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FORM 10-Q

INTREXON CORP - XON

Filed: August 09, 2017 (period: June 30, 2017)

Quarterly report with a continuing view of a company's financial position

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

FORM 10-Q

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

For the quarterly period ended June 30, 2017

OR

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

For the transition period from _____ to _____.

Commission File Number: 001-36042

INTREXON CORPORATION

(Exact name of registrant as specified in its charter)

Virginia	**26-0084895**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification Number)**
20374 Seneca Meadows Parkway Germantown, Maryland	**20876**
(Address of principal executive offices)	**(Zip Code)**

(301) 556-9900

(Registrant's telephone number, including area code)

(Former name, former address and former fiscal year, if changed since last report date)

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

Indicate by check mark whether the registrant has submitted electronically 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 ☒ No ☐

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

Large accelerated filer	☒	Accelerated filer	☐
Non-accelerated filer	☐ (Do not check if a smaller reporting company)	Smaller reporting company	☐
Emerging growth company	☐		

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

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

As of July 31, 2017, 120,519,449 shares of common stock, no par value per share, were outstanding.

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INTREXON CORPORATION

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Special Note Regarding Forward-Looking Statements

This Quarterly Report on Form 10-Q contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, which statements involve substantial risks and uncertainties. All statements, other than statements of historical facts, included in this Quarterly Report on Form 10-Q regarding our strategy, future events, future operations, future financial position, future revenue, projected costs, prospects, plans, objectives of management and expected market growth are forward-looking statements. The words "anticipate," "believe," "estimate," "expect," "intend," "may," "plan," "predict," "project," "would" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. These forward-looking statements include, among other things, statements about:

- our current and future exclusive channel collaborations ("ECCs"), license agreements and other collaborations;
- developments concerning our collaborators and licensees;
- our ability to successfully enter new markets or develop additional products, whether with our collaborators or independently;
- competition from existing technologies and products or new technologies and products that may emerge;
- actual or anticipated variations in our operating results;
- actual or anticipated fluctuations in our competitors' or our collaborators' and licensees' operating results or changes in their respective growth rates;
- our cash position;
- market conditions in our industry;
- our ability, and the ability of our collaborators and licensees, to protect our intellectual property and other proprietary rights and technologies;
- our ability, and the ability of our collaborators and licensees, to adapt to changes in laws or regulations and policies;
- the ability of our collaborators and licensees to secure any necessary regulatory approvals to commercialize any products developed under the ECCs, license agreements and joint ventures;
- the ability of our collaborators and licensees to develop and successfully commercialize products enabled by our technologies;
- the rate and degree of market acceptance of any products developed by a collaborator under an ECC or through a joint venture or license under a license agreement;
- our ability to retain and recruit key personnel;
- the result of litigation proceedings that we face currently or may face in the future;
- our expectations related to the use of proceeds from our public offerings and other financing efforts; and
- our estimates regarding expenses, future revenue, capital requirements and needs for additional financing.

Forward-looking statements may also concern our expectations relating to our subsidiaries and other affiliates. We caution you that the foregoing list may not contain all of the forward-looking statements made in this Quarterly Report on Form 10-Q.

We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make. We have included important factors in the

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cautionary statements included in this Quarterly Report on Form 10-Q, particularly in Part II, Item 1A. "Risk Factors," that could cause actual results or events to differ materially from the forward-looking statements that we make. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments that we may make.

You should read this Quarterly Report on Form 10-Q, the documents that we reference in this Quarterly Report on Form 10-Q, our Annual Report on Form 10-K for the year ended December 31, 2016 and the documents that we have filed as exhibits to our filings with the Securities and Exchange Commission completely and with the understanding that our actual future results may be materially different from what we expect. We do not assume any obligation to update any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law.

