2018, 2017 and 2016, the Company excluded the effects of potentially dilutive shares that were outstanding during those respective periods from the denominator as their inclusion would be anti-dilutive due to the Company's net losses during those periods.

Segment Reporting

Operating segments are identified as components of an enterprise about which separate discrete financial information is available for evaluation by the chief operating decision-maker in making decisions regarding resource allocation and assessing performance. The Company views its operations and manages its business as one operating segment, which includes all activities related to the discovery and development of novel therapeutics to treat serious medical conditions, including pruritus and pain.

Leases

The Company recognizes rent expense for operating leases on a straight-line basis over the term of the lease, beginning on the date the Company takes possession of the property. Rent expense includes the base amounts stated in the lease agreement as well as the effect of reduced or free rent and rent escalations. At lease inception, the Company determines the lease term by assuming the exercise of those renewal options that are reasonably assured because of the significant economic penalty that exists for not exercising those options. The exercise of renewal options is at the Company's sole discretion. The expected lease term is one of the factors used to determine whether a lease is classified as operating or capital and is used to calculate the straight-line rent expense. The difference between the cash paid to the landlord and the amount recognized as rent expense on a straight-line basis is included in deferred rent and classified within long-term liabilities. Lease incentives made by landlords to or on behalf of the Company for leasehold improvements are recorded as deferred rent and classified as long-term liabilities. Deferred rent related to landlord incentives is amortized using the straight-line method over the lease term as an offset to rent expense. Penalties paid to landlords to terminate a lease before the contractual end date of the lease are recognized on an undiscounted basis in the Statements of Comprehensive Loss. On January 1, 2019, the Company will adopt ASU No. 2016-02, Leases (Topic 842), which amends the previous guidance for accounting and disclosure of leases (ASC 840) for both lessees and lessors. The primary effect of adoption will be the requirement to record a right-of-use asset and a corresponding lease obligation for the Stamford operating lease (see Note 2, Recent Accounting Pronouncements Not Yet Adopted).

Litigation Reserves

From time to time, the Company may become subject to arbitration, litigation or claims arising in the ordinary course of its business. Accruals are recorded when it is probable that a liability has been incurred and the amount of the liability can be reasonably estimated. The Company reviews these reserves at least quarterly and adjusts these reserves to reflect current law, progress of each case, opinions and views of legal counsel and other advisers, the Company's experience in similar matters and intended response to the litigation. The Company expenses amounts for administering or litigating claims as incurred. Accruals for legal proceedings, if any, are included in Accounts payable and accrued expenses in the Balance Sheets.

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Other Accounting Pronouncements Recently Adopted

In August 2018, the SEC adopted amendments to certain disclosure requirements in Securities Act Release No. 33-10532, Disclosure Update and Simplification. These amendments eliminate, modify, or integrate into other SEC requirements certain disclosure rules. Among the amendments is the requirement to present an analysis of changes in stockholders' equity in the interim financial statements included in quarterly reports on Form 10-Q. The analysis, which can be presented as a footnote or separate statement, is required for the current and comparative quarter and year-to-date interim periods. The amendments are effective for all filings made on or after November 5, 2018. In light of the anticipated timing of effectiveness of the amendments and expected proximity of effectiveness to the filing date for most filers' quarterly reports, the SEC's Division of Corporate Finance issued a Compliance and Disclosure Interpretation related to Exchange Act Forms, or CDI – Question 105.09, that provides transition guidance related to this disclosure requirement. CDI – Question 105.09 states that the SEC would not object if the filer's first presentation of the changes in stockholders' equity is included in its Form 10-Q for the quarter that begins after the effective date of the amendments. As such, the Company adopted these SEC amendments on November 5, 2018 and will present the analysis of changes in stockholders' equity in its interim financial statements in the Company's Quarterly Report on Form 10-Q for the quarter ending March 31, 2019. The adoption of these SEC amendments will not have a material effect on the Company's financial position, results of operations, cash flows or stockholders' equity.

As of January 1, 2018, the Company adopted ASU No. 2017-09, Compensation – Stock Compensation (Topic 718) - Scope of Modification Accounting, or ASU 2017-09, which clarifies that a change to the terms or conditions of a share-based payment award should be accounted for as a modification only if the fair value, vesting conditions or classification (as equity or liability) of the award changes as a result of the change in terms or conditions. Modification of a share-based payment award may result in the Company recognizing additional compensation expense. The Company does not expect to frequently modify, the fair value, vesting conditions or classification of its share-based payment awards. The Company does not expect this guidance to have a material effect on its financial position, results of operations or cash flows. However, if and when modifications occur, their effect could be material to the Company's financial position, results of operations or cash flows.

As of January 1, 2018, the Company adopted ASU No. 2017-01, Business Combinations (Topic 805), Clarifying the Definition of a Business, or ASU 2017-01, that clarifies the definition of a business to assist entities with evaluating whether transactions should be accounted for as acquisitions (or disposals) of assets or businesses. ASU 2017-01 requires an entity to evaluate if substantially all of the fair value of the gross assets acquired or disposed of is concentrated in a single identifiable asset or a group of similar identifiable assets; if so, the set of transferred assets and activities is not a business. ASU 2017-01 also requires a business to include at least an input and one substantive process that together significantly contribute to the ability to create output and removes the evaluation of whether a market participant could replace missing elements. The adoption of ASU 2017-01 did not have a material effect on the Company's financial position, results of operations or cash flows.

As of January 1, 2018, the Company adopted ASU No. 2016-18, Statement of Cash Flows (Topic 230), Restricted Cash (a consensus of the Emerging Issues Task Force), or ASU 2016-18, which changes the presentation of the cash flow statement to include amounts generally described as restricted cash or restricted cash equivalents, together with cash and cash equivalents, when reconciling the beginning-of-period and end-of-period amounts shown on the statement of cash flows. ASU 2016-18 also requires additional disclosures concerning the nature of the restrictions on cash and cash equivalents and a reconciliation between amounts of cash, cash equivalents and restricted cash on the balance sheet and statement of cash flows for each period presented. Upon adoption, ASU 2016-18 was applied retrospectively to all periods presented. The Company historically presented changes in restricted cash as an investing activity in the statement of cash flows. Upon adoption of ASU 2016-18, such changes are reflected in the beginning and ending balances of cash, cash equivalents and restricted cash for all periods presented (see Note 7, Restricted Cash).

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In November 2018, the FASB issued ASU No. 2018-18, Collaborative Arrangements (Topic 808): Clarifying the Interaction between Topic 808 and Topic 606, or ASU 2018-18, which clarifies the interaction between Topic 808 and Topic 606 by (1) clarifying that certain transactions between collaborative arrangement participants should be accounted for under Topic 606; (2) adding unit-of-account guidance in Topic 808 to align with the guidance in Topic 606; and (3) clarifying presentation guidance for transactions with a collaborative arrangement participant that are not accounted for under Topic 606. ASU 2018-18 is effective for public business entities for fiscal years beginning after December 15, 2019, and interim periods within those fiscal years. Early adoption is permitted, including adoption in any interim period. The Company has determined that ASU 2018-18 will not have any effect on its financial position, results of operations or cash flows since all three of its collaboration and licensing agreements are accounted for under Topic 606 (see Note 11, Collaboration and Licensing Agreements and Note 12, Revenue Recognition).

In August 2018, the FASB issued ASU No. 2018-13, Fair Value Measurement (Topic 820): Disclosure Framework – Changes to the Disclosure Requirements for Fair Value Measurement, or ASU 2018-13, which modifies the disclosure requirements on fair value measurements in Topic 820 to remove the amount of and reasons for transfers between Level 1 and Level 2 of the fair value hierarchy, the policy for timing of transfers between levels, and the valuation processes for Level 3 fair value measurements. ASU 2018-13 also amends Topic 820 to clarify that the measurement uncertainty disclosure is to communicate information about the uncertainty in measurement as of the reporting date. ASU 2018-13 also requires additional disclosure for changes in unrealized gains and losses for the period included in other comprehensive income for recurring Level 3 fair value measurements held at the end of the reporting period as well as the range and weighted average of significant unobservable inputs used to develop Level 3 fair value measurements. ASU 2018-13 is effective for all entities for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2019. The amendments on changes in unrealized gains and losses, the range and weighted average of significant unobservable inputs used to develop Level 3 fair value measurements, and the narrative description of measurement uncertainty should be applied prospectively for only the most recent interim or annual period presented in the initial fiscal year of adoption. All other amendments should be applied retrospectively to all periods presented upon their effective date. Early adoption is permitted upon issuance of ASU 2018-13. The Company will adopt ASU 2018-13, as applicable, on January 1, 2020. The Company does not expect that the adoption of ASU 2018-13 will have a material effect on its results of operations, financial position, cash flows or footnote disclosures.

In June 2018, the FASB issued ASU No. 2018-07, Compensation—Stock Compensation (Topic 718), Improvements to Nonemployee Share-Based Payment Accounting, or ASU 2018-07, which expands the scope of Topic 718 to include share-based payment transactions for acquiring goods and services from nonemployees. ASU 2018-07 applies to all share-based payment transactions in which a grantor acquires goods or services to be used or consumed in a grantor’s own operations by issuing share-based payment awards. Accordingly, under ASU 2018-07, the fair value of stock options granted to nonemployees will be measured only on the grant date, the amount of which will be recognized as compensation expense over the nonemployee’s service (vesting) period in the same period(s) and in the same manner as if the Company had paid cash for the goods or services instead of paying with or using share-based payment awards. On an award-by-award basis, the Company may elect to use the contractual term as the expected term when estimating the fair value of a nonemployee award to satisfy the measurement objective. Prior guidance under Subtopic 505-50 required the fair value of nonemployee stock options to be marked to market at each reporting period during the service period, which resulted in volatility of compensation expense during that period. ASU 2018-07 is effective for fiscal years beginning after December 15, 2018, including interim periods within that fiscal year. Early adoption is permitted, but no earlier than an entity's adoption date of Topic 606. The Company will adopt ASU 2018-07 on January 1, 2019 on a modified retrospective basis and will remeasure, on that date, the fair value of all outstanding unvested stock options that had been granted to nonemployees. The Company expects that the adoption of ASU 2018-07 will not have a material effect on its results of operations, financial position or cash flows because grants of stock options to nonemployees have been insignificant.

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In June 2016, the FASB issued ASU No. 2016-13, Financial Instruments—Credit Losses (Topic 326), Measurement of Credit Losses on Financial Instruments, or ASU 2016-13, which replaces the incurred loss impairment methodology in current GAAP, that delays recognition of a credit loss until it is probable that such loss has been incurred, with a methodology that reflects expected credit losses and requires consideration of a broader range of reasonable and supportable information to inform credit loss estimates. ASU 2016-13 modifies the other-than-temporary impairment model for available-for-sale debt securities by requiring (1) estimating expected credit losses only when the fair value is below the amortized cost of the asset; (2) recording a credit loss without regard to the length of time a security has been in an unrealized loss position; (3) limiting the measurement of the credit loss to the difference between the security’s amortized cost basis and its fair value and (4) presenting credit losses as an allowance rather than as a write-down, which will allow the Company to record reversals of credit losses in current period net income, a practice that is currently prohibited. ASU 2016-13 will be effective for fiscal years beginning after December 15, 2019, including interim periods within those fiscal years. As such, the Company expects to adopt ASU 2016-13 on January 1, 2020 and is currently evaluating the effect it will have on its results of operations, financial position and cash flows.

In February 2016, the FASB issued ASU No. 2016-02, Leases (Topic 842), or ASU 2016-02, which amends the current guidance for the accounting and disclosure of leases (ASC 840) for both lessees and lessors. The Company has completed its review of existing contracts and has identified one material contract that contains a lease. The primary effect of adoption will be the requirement to record a right-of-use asset and a corresponding lease obligation for the Stamford operating lease (see Note 17, Commitments and Contingencies). ASU 2016-02 is effective for interim and annual periods beginning after December 31, 2018 but may be adopted earlier. ASU 2016-02 requires modified retrospective adoption. However, the FASB issued ASU 2018-11, Leases (Topic 842): Targeted Improvements, or ASU 2018-11, which allows entities to elect an optional transition method by continuing to apply the guidance in ASC 840, including its disclosure requirements, in the comparative periods presented in the year that they adopt the new leases guidance in ASC 842. Entities that elect this optional transition method would record the cumulative effect of adoption on the effective date rather than at the beginning of the earliest comparative period presented. The Company will adopt ASU 2016-02 and ASU 2018-11 on January 1, 2019 using the optional transition method from ASU 2018-11. The Company expects that the adoption of ASU 2016-02 or ASU 2018-11 will not have a material impact on its Statements of Comprehensive Loss or its Statements of Cash Flows, but it expects that the lease liability recorded on the Balance Sheet beginning on January 1, 2019 will be between $5,000 and $6,000.

3. Available-for-Sale Marketable Securities

As of December 31, 2018, and 2017, the Company’s available-for-sale marketable securities consisted of debt securities issued by U.S. government-sponsored entities and by investment grade institutions. As of December 31, 2018, the Company’s available-for-sale marketable securities also included debt securities issued by the U.S. Treasury and municipal bonds. As of December 31, 2017, the Company’s available-for-sale securities also included a money market fund.

The following tables summarize the Company's available-for-sale marketable securities by major type of security as of December 31, 2018, and 2017:

As of December 31, 2018

Type of Security	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
U.S. Treasury securities	$ 19,540	$ —	$ (1)	$ 19,539
U.S. government agency obligations	17,860	—	(1)	17,859
Corporate bonds	75,999	5	(94)	75,910
Commercial paper	50,413	—	(23)	50,390
Municipal bonds	4,000	—	—	4,000
Total available-for-sale marketable securities	$ 167,812	$ 5	$ (119)	$ 167,698

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As of December 31, 2017

Type of Security	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Money market funds	$ 39,988	$ —	$ (37)	$ 39,951
U.S. government agency obligations	7,799	—	(5)	7,794
Corporate bonds	15,919	—	(12)	15,907
Commercial paper	19,545	—	(16)	19,529
Total available-for-sale marketable securities	$ 83,251	$ —	$ (70)	$ 83,181

All available-for-sale marketable securities are classified as Marketable securities, current or Marketable Securities, non-current depending on the contractual maturity date of the individual available-for-sale security.

The Company classifies its marketable debt securities based on their contractual maturity dates. As of December 31, 2018, the Company's marketable debt securities mature at various dates through November 2020. The amortized cost and fair values of marketable debt securities by contractual maturity were as follows. The table does not include money market funds that are classified as available-for sale marketable securities as of December 31, 2017.

	As of December 31,			
	2018		2017	
Contractual maturity	Amortized Cost	Fair Value	Amortized Cost	Fair Value
Less than one year	$ 146,363	$ 146,302	$ 43,263	$ 43,230
One year to two years	21,449	21,396	—	—
Total	$ 167,812	$ 167,698	$ 43,263	$ 43,230

During the years ended December 31, 2018 and 2017, the Company sold shares of its investments in available-for-sale marketable securities with total fair values of $79,808 and $8,755, respectively. The cost of the available-for-sale marketable securities that were sold was determined by specific identification. The sales of the investments in available-for-sale marketable securities during each year resulted in realized (losses) gains, totaling $(5) and $5, respectively.

The following tables show the fair value of the Company's available-for-sale marketable securities that have unrealized losses and that are deemed to be only temporarily impaired, aggregated by investment category and length of time that the individual investments have been in a continuous unrealized loss position.

	Less than 12 Months		12 Months or Greater		Total	
As of December 31, 2018	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses
U.S. Treasury securities	$16,392	$ (1)	$ —	$ —	$16,392	$ (1)
U.S. government agency obligations	5,596	(1)	—	—	5,596	(1)
Corporate bonds	71,322	(94)	—	—	71,322	(94)
Commercial paper	39,445	(23)	—	—	39,445	(23)
Total	$132,755	$ (119)	$ —	$ —	$132,755	$ (119)

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	Less than 12 Months		12 Months or Greater		Total	
As of December 31, 2017	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses
Money market funds	$39,951	$ (37)	$ —	$ —	$39,951	$ (37)
U.S. government agency obligations	7,794	(5)	—	—	7,794	(5)
Corporate bonds	15,907	(12)	—	—	15,907	(12)
Commercial paper	19,031	(16)	—	—	19,031	(16)
Total	$82,683	$ (70)	$ —	$ —	$82,683	$ (70)

As of December 31, 2018, and 2017, the Company held a total of 69 out of 84 positions and 30 out of 31 positions, respectively, that were in an unrealized loss position, none of which had been in an unrealized loss position for 12 months or greater. Based on the Company’s review of these securities, the Company believes that the cost basis of its available-for-sale marketable securities is recoverable and that, therefore, it had no other-than-temporary impairments on these securities as of December 31, 2018, or 2017. The Company does not intend to sell these debt securities before maturity and the Company believes it is not more likely than not that it will be required to sell these securities before the recovery of their amortized cost basis, which may be maturity.

4. Accumulated Other Comprehensive Income (Loss)

The following table summarizes the changes in accumulated other comprehensive income (loss), or AOCI, net of tax, from unrealized gains (losses) on available-for-sale marketable securities, the Company's only component of AOCI, for the years ended December 31, 2018, 2017 and 2016.

	Total Accumulated Other Comprehensive Income (Loss)
Balance, December 31, 2015	$ (35)
Other comprehensive income before reclassifications	61
Amount reclassified from accumulated other comprehensive income	(23)
Net current period other comprehensive income	38
Balance, December 31, 2016	3
Other comprehensive loss before reclassifications	(68)
Amount reclassified from accumulated other comprehensive income	(5)
Net current period other comprehensive loss	(73)
Balance, December 31, 2017	(70)
Other comprehensive loss before reclassifications	(49)

Amount reclassified from accumulated other comprehensive loss		5
Net current period other comprehensive loss		(44)
Balance, December 31, 2018	$	(114)

The reclassifications out of AOCI and into net loss were as follows:

Component of AOCI	Year Ended December 31, 2018	2017	2016	Affected Line Item in the Statements of Comprehensive Loss
Unrealized gains (losses) on available-for-sale marketable securities				
Realized (losses) gains on sale of securities	$(5)	$ 5	$ 23	Other income
	—	—	—	Income tax benefit
	$(5)	$ 5	$ 23	

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The amounts reclassified out of AOCI into net loss were determined by specific identification.

5. Prepaid Expenses

As of December 31, 2018, the amount of prepaid expenses was $4,805, consisting of $4,377 of prepaid R&D clinical costs, $245 of prepaid insurance and $183 of other costs. As of December 31, 2017, the amount of prepaid expenses was $1,635, consisting of $1,287 of prepaid R&D clinical costs, $124 of prepaid insurance and $224 of other costs.

6. Property and Equipment, Net

Property and equipment, net consists of the following:

	December 31,	
	2018	2017
Computer and office equipment	$211	$158
Laboratory equipment	628	628
Furniture and fixtures	47	27
Leasehold improvements	1,128	1,128
	$2,014	$1,941
Less accumulated depreciation and amortization	1,134	764
Property and equipment, net	$880	$1,177

Depreciation and amortization expense included in R&D expense and General and administrative expense was $370, $495 and $1,465 for the years ended December 31, 2018, 2017 and 2016, respectively.

In connection with the Company's relocation of its operating facility from Shelton, Connecticut to Stamford, Connecticut, the Company accelerated the amortization of the Shelton leasehold improvements during the period from December 2015 (signing of the Stamford lease) to May 2016 (the date that the Shelton facility was vacated) (see Note 17, Commitments and Contingencies). In addition, during the years ended December 31, 2017 and 2016, the Company wrote-off $7,816 and $397, respectively, of fully-depreciated Shelton property and equipment, including leasehold improvements, that was not re-located to the Stamford headquarters. During the year ended December 31, 2017, the Company sold fully-depreciated Shelton property and equipment for net proceeds of $41.

7. Restricted Cash

The Company is required to maintain a stand-by letter of credit as a security deposit under its lease for its office space in Stamford, Connecticut (refer to Note 17, Commitments and Contingencies). The fair value of the letter of credit approximates its contract value. The Company's bank requires the Company to maintain a restricted cash balance to serve as collateral for the letter of credit issued to the landlord by the bank. As of December 31, 2018, the restricted cash balance for the Stamford lease was invested in a commercial money market account.

The letter of credit balance for the Stamford lease is required to remain at $769 through May 2019 and may, upon request from the Company, thereafter be reduced to $408 through the end of the lease term in November 2023. The reduction in the balance of the letter of credit for the Stamford lease is contingent upon the Company not being in default of any provisions of that lease prior to request for the reduction. As of December 31, 2018, the Company had $361 of restricted cash related to the Shelton lease in current assets and $408 in long-term assets. As of December 31, 2017, the Company had $769 of restricted cash related to the Stamford lease in long-term assets.

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

	December 31,	
	2018	2017
Cash and cash equivalents	$15,081	$9,388
Restricted cash, current assets	361	—
Restricted cash, long-term assets	408	769
Total cash, cash equivalents, and restricted cash shown in the Statements of Cash Flows	$15,850	$10,157

8. Accounts Payable and Accrued Expenses

Accounts payable and accrued expenses consist of the following:

	December 31,	
	2018	2017
Accounts payable	$4,371	$3,829
Accrued research projects	6,079	2,356
Accrued professional fees	802	384
Accrued compensation and benefits	2,370	1,864
Accrued other	—	73
	$13,622	$8,506

9. Stockholders’ Equity

The Company’s Board of Directors has authorized 100,000,000 shares of the Company’s common stock, par value $0.001 per share, and 5,000,000 shares of undesignated preferred stock, par value $0.001 per share, that may be issued from time to time by the Board of Directors of the Company in one or more series. As of December 31, 2018, there were 39,547,558 shares of common stock and no shares of preferred stock issued and outstanding.

Each share of common stock entitles the holder to one vote on all matters submitted to a vote of the Company’s stockholders. Common stockholders are entitled to dividends when and if declared by the Board of Directors, subject to the preferential rights of the holders of preferred stock, if any.

On March 30, 2017, the Company entered into an underwriting agreement with Piper Jaffray & Co. and Stifel, Nicolaus & Company, Incorporated, as representatives of the several underwriters named therein, relating to the issuance and sale by the Company of 5,117,500 shares of its common stock, including 667,500 shares of common stock the underwriters had the option to purchase, at a public offering price of $18.00 per share, or the 2017 Offering. The 2017 Offering was made pursuant to the Company's Registration Statement on Form S-3 (File No. 333-216657), filed with the SEC on March 13, 2017 and declared effective on March 24, 2017, and a related prospectus supplement dated March 30, 2017, which was filed with the SEC on March 31, 2017.

On April 5, 2017, the Company closed the 2017 Offering, including the full exercise of the underwriters' option to purchase 667,500 additional shares of common stock. The Company received net proceeds of $86,224, after deducting $5,891 relating to underwriting discounts and commissions and offering expenses.

On May 17, 2018, the Company issued 1,174,827 shares of its common stock to Vifor in connection with the license agreement entered into with VFMCRP (refer to Note 11, Collaboration and Licensing Agreements).

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On July 18, 2018, the Company entered into an underwriting agreement with Jefferies LLC and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as representatives of the several underwriters named therein, relating to the issuance and sale by the Company of up to 5,175,000 shares of its common stock, including 675,000 shares of common stock the underwriters had the option to purchase, at a public offering price of $19.00 per share. This offering was made pursuant to the Company's Registration Statement on Form S-3 (File No. 333-216657), filed with the SEC on March 13, 2017 and declared effective on March 24, 2017, and a related prospectus dated March 24, 2017 and prospectus supplement dated July 18, 2018, which was filed with the SEC on July 20, 2018.

On July 23, 2018, the Company closed the offering, including the full exercise of the underwriters' option to purchase 675,000 additional shares of common stock. The Company received net proceeds of $92,063, after deducting $6,262 relating to underwriting discounts and commissions and offering expenses.

In December 2018, as a result of the achievement of a clinical performance target, restricted stock units of various executive officers vested and were converted into 83,791 shares of the Company's common stock (see Note 13, Stock-Based Compensation).

10. Fair Value Measurements

The following tables summarize the Company's financial assets measured at fair value on a recurring basis as of December 31, 2018 and 2017 and by level within the fair value hierarchy:

Fair value measurement as of December 31, 2018:

Financial assets Type of Instrument	Total	Quoted prices in active markets for identical assets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)
Cash and cash equivalents:				
Money market funds and checking accounts	$15,081	$ 15,081	$ —	$ —
Available-for-sale marketable securities:				
U.S. Treasury securities	19,539	—	19,539	—
U.S. government agency obligations	17,859	—	17,859	—
Corporate bonds	75,910	—	75,910	—
Commercial paper	50,390	—	50,390	—
Municipal bonds	4,000	—	4,000	—
Restricted cash:				
Commercial money market account	769	769	—	—
Total financial assets	$183,548	$ 15,850	$ 167,698	$ —

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Fair value measurement as of December 31, 2017:

Financial assets Type of Instrument	Total	Quoted prices in active markets for identical assets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)
Cash and cash equivalents:				
Money market fund and checking accounts	$9,388	$ 9,388	$ —	$ —
Available-for-sale marketable securities:				
Money market fund	39,951	—	39,951	—
U.S. government agency obligations	7,794	—	7,794	—
Corporate bonds	15,907	—	15,907	—
Commercial paper	19,529	—	19,529	—
Restricted cash:				
Commercial money market account	769	769	—	—
Total financial assets	$93,338	$ 10,157	$ 83,181	$ —

There were no purchases, sales or maturities of Level 3 financial assets and no unrealized gains or losses related to Level 3 available-for-sale marketable securities for the years ended December 31, 2018, 2017 and 2016. There were no transfers of financial assets between Levels 1, 2, or 3 classifications during the years ended December 31, 2018, 2017 and 2016.

11. Collaboration and Licensing Agreements

Vifor Fresenius Medical Care Renal Pharma Ltd.

On May 17, 2018, the Company entered into a license agreement, or the VFMCRP Agreement, with VFMCRP under which the Company granted VFMCRP an exclusive, royalty-bearing license, or the VFMCRP License, to seek regulatory approval to commercialize, import, export, use, distribute, offer for sale, promote, sell and otherwise commercialize CR845/difelikefalin injection, or the Licensed Product, for all therapeutic uses to prevent, inhibit or treat itch associated with pruritus in hemodialysis and peritoneal-dialysis patients, or the Field, worldwide (excluding the United States, Japan and South Korea), or the Territory. VFMCRP cannot perform development activities on their own unless specifically allocated to VFMCRP by the Joint Development Committee, or JDC, and Joint Steering Committee, or JSC. The Company's membership on the JSC or JDC is at its sole discretion and is not its obligation.

The Company is responsible, at its own cost, to undertake clinical and non-clinical development, or the R&D services. The Company is also responsible to provide all content and subject matter expertise required for registration with the European Medicines Agency, or EMA, in the European Union, or the EU, that will be needed by VFMCRP for such registration, including participation in regulatory meetings, as needed. If third-party costs incurred by the Company with respect to its clinical development for the EMA registration exceed $20,000, such excess costs will be shared equally by the Company and VFMCRP. VFMCRP will contribute, at its own cost, its clinical development expertise as reasonably useful for such development activities, such as preparing the clinical results that the Company presents to it in a format acceptable to the EMA to obtain marketing approval in the EU.

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The Company has identified two performance obligations under ASC 606: (1) granting of the VFMCRP License and (2) the R&D services. The Company has determined that these two performance obligations are not capable of being distinct (i.e., do not have standalone value for VFMCRP) because VFMCRP cannot benefit (derive potential cash flows) from either one on its own or together with other resources that are readily available to it since VFMCRP is relying on the Company's expertise in investigating chronic kidney disease-associated pruritus, or CKD-aP, and its know-how obtained from multiple years of pre-clinical and clinical development, and years of interactions with the FDA which other companies or CROs would not have. The VFMCRP License does not provide benefit to VFMCRP until and unless the Company conducts the pivotal clinical trials and other supportive trials in CKD-aP to gather sufficient clinical data for VFMCRP to obtain marketing approval in the Territory. Furthermore, VFMCRP does not have the right to perform development activities on its own unless specifically allocated by the JDC or JSC.

The two identified performance obligations are also not distinct within the context of the contract, (i.e., are not separately identifiable from each other) because of the nature of the promise within the context of the contract. The nature of the promise is to transfer a combined deliverable to VFMCRP based on the agreement (to support the ability of VFMCRP to commercialize the Licensed Product) and the Company determined that the VFMCRP License and the R&D services are inputs rather than a transfer of each of these goods and services individually. In addition, the two identified performance obligations are highly interrelated and interdependent because satisfaction of both performance obligations is required for VFMCRP to derive benefit from the VFMCRP Agreement for commercialization of the Licensed Product in the Territory. Therefore, the two performance obligations are not distinct from each other and are accounted for as a single performance obligation.

Upon entry into the VFMCRP Agreement, VFMCRP made a non-refundable, non-creditable $50,000 upfront payment to the Company and Vifor purchased 1,174,827 shares of the Company's common stock, or the Vifor Shares, for $20,000 at a price of $17.024 per share, which represents a premium over a pre-determined average closing price of the Company's common stock. The purchase of the Company's common stock was governed by a separate stock purchase agreement. The excess of the stock purchase price over the cost of the Vifor Shares at the closing price of the Company's common stock on the purchase date of $5,444 was added to the upfront payment for accounting purposes.

The Company is eligible to receive from VFMCRP regulatory and commercial milestone payments in the aggregate of up to $470,000, consisting of up to $30,000 in regulatory milestones and up to $440,000 in tiered commercial milestones, all of which are sales-related. The Company is also eligible to receive tiered double-digit royalty payments based on annual net sales, as defined in the VFMCRP Agreement, of CR845/difelikefalin injection in the Licensed Territories. The Company retains full commercialization rights for CR845/difelikefalin injection for the treatment of CKD-aP in the United States except in the dialysis clinics of Fresenius Medical Care North America, or FMCNA, where VFMCRP and the Company will promote CR845/difelikefalin injection under a profit-sharing arrangement (subject to the terms and conditions of the VFMCRP Agreement) based on net FMCNA clinic sales recorded by the

Company.

At inception of the VFMCRP Agreement, there was significant uncertainty as to whether marketing approval would be obtained in the Territory for the Licensed Product. Therefore, at that time, there was a significant probability that any potential revenue from sales of the Licensed Product that would be included in the transaction price would be reversed when the uncertainty is resolved. Consequently, any sales royalties and sales milestones are constrained from the transaction price at inception of the VFMCRP Agreement and will be recognized as revenue if, and when, such sales transactions occur in the future.

At inception of the VFMCRP Agreement, the transaction price of $55,444 was allocated entirely to the one combined performance obligation, as described above, and was initially recorded as deferred revenue. License and milestone revenue will be recognized proportionately as the R&D services are conducted (i.e., prior to submission of an NDA).

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The license also requires VFMCRP to promote and take orders in the U.S. for sale by the Company to FMC U.S. Dialysis Clinics and allows VFMCRP to grant sub-licenses, which, in certain cases, requires the Company's prior written consent. The Company retains the rights to import, distribute, promote, sell and otherwise commercialize the Licensed Product outside of the Field and outside of the Territory.

The Company retains the rights to make and have made the Licensed Product in the Territory for commercial sale by VFMCRP in the Field in or outside the Territory and for supply of Licensed Product to VFMCRP under the terms of a supply agreement, or the Supply Agreement. The supply price will be the Company's cost of goods sold, as calculated under U.S. GAAP, plus an agreed upon margin. The Supply Agreement will co-terminate with the VFMCRP Agreement. In regards to a supply agreement, the VFMCRP Agreement only includes a requirement for the Company to negotiate in good faith with VFMCRP. After the execution of the VFMCRP Agreement, a separate agreement to supply them with the Licensed Product would be entered into, although the Company has no obligation to execute a supply agreement. In the event that the parties fail to enter into a Supply Agreement or if the Company fails to provide Licensed Product on a timely basis, VFMCRP has the right to manufacture or have manufactured the Licensed Product in and outside the Territory.

The Supply Agreement will be accounted for as a customer option that is not a material right because the selling price of the Licensed Product under the Supply Agreement is the Company's cost of goods sold plus an agreed upon margin, which is commensurate with the "cost of goods sold plus" model that the Company would charge other parties under similar agreements (the standalone selling price) and not at a discount. Therefore, the sale of clinical compound to VFMCRP is not a performance obligation under the VFMCRP Agreement but rather the Supply Agreement is a separate agreement from the VFMCRP Agreement. The only performance obligation under the Supply Agreement is the delivery of the Licensed Product to VFMCRP for commercialization. Revenue from the sale of the Licensed Product to VFMCRP will be recognized as Clinical Supply revenue in the Company's Statements of Comprehensive Loss as sales of the Licensed Product occur. As of December 31, 2018, no supply agreement has been entered into between the Company and VFMCRP.

The VFMCRP Agreement terminates upon the expiration of all royalty terms with respect to the Licensed Products, which expire on a Product-by-Product and country-by-country basis, at the latest of (a) the expiration of all patent rights licensed to VFMCRP covering such Licensed Product; (b) the expiration of all regulatory and data exclusivity applicable to such Licensed Product in such country and (c) the tenth anniversary of the first commercial sale of such Product in such country.

The VFMCRP Agreement may be terminated earlier by either party for material breach that is not cured within 60 days, bankruptcy by either party and by both parties upon mutual written consent. The Company may terminate the VFMCRP Agreement if VFMCRP challenges the validity of any licensed patent rights, except if such patent challenge results from the Company's action against VFMCRP for infringement of any licensed patent in the Territory. In addition, upon the earlier of (1) the acceptance for filing of an NDA covering Licensed Product filed with the FDA (after completion of the Phase 3 program) or (2) the third anniversary of the Effective Date, the VFMCRP Agreement may be terminated by VFMCRP in its entirety or with respect to any countries within the Territory upon written notice to the Company. Such termination will be effective twelve months following the date of such notice.

If the VFMCRP Agreement terminates early for any reason stated above, VFMCRP's licenses will terminate, VFMCRP's rights to use the Company's confidential information and the Company's know-how will revert to the Company and VFMCRP will assign and transfer to the Company all right, title and interest in all regulatory applications (IND's and NDA's), regulatory approval applications and regulatory approvals in the Territory covering Licensed Product.

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Maruishi Pharmaceutical Co., Ltd.

In April 2013, the Company entered into a license agreement with Maruishi, or the Maruishi Agreement, under which the Company granted Maruishi an exclusive license to develop, manufacture, and commercialize drug products containing CR845/difelikefalin for acute pain and/or uremic pruritus in Japan. Maruishi has the right to grant sub-licenses in Japan, which entitles the Company to receive sub-license fees, net of prior payments made by Maruishi to the Company. Under the Maruishi Agreement, the Company and Maruishi are required to use commercially reasonable efforts, at their own expense, to develop, obtain regulatory approval for and commercialize CR845/difelikefalin in the United States and Japan, respectively. In addition, the Company provided Maruishi specific clinical development services for CR845/difelikefalin used in Maruishi's field of use.

Under the Maruishi Agreement, the Company identified two performance obligations in accordance with ASC 606: (1) the license; and (2) the R&D services specific to the uremic pruritus field of use (specified as Phase 1 and proof-of-concept clinical trials), both of which were determined to have standalone value. The Company determined that these performance obligations had standalone value due to the fact that Maruishi obtained the right to develop the compound on its own and the Company was specifically contracted to perform specific R&D services as noted above. The Company believes that these early stage R&D services performed by the Company did not require any specific expertise or know-how, but rather could have been completed by outside third parties, therefore providing standalone value to Maruishi.

In March 2017, Maruishi entered into a sub-license agreement with Kissei Pharmaceutical Co. Ltd., or Kissei, for the development and sales/marketing of CR845/difelikefalin (called MR13A9 by Maruishi) for the treatment of uremic pruritus in dialysis patients in Japan. Consequently, for the year ended December 31, 2017, the Company recognized revenue of $843 related to the sub-license fee. The Company allocated the amount of the sub-license fee to each of the two identified performance obligations in the same proportion as the upfront license fee that the Company received at inception of the Maruishi Agreement. Accordingly, $530 was recognized as license and milestone fees revenue and $313 was recognized as collaborative revenue.

Under the terms of the Maruishi Agreement, the Company is eligible to receive milestone payments upon the achievement of defined clinical and regulatory events as well as tiered, low double-digit royalties with respect to any sales of the licensed product sold in Japan by Maruishi, if any, and share in any sub-license fees.

During the years ended December 31, 2018, 2017 and 2016, the Company recognized clinical compound revenue of $33, $68 and $86, respectively, from the sale of clinical compound to Maruishi.

The Company incurred R&D expense related to the Maruishi Agreement of $30, $61 and $78 (all related to the cost of clinical compound sold to Maruishi) during the years ended December 31, 2018, 2017 and 2016, respectively.

Chong Kun Dang Pharmaceutical Corporation

In April 2012, the Company entered into a license agreement, or the CKDP Agreement, with Chong Kun Dang Pharmaceutical Corporation, or CKDP, in South Korea, under which the Company granted CKDP an exclusive license to develop, manufacture and commercialize drug products containing CR845/difelikefalin in South Korea. The

Company and CKDP are each required to use commercially reasonable efforts, at their respective expense, to develop, obtain regulatory approval for and commercialize CR845/difelikefalin in the United States and South Korea, respectively. The Company identified the granting of the license as its only performance obligation under the CKDP Agreement.

Under the terms of the CKDP Agreement, the Company is eligible to receive milestone payments upon the achievement of defined clinical and regulatory events as well as tiered royalties, with percentages ranging from the high single digits to the high teens, based on net sales of products containing CR845/difelikefalin in South Korea, if any, and share in any sub-license fees.

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12. Revenue Recognition

The Company currently recognizes revenue in accordance with ASC 606, as amended, for the VFMCRP, Maruishi and CKDP agreements (see Note 11, Collaboration and Licensing Agreements). Under each of these agreements, the Company has recognized revenue from upfront payments and, under the Maruishi Agreement and the CKDP Agreement, from clinical development milestone payments. The Company has also recognized revenue from a sub-license payment earned under the Maruishi Agreement. Under the Maruishi Agreement and the CKDP Agreement, the Company may earn additional future milestone payments upon the achievement of defined clinical events, and under the VFMCRP Agreement, the Maruishi Agreement and the CKDP Agreement upon the achievement of defined regulatory events and, under the VFMCRP Agreement and the Maruishi Agreement, from sales milestones. The Company may also recognize revenue in the future from royalties on net sales under all three agreements. In addition, the Company has recognized revenue upon the delivery of clinical compound to Maruishi in accordance with separate supply agreements.

Contract balances

As of December 31, 2018, the Company had deferred revenue, current of $26,825 and deferred revenue, non-current of $15,184 related to the performance obligations from the VFMCRP Agreement and had no balances of receivables or other assets related to the VFMCRP Agreement. There were no balances of receivables, other assets or deferred revenue relating to the Maruishi and CKDP agreements as of December 31, 2018. As of December 31, 2017, the Company had no balances of receivables, other assets or deferred revenue related to the Maruishi and CKDP Agreements.

Performance obligations

Under the VFMCRP Agreement, the Company’s performance obligations of granting a license to allow VFMCRP to commercialize CR845/difelikefalin injection worldwide, except in the United States, Japan and South Korea, which occurred at inception of the contract in May 2018, and performing R&D services by the Company to obtain sufficient clinical data which will be shared with VFMCRP to allow them to receive regulatory approval to sell CR845/difelikefalin in the licensed territory, are not distinct, and are accounted for as a single performance obligation during the period that the R&D services are rendered (see Note 11, Collaboration and Licensing Agreements).

The Company’s distinct performance obligations under the Maruishi Agreement include transfer of the license to the Company’s IP, which allowed Maruishi to develop and commercialize CR845/difelikefalin, for acute pain and uremic pruritus indications in Japan, which occurred at inception of the contract in 2013, and performance of R&D services, which occurred from 2013 to 2015, as those services were rendered. The Company agreed to conduct limited work on an oral tablet formulation of CR845/difelikefalin and to conduct Phase 1 and proof-of-concept Phase 2 clinical trials of an intravenous formulation of CR845/difelikefalin to be used to treat patients with uremic pruritus. The Company agreed to transfer the data and information from such development to Maruishi for its efforts to obtain regulatory approval in Japan. These activities are referred to as R&D services.

The Company’s only performance obligation under the supply agreement with Maruishi is to deliver clinical compound to Maruishi in accordance with the receipt of purchase orders. If and when the Company enters into a supply agreement with VFMCRP, the Company’s only performance obligation under this supply agreement would be to deliver CR845/difelikefalin injection to VFMCRP in accordance with the receipt of purchase orders.

Under the CKDP Agreement, the Company’s only performance obligation is to transfer the license to the Company’s IP related to CR845/difelikefalin, which occurred at inception of the contract in 2012.

Upon execution of the VFMCRP Agreement, the Maruishi Agreement and the CKDP Agreement, the Company received a single fixed payment from each counterparty in exchange for granting the respective licenses and performing its other obligations. In addition, each of the counterparties made an equity investment in the Company’s common stock.

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Transaction price allocated to the remaining performance obligations

At inception of the VFMCRP Agreement, the entire transaction price of $55,444 was allocated to the one combined performance obligation, as described above. As of December 31, 2018, $13,436 of that amount was recognized as license and milestone fees revenue based on the percentage of R&D services that had been completed. As of December 31, 2018, there were no remaining performance obligations under either the Maruishi Agreement or the CKDP Agreement, although the Company is eligible to receive milestone payments and sales royalties in the future.

Significant judgments

In applying ASC 606, as amended, to its three contracts, the Company made the following judgments that significantly affect the timing and amount of revenue recognition:

1. Determination of the number of distinct performance obligations in a contract

The VFMCRP Agreement contains one combined performance obligation, which includes the Company's two performance obligations to grant a license to VFMCRP and conduct R&D services. Both of those performance obligations are inputs to the promise, within the context of the contract, to transfer a combined output for which VFMCRP has contracted (the ability of VFMCRP to commercialize the Licensed Product) (see Note 11, Collaboration and Licensing Agreements, for further discussion).

The Maruishi Agreement contains two distinct performance obligations: the granting of the license and the promise to deliver defined R&D services. Under the Maruishi Agreement, the license and the R&D services represent distinct goods or services from each other because Maruishi is able to benefit from the license on its own or together with other resources that are readily available to it (i.e., capable of being distinct). Maruishi's ability to benefit from the license without the R&D services is indicated by its ability to conduct clinical trials of CR845/difelikefalin on its own and by the provision in the Maruishi Agreement whereby if the Company suspends or discontinues its development activity, the Company will provide information regarding its development efforts up to that point so that Maruishi may continue development and commercialization of the product in Japan. Therefore, the R&D services do not significantly affect Maruishi's ability to use and benefit from the license.

In addition, the Company's promise in the Maruishi contract to transfer the license is separately identifiable from the promise to provide defined R&D services (i.e., distinct within the context of the contract) because the Company is not using the goods or services as inputs to produce or deliver the combined output or outputs specified by the customer. The combined output specified by Maruishi is its right to conduct development activities related to CR845/difelikefalin in Japan, which could result in regulatory approval in Japan. That right is derived from the Company's grant of the license. Maruishi is conducting clinical trials on its own and does not require the R&D services provided by the Company. Furthermore, the R&D services do not significantly modify or customize the license and vice versa. Finally, the license and R&D services are not highly interdependent or highly interrelated because the Company is able to fulfill its promise to transfer the initial license independently from its promise to subsequently provide the R&D services, which Maruishi can obtain on its own.

The only performance obligation in the CKDP Agreement is the granting of the license.

2. Determination of the transaction price, including whether any variable consideration is included at inception of the contract

The transaction price is the amount of consideration that the Company expects to be entitled to in exchange for transferring promised goods or services to the customer. The transaction price must be determined at inception of a contract and may include amounts of variable consideration. However, there is a constraint on inclusion of variable consideration, such as milestone payments or sales-based royalty payments, in the transaction price related to licenses of IP, if there is uncertainty at inception of the contract as to whether such consideration will be recognized in the future (see Note 2, Significant Accounting Policies: Revenue Recognition).

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The decision as to whether or not it is probable that a significant reversal of revenue will occur in the future, depends on the likelihood and magnitude of the reversal and is highly susceptible to factors outside the entity's influence (for example, the Company cannot determine the outcome of clinical trials; the Company cannot determine if or when they or the counterparty will initiate or complete clinical trials; and the Company's ability to obtain regulatory approval is difficult). In addition, the uncertainty is not expected to be resolved for a long period of time (in the order of years) and finally, the Company has limited experience in the field.

Therefore, at inception of the VFMCRP Agreement, the Maruishi Agreement and the CKDP Agreement, milestones and sales-based royalty payments were not included in the transaction price based on the factors noted above.

Under the VFMCRP Agreement, the single combined performance obligation will be satisfied as the R&D services are rendered and the transaction price, including the upfront payment of $50,000 and the premium on the common stock purchased by VFMCRP of $5,444, will be recognized as revenue as the R&D services are performed based on the costs incurred as a percentage of the estimated total costs to be incurred to complete the performance obligation. The remaining potential consideration was considered to be variable consideration and was constrained at inception of the contract, including regulatory and sales milestones and sales royalties (see Note 11, Collaboration and Licensing Agreements).

All performance obligations under the Maruishi Agreement and the CKDP Agreement were satisfied by the end of 2015. In the future, any milestone event will be recognized in accordance with Note 2, Significant Accounting Polices: Revenue Recognition, as milestone and license fee revenue and collaboration revenue based upon the relative standalone selling prices of the two performance obligations at inception of the Maruishi Agreement, and as milestone and license fee revenue under the CKDP Agreement.

Under the Maruishi Agreement, the transaction price includes only the non-refundable and non-creditable upfront license fee of $15,337, including the premium of $337 from the sale of Company stock to Maruishi, that was paid to the Company at inception of the contract. The remaining potential consideration was considered to be variable consideration and was constrained at inception of the contract, including an aggregate of up to $10,500, which the Company is eligible to receive upon achievement of clinical development and regulatory milestones, a one-time sales milestone of one billion Yen when a certain sales level is attained; a mid-double-digit percentage of all non-royalty payments received by Maruishi from its sub-licensees, if any; and tiered royalties based on net sales of products containing CR845/difelikefalin in Japan, if any, with minimum royalty rates in the low double digits and maximum royalty rates in the low twenties.

Under the CKDP Agreement, the transaction price includes only the non-refundable and non-creditable upfront license fee of $646, including the premium of $83 from the sale of Company stock to CKDP, that was paid to the Company at inception of the contract. The remaining consideration was considered to be variable consideration and was constrained at inception of the contract, including an aggregate of up to $3,750, which the Company is eligible to earn upon achievement of clinical development and regulatory milestones. The Company is also eligible to receive a mid-double-digit percentage of all non-royalty payments received by CKDP from its sub-licensees, if any, and tiered royalties ranging from the high single digits to the high teens based on net sales of products containing CR845/difelikefalin in South Korea, if any.

3. Determination of the estimate of the standalone selling price of performance obligations

In order to recognize revenue under ASC 606, as amended, for contracts for which more than one distinct performance obligation has been identified, the Company must allocate the transaction price to the performance obligations based upon their standalone selling prices. The best evidence of standalone selling price is an observable price of a good or service when sold separately by an entity in similar circumstances to similar customers. If such evidence is not available, standalone selling price should be estimated so that the amount that is allocated to each performance obligation equals the amount that the entity expects to receive for transferring goods or services. The Company has identified more than one performance obligation only in the Maruishi Agreement. Since evidence based on observable prices is not available for the performance obligations under the Maruishi Agreement, the Company considered market conditions and entity-specific factors, including those contemplated in negotiating the agreements, as well as certain internally developed estimates.

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At inception of the Maruishi Agreement, the Company determined the estimate of standalone selling price for the license performance obligation by using the adjusted market assessment approach. Under this method, the Company forecasted and analyzed CR845/difelikefalin in the Japanese market, the phase of clinical development as well as considered recent similar license arrangements within the same phase of clinical development, therapeutic area, type of agreement, etc. To estimate the standalone selling price of the R&D services, the Company forecasted its expected costs of satisfying that performance obligation and added a margin for that service.

4. Determination of the method of allocation of the transaction price to the distinct performance obligations

At inception of the Maruishi Agreement, the Company allocated the transaction price of $15,337 between the two performance obligations based on their relative standalone selling prices, determined as described above. The Company determined that the license and the R&D services had estimated standalone selling prices of $10,200 and $6,200, respectively. The resulting percentage allocations were applied to the $15,337 of total transaction price, which resulted in $9,637 being allocated to the license performance obligation, which was recognized immediately as license revenue, while $5,700 was allocated to the R&D services performance obligation. The amount allocated to the R&D services performance obligation was initially recorded as deferred revenue and was recognized as collaborative revenue as the R&D services were provided through July 2015.

Since both the VFMCRP Agreement and the CKDP Agreement each contain only one distinct performance obligation, at the inception of each of those agreements, the entire transaction price was allocated to the respective performance obligation.

5. Determination of the timing of revenue recognition for contracts

Revenue should be recognized when, or as, an entity satisfies a performance obligation by transferring a promised good or service to a customer; i.e., when the customer obtains control of the good or service. The licenses granted to both Maruishi and CKDP are being accounted for as distinct performance obligations. As discussed below, both licenses relate to functional IP for which revenue is recognized at a point in time – in the case of these two license agreements, the point in time is at inception of the contract because the customer obtained control of the license at that point.

The licenses grant Maruishi and CKDP the right to use the Company’s IP relating to CR845/difelikefalin as it existed at the point in time that the licenses were granted. That IP has significant standalone functionality as it provides the customer with the ability to perform a function or task, such as to manufacture CR845/difelikefalin and conduct clinical trials, and is considered to be functional IP.

During the license periods, the Company is continuing to develop and advance CR845/difelikefalin by conducting clinical trials. Those development efforts are for its own benefit and do not substantively change the significant standalone functionality of the licensed IP granted to Maruishi or CKDP. Therefore, the Company’s ongoing development efforts do not significantly affect the IP’s utility to which Maruishi or CKDP have rights. Furthermore, if the Company abandons its development efforts, Maruishi or CKDP may still continue to develop CR845/difelikefalin in their respective countries.

The R&D services performance obligation under the Maruishi Agreement represents a separate performance obligation. The R&D services were provided to Maruishi by the Company from inception of the agreement in 2013 through the third quarter of 2015, at which time the Company had fulfilled its promise related to the R&D services. Revenue related to the R&D services performance obligation was recognized as services were performed based on the costs incurred as a percentage of the estimated total costs to be incurred to complete the performance obligation.

Similarly, under the VFMCRP Agreement, revenue related to the single distinct performance obligation, which includes both granting of the license and performance of the R&D services, will be recognized as the R&D services are performed, based on the costs incurred as a percentage of the estimated total costs to be incurred to complete the performance obligation. The Company expects that the remaining amount of the transaction price that was allocated to the combined performance obligation of $42,009 at December 31, 2018 will be recognized by 2020, as the R&D services are performed, subject to certain development and regulatory uncertainties.

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6. Determination of consideration as variable consideration, including factors related to inclusion in the transaction price at inception of the contract and timing of recognition as revenue.

The VFMCRP Agreement, the Maruishi Agreement and the CKDP Agreement contain potential payments related to achievement of defined milestone events and royalties upon net sales of future products, which are considered to be variable consideration because of the uncertainty of occurrence of any of those events specified in those agreements at inception of the agreements. Therefore, those potential payments were not included in the transaction price at the inception of the agreements.

Revenue related to achievement of milestone events is recognized when the Company has determined that it is probable that a milestone event will be achieved and there will not be a significant reversal of revenue in future periods. Upon probability of achievement of a milestone event, the most likely amount of variable consideration is included in the transaction price. Subsequent changes to the transaction price, after contract initiation, are allocated to the performance obligations in the contract on the same basis as at contract inception. Revenue for variable consideration is recognized in the same manner (point in time or over time) as for the performance obligations to which the payment amounts were allocated.

The Maruishi Agreement and the CKDP Agreement specify that certain development milestones will be achieved at pre-specified defined phases of a clinical trial (such as initiation or completion or other pre-specified time during a clinical trial as specified in the agreements).

During the years ended December 31, 2018, 2017 and 2016, no milestone events were probable of occurrence or achieved.

Sublicense payments

VFMCRP's, Maruishi's and CKDP's right to grant sub-licenses is explicitly stated in their respective license agreements. The amount of any potential sub-license fees to be received by the Company, which is based on a formula, is considered to be variable consideration and is constrained from inclusion in the transaction price at inception of the contract since at that time it was probable that there would be a reversal of such revenue in the future because the Company did not know if a sublicense would be granted in the future.

In March 2017, Maruishi entered into a sub-license agreement to the Maruishi Agreement with Kissei in Japan for development and sales/marketing of CR845/difelikefalin for the treatment of uremic pruritus in dialysis patients in Japan. The Company first learned that the terms of the sub-license agreement had been finalized less than a month before the sub-licensee publicly announced the agreement. At that time, the Company determined that the sub-license fee would not be constrained from inclusion in the transaction price. Consequently, the Company included the amount of the sub-license fee in the transaction price and recognized revenue of $843 in the same manner as described above for milestone payments.

Sales-based Royalty Payments

The VFMCRP Agreement, CKDP Agreement and Maruishi Agreement each allow the Company to earn sales-based royalty payments in exchange for a license of intellectual property. In that case, the Company will recognize revenue for a sales-based royalty only when (or as) the later of the following events occurs:

a. The subsequent sale or usage occurs.
b. The performance obligation to which some or all of the sales-based royalty has been allocated has been satisfied (or partially satisfied).

Since the sale (item a, above) occurs after the license was delivered (item b, above), the sales-based royalty exception, to exclude such royalty payments from the transaction price, applies to the overall revenue stream. Therefore, sales-based royalty payments are recognized as revenue when the customer's sales occur. To date, no royalties have been earned or were otherwise due to the Company.

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13. Stock-Based Compensation

2014 Equity Incentive Plan

The Company’s 2014 Equity Incentive Plan, or the 2014 Plan, is administered by the Company’s Board of Directors or a duly authorized committee thereof, referred to as the Plan administrator. The 2014 Plan provides for the grant of incentive stock options, non-statutory stock options, restricted stock awards, restricted stock unit awards, stock appreciation rights, performance stock awards and other forms of equity compensation, collectively referred to as Stock Awards. Additionally, the 2014 Plan provides for the grant of performance cash awards. Incentive stock options may be granted only to employees. All other awards may be granted to employees, including officers, non-employee directors, and consultants. No incentive stock options may be granted under the 2014 Plan after the tenth anniversary of the effective date of the 2014 Plan. Stock Awards granted under the 2014 Plan vest at the rate specified by the Plan administrator. Initial grants of Stock Awards made to employees and non-employee consultants generally vest as to 25% on the first anniversary of the date of grant and the balance ratably over the next 36 months and subsequent grants vest monthly over a period of four years from the grant date. Beginning in 2018, stock options initially granted to members of the Company’s Board of Directors vest over a period of three years in equal installments from the date of the grant, subject to the option holder’s continued service as a Director through such date. Subsequent grants to Directors that are made automatically at Annual Meetings of Stockholders vest fully on the first anniversary of the date of grant. The Plan administrator determines the term of Stock Awards granted under the 2014 Plan up to a maximum of ten years.

The aggregate number of shares of the Company’s common stock reserved for issuance under the 2014 Plan has automatically increased on January 1 of each year, beginning on January 1, 2015 and will continue to increase on January 1 of each year through and including January 1, 2024, by 3% of the total number of shares of the Company’s capital stock outstanding on December 31 of the preceding calendar year, or a lesser number of shares determined by the Company’s Board of Directors. On January 1, 2019, the aggregate number of shares of common stock that may be issued pursuant to Stock Awards under the 2014 Plan automatically increased from 4,900,481 to 6,086,907. The maximum number of shares that may be issued pursuant to the exercise of incentive stock options under the 2014 Plan is 30,000,000 shares.

Restricted Stock Units

In September 2018, the Company granted a total of 83,791 restricted stock units to executive officers under the 2014 Plan with a grant date fair value of $20.21 per share. Vesting of the restricted stock units was contingent on the achievement of certain performance targets through the first quarter of 2019, subject to the recipient’s continuous service through the vesting events. At the date of grant, the Company concluded that the probability of achievement of the performance targets could not be determined until they were achieved, and accordingly, the Company would recognize compensation expense associated with these awards when, and to the extent, the restricted stock units vested in accordance with achievement of the performance targets. As of December 31, 2018, all of the performance targets had been achieved and, consequently, all of the restricted stock units had vested. As a result, $1,693 of stock compensation expense relating to the vesting of restricted stock units was recognized in the Statement of Comprehensive Loss for the year ended December 31, 2018, consisting of $1,217 relating to G&A stock compensation expense and $476 relating to R&D stock compensation expense. In addition, all of the 83,791 restricted stock units were converted to outstanding shares of the Company’s common stock as of December 31, 2018.

2004 Stock Incentive Plan

The Company’s 2004 Stock Incentive Plan, or the 2004 Plan, as amended, was adopted by the Company’s Board of Directors and stockholders. Under the 2004 Plan, the Company has granted stock options to selected officers, employees and consultants of the Company. The Company’s Board of Directors administers the 2004 Plan. Options granted under the 2004 Plan have a maximum term of ten years. Options issued generally vest 25% on the first anniversary date of grant and the balance ratably over the next 36 months. Following the effectiveness of the 2014 Plan in January 2014, no additional options or restricted share awards were granted under the 2004 Plan. As of September 30, 2014, the 2004 Plan expired and no further grants of stock options or restricted stock are allowed.

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The Company accounts for stock options granted to employees and non-employee members of the Board of Directors in accordance with ASC 718, Compensation – Stock Compensation. The Company also occasionally grants stock options to non-employee consultants. Such grants are accounted for pursuant to ASC 505-50, Equity-Based Payments to Non-Employees (refer to Note 2, Summary of Significant Accounting Policies - Stock-Based Compensation).

A summary of the Company's stock option activity related to employees, non-employee members of the Board of Directors and non-employee consultants as of and for the year ended December 31, 2018 is as follows:

	Number of Options	Weighted-Average Exercise Price	Aggregate Intrinsic Value
Outstanding at December 31, 2017	3,492,141	$ 11.75	
Granted	1,197,500	16.15	
Exercised	(451,685)	9.29	
Expired	(60,111)	10.79	
Forfeited	(173,423)	12.12	
Outstanding at December 31, 2018	4,004,422	$ 13.34	$ 6,627
Weighted average remaining contractual life as of December 31, 2018 (in years)	7.92		
Options exercisable at December 31, 2018	1,974,979	$ 11.70	$ 4,985
Weighted average remaining contractual life as of December 31, 2018 (in years)	7.00		
Options vested and expected to vest as of December 31, 2018	4,004,422	$ 13.34	$ 6,627
Weighted average remaining contractual life as of December 31, 2018 (in years)	7.92		

The total fair value of options vested during the years ended December 31, 2018, 2017 and 2016 was $9,023, $5,303 and $3,589, respectively. The intrinsic value of options exercised during the years ended December 31, 2018, 2017 and 2016 was $3,893, $2,285 and $126, respectively.

During the years ended December 31, 2018, 2017 and 2016, the Company granted 1,197,500, 1,328,500 and 1,078,000 stock options, respectively, to employees, non-employee members of the Board of Directors or non-employee consultants. The fair values of the stock options granted to those groups were estimated using the Black-Scholes option valuation model with the following ranges of assumptions (see Note 2, Summary of Significant Accounting Policies - Stock-Based Compensation):

	Year Ended December 31,		
	2018	2017	2016
Risk-free interest rate	2.51% - 3.09%	1.85% - 2.57%	1.19% - 1.93%
Expected volatility	82.6% - 92.8%	73.3% - 84.5%	67.8% - 77.8%
Expected dividend yield	0%	0%	0%
Expected life of employee and Board of Directors' options (in years)	6.25	6.25	6.25
Expected life of non-employee options (in years)	—	10	10

The weighted average grant date fair value of options granted to employees, non-employee members of the Board of Directors for their Board service and non-employee consultants during the years ended December 31, 2018, 2017 and 2016 was $11.99, $11.46 and $4.28, respectively.

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At the end of each fiscal quarter during the years ended December 31, 2018, 2017 and 2016, the Company used the Black-Scholes option valuation model with the following ranges of assumptions to re-measure the fair value of all outstanding options that had been granted to non-employee consultants during the vesting period of each tranche in accordance with ASC 505-50:

	Year Ended December 31,		
	2018	2017	2016
Risk-free interest rate	1.82% - 3.02%	1.28% - 2.39%	1.35% - 2.38%
Expected volatility	58.2% - 101.0%	74.6% - 87.3%	70.8% - 75.5%
Expected dividend yield	0%	0%	0%
Expected life of non-employee options (in years)	0.25 - 8.94	0.62 - 9.94	7.08 - 9.60

Under ASC 505-50, upon re-measurement of each award, income or expense is recognized during its vesting term (see Note 2, Accounting Pronouncements Not Yet Adopted for the adoption of ASU 2018-07 on January 1, 2019).

The weighted average fair value of outstanding options that had been granted to nonemployee consultants, as re-measured during the vesting period of each tranche in accordance with ASC 505-50 during the years ended December 31, 2018, 2017 and 2016 was $8.74, $10.16 and $4.81, respectively.

On January 1, 2017, the Company adopted ASU 2016-09, Improvements to Employee Share-Based Payment Accounting (see Note 2, Basis of Presentation - Recently Adopted Accounting Pronouncements). On the date of adoption of ASU 2016-09, the Company began to account for forfeitures of unvested stock options as they occur rather than estimate forfeiture rates that were applied to unvested stock option awards, as under the previous accounting guidance. Accordingly, on the date of adoption, the Company recorded a cumulative-effect adjustment to stockholders' equity of $45 for all stock option awards that were unvested as of that date.

During the years ended December 31, 2018, 2017 and 2016, the Company recognized compensation expense relating to stock options (excluding compensation expense related to the vesting of restricted stock units of $476 in R&D and $1,217 in G&A in 2018), as follows:

	Year Ended December 31,		
	2018	2017	2016
Research and development	$3,919	$2,433	$1,301
General and administrative	4,482	3,897	1,499
Total stock option expense	$8,401	$6,330	$2,800

Included in the table above are the following amounts of compensation expense recognized with regard to stock options that were granted to non-employee consultants, including the effect of re-measurement of the fair values of those options, as described above:

	Year Ended December 31,		
	2018	2017	2016
Research and development	$195	$170	$(79)
General and administrative	192	200	(20)
Total stock option expense	$387	$370	$(99)

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In October 2018, the Company modified the terms of its former Chief Medical Officer's outstanding Stock Awards to accelerate 50% of the unvested shares underlying his outstanding stock options immediately as of the modification date, and specify that the remainder of the unvested shares will vest monthly through the date of termination of his continuous service to the Company as a Consultant. As of the modification date, the Company entered into a consulting agreement with the former Chief Medical Officer under which he will provide continuous service to the Company as a Consultant by providing transition services and other services upon request by the Company. Pursuant to the terms of the separation and consulting agreement, such Stock Awards will continue to vest under their original vesting conditions as long as he provides continuous service to the Company (including as a consultant). The term of his consulting agreement is through July 22, 2019, if not terminated earlier per the terms of the consulting agreement or extended by the Company.

In August 2017, the Company modified the terms of its former Chief Financial Officer's outstanding Stock Awards to (1) accelerate 50% of the unvested shares underlying his outstanding Stock Awards immediately as of the modification date and specify that the remainder will vest monthly through the date of termination of his continuous service to the Company; and (2) extend the period during which his outstanding Stock Awards may be exercised through the six-month anniversary of the date of termination of his continuous service to the Company. As of the modification date, the Company entered into a consulting agreement with the former Chief Financial Officer under which he provided continuous service to the Company by assisting with the transition of his role to the Company's Chief Financial Officer. Pursuant to the terms of the 2014 Plan and his outstanding Stock Awards, such Stock Awards continued to vest under their original vesting conditions as long as he provided continuous service to the Company (including as a consultant). The term of his consulting agreement ended on February 15, 2018.

The Company determined that the acceleration of vesting for Stock Awards in 2018 and 2017 that would have vested based on their original vesting terms through the term of the consulting services were Type 1 modifications pursuant to ASC 718, Compensation – Stock Compensation, because those Stock Awards would have vested whether or not the vesting of those Stock Awards had been accelerated. However, acceleration of vesting for the remaining Stock Awards was a Type 3 modification pursuant to ASC 718 because absent the modification terms, those Stock Awards would have been forfeited as of the last day that the former Chief Medical Officer and Chief Financial Officer provided continuous service as a consultant.

During the year ended December 31, 2018, with respect to these modifications for the former Chief Medical Officer, the Company recognized $520 of compensation expense, including expense based on marking to market the fair value of the modified Stock Awards in accordance with ASC 505-50, which is included in Research and development expense in the total compensation expense table above.

During the years ended December 31, 2018 and 2017, with respect to these modifications for the former Chief Financial Officer, the Company recognized $96 and $537 of compensation expense, respectively, including expense based on marking to market the fair value of the modified Stock Awards in accordance with ASC 505-50, which is included in General and administrative expense in the total compensation expense table above.

As of December 31, 2018, the total compensation expense relating to unvested options granted to employees, non-employee members of the Board of Directors and non-employee consultants that had not yet been recognized was $20,474, which is expected to be realized over a weighted average period of 2.84 years. The Company will issue shares upon exercise of options from common stock reserved.

The Company does not expect to realize any tax benefits from its stock option activity or the recognition of stock-based compensation expense because the Company currently has net operating losses and has a full valuation allowance against its deferred tax assets. Accordingly, no amounts related to excess tax benefits have been reported in cash flows from operations or cash flows from financing activities for the years ended December 31, 2018, 2017 and 2016.

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14. Income Taxes

The Company's benefit from income taxes is as follows:

	December 31, 2018	2017	2016
Current:			
Federal	$—	$—	$—
State	(389)	(204)	(468)
	(389)	(204)	(468)
Deferred:			
Federal	—	—	—
State	—	—	—
	—	—	—
Benefit from income taxes	$(389)	$(204)	$(468)

The Company's tax benefits relate to state R&D tax credits exchanged for cash. The State of Connecticut provides companies with the opportunity to exchange certain R&D credit carryforwards for cash in exchange for foregoing the carryforward of the R&D credit. The program provides for such exchange of the R&D credits at a rate of 65% of the annual R&D credit, as defined.

A reconciliation of income taxes computed using the U.S. federal statutory rate to that reflected in operations is as follows:

	December 31, 2018	2017	2016
Income taxes using U.S. federal statutory rate	21.00 %	34.00 %	34.00 %
State income taxes, net of federal benefit	6.82 %	5.33 %	5.44 %
Tax Cuts and Jobs Act	0.00 %	-44.43 %	0.00 %
Impact of R&D tax credit on effective tax rate	3.48 %	3.25 %	3.24 %
Stock option shortfalls and cancellations	-0.43 %	0.21 %	-0.07 %
Permanent items and other	-0.15 %	-0.56 %	-0.64 %
Change in valuation allowance	-31.76 %	2.55 %	-41.17 %
Provision to return	0.03 %	0.00 %	0.00 %
Non-taxable revenue	1.54 %	0.00 %	0.00 %
	0.53 %	0.35 %	0.80 %

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Significant components of the Company's deferred tax assets and liabilities are as follows:

	December 31, 2018	December 31, 2017
Deferred tax assets:		
Net operating loss carryforwards	$73,578	$54,831
Federal and state tax credits	11,108	8,401
Deferred revenue	1,111	—
Stock-based compensation expense	3,605	2,382
Other	420	582
	89,822	66,196
Deferred tax liabilities:		
Accelerated depreciation	(7)	(23)
Valuation allowance	(89,815)	(66,173)
Net deferred tax asset	$—	$—

A 100% valuation allowance has been recorded on the deferred tax asset as of December 31, 2018 and 2017 because management believes it is more likely than not that the asset will not be realized. The change in the valuation allowance during 2018 and 2017 was $23,642 and $618, respectively.

In 2017, the Company recorded a cumulative-effect adjustment for the tax benefit of approximately $840 related to the exercise of non-qualified stock options and the disqualified disposition of incentive stock options. As a result of the adoption of ASU 2016-09 on January 1, 2017, the tax benefit related to the exercise of stock options was recognized as a deferred tax asset with a corresponding cumulative adjustment to retained earnings, that is offset by a valuation allowance against retained earnings.

The Company applies the provisions of ASC 740, Income Taxes, which prescribes a comprehensive model for how a company should recognize, measure, present, and disclose in its financial statements uncertain tax positions that the Company has taken or expects to take on a tax return. As of December 31, 2018 and 2017, the Company had no unrecognized tax benefits or related interest and penalties accrued. In the event the Company determines that accrual of interest or penalties are necessary in the future, the amount will be presented as a component of income tax expense.

The Company files income tax returns in the United States and the State of Connecticut. All tax years since the date of the Company's incorporation remain open to examination by the major taxing jurisdictions (state and federal) to which the Company is subject, as carry-forward attributes generated in years past may still be adjusted upon examination by the Internal Revenue Service, or IRS, or other authorities if they have or will be used in a future period. The Company is not currently under examination by the IRS, or any other jurisdictions, for any tax year.

At December 31, 2018, the Company had federal and state net operating loss carryforwards of approximately $274,764 and $267,973, respectively. The federal and state tax loss carryforwards will begin to expire in 2026 and 2027, respectively, unless previously utilized. The federal net operating losses arising in 2018 and forward have an unlimited carryforward period, however will only offset 80% of taxable income in a carryforward year. The federal losses may also be subject to limitation pursuant to Internal Revenue Code section 382. The Company also had federal and state R&D tax credit carryforwards of approximately $9,925 and $1,236, respectively. The federal credits will begin expiring in 2025 unless previously utilized. The Connecticut credit carryforwards have no expiration period. Because of the net operating loss and research credit carryforwards, tax years 2006 through 2018 remain open to U.S. federal and state tax examinations.

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On December 22, 2017, the United States enacted the Tax Cuts and Jobs Act (the “Act”). The Act, which is also commonly referred to as “U.S. tax reform”, significantly changes U.S. corporate income tax laws by, among other provisions, reducing the maximum U.S. corporate income tax rate from 35% to 21% starting in 2018. During the year ended December 31, 2017, the Company reduced deferred tax assets by $25,913, offset by a corresponding reduction to its valuation allowance, as a result of the re-measurement of deferred tax assets and liabilities from its 34% effective rate under existing law to the new lower statutory rate of 21%. As of December 31, 2018 and 2017, the Company did not have any foreign subsidiaries and the international aspects of the Act were not applicable.

On December, 22, 2017, SAB 118 was issued due to the complexities involved in accounting for the recently enacted Tax Act. SAB 118 requires the Company to include in its financial statements a reasonable estimate of the impact of the Tax Act on earnings to the extent such estimate has been determined. Accordingly, the U.S. provision for income tax for 2017 was based on the reasonable estimate guidance provided by SAB 118. The Company has finalized its accounting for the Act as of December 31, 2018, which resulted in insignificant adjustments.

15. Net Loss per Share

The Company computes net loss per share in accordance with ASC 260-10, Earnings per Share (see Note 2, Significant Accounting Policies – Income (Loss) per Share).

The denominators used in the net loss per share computations are as follows:

	Year Ended December 31,		
	2018	2017	2016
Basic:			
Weighted average shares outstanding	35,892,786	31,202,842	27,279,008
Diluted:			
Weighted average shares outstanding - Basic	35,892,786	31,202,842	27,279,008
Common stock options *	—	—	—
Denominator for diluted net loss per share	35,892,786	31,202,842	27,279,008

*No amounts were considered as their effects would be anti-dilutive.
Basic and diluted net loss per share are computed as follows:

Year Ended December 31,

	2018	2017	2016
Net loss	$(74,013)	$(58,125)	$(57,280)
Weighted-average common shares outstanding:			
Basic and Diluted	35,892,786	31,202,842	27,279,008
Net loss per share:			
Basic and Diluted	$(2.06)	$(1.86)	$(2.10)

As of December 31, 2018, 2017 and 2016, 4,004,422, 3,492,141 and 2,548,408 stock options, respectively, were outstanding, which could potentially dilute basic earnings per share in the future, but were not included in the computation of diluted net loss per share because to do so would have been anti-dilutive.

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16. Employee Benefit Plan

In February 2006, the Company adopted a defined contribution retirement plan that complies with Section 401(k) of the Internal Revenue Code. All employees over the age of 21 are eligible to participate in the plan at the beginning of the calendar quarter after three consecutive months of service. Employees are able to defer a portion of their pay into the plan on the first day of the quarter on or after the day all age and service requirements have been met. All eligible employees receive an employer contribution equal to 3% of their salary up to the annual IRS limit. During the years ended December 31, 2018, 2017 and 2016, employer contributions to the plan were $198, $174 and $118, respectively.

17. Commitments and Contingencies

Contractual obligations and commitments as of December 31, 2018, comprising future minimum lease payments under the Company's Stamford lease, were as follows:

	Payment Due for the Year Ending December 31,					
	2019	2020	2021	2022	2023	Total
Stamford operating lease	$1,215	$1,240	$1,264	$1,288	$1,164	$6,171

Stamford Operating Lease

In December 2015, the Company entered into a lease agreement, or the Stamford Lease, for office space in Stamford, Connecticut, or the Premises, for the purpose of relocating its headquarters. The initial term of the Stamford Lease commenced in May 2016, or the Commencement Date, and ends in November 2023. The Stamford Lease requires monthly lease payments, including rent escalations and rent holidays, during the initial lease term. The Company began to make rental payments from the Commencement Date. The Company records monthly rent expense on a straight-line basis from March 2016, upon taking possession of the Premises, through November 2023. As of December 31, 2018 and 2017, the balance of deferred lease obligation, representing the difference between cash rent paid and straight-line rent expense, was $864 and $876, respectively. The Stamford Lease is renewable for one five-year term.

As of the Commencement Date, the Stamford Lease landlord had made tenant improvements of $1,094 to the leased premises. Such amount was included in Property and equipment, net and in Deferred lease obligation. The portion of Deferred lease obligation that is related to tenant improvements is being amortized as a reduction to rent expense over the same term as rent expense. As of December 31, 2018 and 2017, the balance of Deferred lease obligation related to tenant improvements was $698 and $842, respectively.

Total rent expense under the Stamford Lease was $974, $935 and $797 for the years ended December 31, 2018, 2017 and 2016, respectively.

In connection with the signing of the Stamford Lease, the Company entered into a standby letter of credit agreement for $769, which serves as a security deposit for the Premises. The standby letter of credit is automatically renewed annually through November 2023. This standby letter of credit is secured with restricted cash in a money market account (refer to Note 7, Restricted Cash).

Shelton Operating Lease

In May 2016, the Company relocated its headquarters to Stamford, Connecticut and vacated its former operating facility in Shelton, Connecticut, which the Company continued to lease under an operating lease, or the Shelton Lease. The Shelton Lease terminated in November 2017.

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The Shelton Lease, as amended, required monthly lease payments through its term. The Company recorded monthly rent expense associated with the Shelton Lease on a straight-line basis from inception of the lease in October 2007 through May 2016, when the facility was vacated. In accordance with the accounting guidance in ASC 420-10-25-13 regarding exit or disposal cost obligations, as of May 2016, the Company recorded rent expense, within R&D expense and General and administrative expense, and accrued a liability of $1,312, which represented the fair value of costs that continued to be incurred during the remaining term of the Shelton Lease without economic benefit to the Company.

Total rent expense under the Shelton Lease was $1,127 for the year ended December 31, 2016.

In conjunction with the signing of the Shelton Lease, the Company entered into a standby letter of credit agreement, which expired on December 13, 2017, as a security deposit for the premises. The balance of the letter of credit was $700, which was secured with restricted cash.

The Company accelerated the amortization of the Shelton leasehold improvements from the date of signing of the Stamford lease in December 2015 through the date that the Company vacated the Shelton facility in May 2016. Additional amortization expense as a result of such acceleration amounted to $899 (additional net loss per share of $0.03) for the year ended December 31, 2016.

18. Legal Matters

From time to time, the Company may become subject to arbitration, litigation or claims arising in the ordinary course of its business. The Company is not currently a party to any arbitration or legal proceeding that, if determined adversely to the Company, would have a material adverse effect on its business, operating results or financial condition. The results of any future claims or proceedings cannot be predicted with certainty, and regardless of the outcome, litigation can have an adverse impact on the Company because of defense and settlement costs, diversion of management resources and other factors.

19. Quarterly Results of Operations (Unaudited)

The following tables contain selected financial data for each quarter of the years ended December 31, 2018 and 2017. The Company believes that the following information reflects all normal recurring adjustments necessary for a fair presentation of the information for each quarter of the years ended December 31, 2018 and 2017. The operating results for any period are not necessarily indicative of results for any future periods.

	Year Ended December 31, 2018			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Revenues	$—	$2,874	$5,062	$5,533
Net loss - Basic and Diluted	(16,767)	(17,194)	(19,400)	(20,652)

Loss per share - Basic and Diluted	$(0.51)	$(0.52)	$(0.51)	$(0.52)

	Year Ended December 31, 2017			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Revenues	$911	$—	$—	$—
Net loss - Basic and Diluted	(22,204)	(9,300)	(12,444)	(14,177)
Loss per share - Basic and Diluted	$(0.81)	$(0.29)	$(0.38)	$(0.43)(a)

(a) The difference between the sum of net loss per share, basic and diluted, as calculated on a quarterly basis for 2017 ($1.91), and net loss per share, basic and diluted, for the year ended December 31, 2017 ($1.86) is due to the denominator used for the year ended December 31, 2017, which weights shares outstanding on a cumulative basis and reflects the issuance of 5.1 million shares of the Company's common stock during the year ended December 31, 2017 (see Note 9, Stockholders' Equity).