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PART I. FINANCIAL INFORMATION

Item 1. Consolidated Financial Statements

Intrexon Corporation and Subsidiaries
Consolidated Balance Sheets
(Unaudited)

(Amounts in thousands, except share data)	June 30, 2017	December 31, 2016
Assets		
Current assets		
Cash and cash equivalents	$ 64,360	$ 62,607
Restricted cash	6,987	6,987
Short-term investments	92,804	174,602
Receivables		
Trade, net	22,833	21,637
Related parties	18,728	16,793
Notes, net	—	1,500
Other	2,076	2,555
Inventory	19,146	21,139
Prepaid expenses and other	7,183	7,361
Total current assets	234,117	315,181
Long-term investments	—	5,993
Equity securities	23,901	23,522
Investments in preferred stock	144,742	129,545
Property, plant and equipment, net	92,880	64,672
Intangible assets, net	240,360	225,615
Goodwill	164,931	157,175
Investments in affiliates	21,904	23,655
Other assets	11,151	3,710
Total assets	$ 933,986	$ 949,068

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

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Intrexon Corporation and Subsidiaries
Consolidated Balance Sheets
(Unaudited)

(Amounts in thousands, except share data)	June 30, 2017	December 31, 2016
Liabilities and Total Equity		
Current liabilities		
Accounts payable	$ 8,221	$ 8,478
Accrued compensation and benefits	9,098	6,540
Other accrued liabilities	22,275	15,776
Deferred revenue	47,662	53,364
Lines of credit	285	820
Current portion of long term debt	434	386
Deferred consideration	6,967	8,801
Related party payables	744	440
Total current liabilities	95,686	94,605
Long term debt, net of current portion	7,684	7,562
Deferred revenue, net of current portion	237,656	256,778
Deferred tax liabilities	16,266	17,007
Other long term liabilities	5,144	3,868
Total liabilities	362,436	379,820
Commitments and contingencies (Note 16)		
Total equity		
Common stock, no par value, 200,000,000 shares authorized as of June 30, 2017 and December 31, 2016; 120,404,676 and 118,688,770 shares issued and outstanding as of June 30, 2017 and December 31, 2016, respectively	—	—
Additional paid-in capital	1,355,956	1,325,780
Accumulated deficit	(780,865)	(729,341)
Accumulated other comprehensive loss	(24,221)	(36,202)
Total Intrexon shareholders' equity	550,870	560,237
Noncontrolling interests	20,680	9,011
Total equity	571,550	569,248
Total liabilities and total equity	$ 933,986	$ 949,068

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Intrexon Corporation and Subsidiaries
Consolidated Statements of Operations
(Unaudited)

(Amounts in thousands, except share and per share data)	Three Months Ended June 30, 2017	Three Months Ended June 30, 2016	Six Months Ended June 30, 2017	Six Months Ended June 30, 2016
Revenues				
Collaboration and licensing revenues, including $24,558 and $23,612 from related parties during the three months ended June 30, 2017 and 2016, respectively, and $53,445 and $43,611 during the six months ended June 30, 2017 and 2016, respectively	$ 28,164	$ 27,481	$ 61,229	$ 51,554
Product revenues	9,980	10,884	18,110	19,439
Service revenues	15,884	13,927	27,915	24,592
Other revenues	405	209	683	354
Total revenues	54,433	52,501	107,937	95,939
Operating Expenses				
Cost of products	8,861	10,753	17,624	20,315
Cost of services	7,988	6,332	14,792	12,004
Research and development	34,011	28,375	68,191	54,231
Selling, general and administrative	38,843	30,263	73,981	73,144
Total operating expenses	89,703	75,723	174,588	159,694
Operating loss	(35,270)	(23,222)	(66,651)	(63,755)
Other Income (Expense), Net				
Unrealized and realized appreciation (depreciation) in fair value of equity securities and preferred stock	8,687	(23,469)	7,065	(45,800)
Interest expense	(181)	(267)	(360)	(532)
Interest and dividend income	4,743	713	9,367	1,323
Other income, net	4,879	676	5,474	1,237
Total other income (expense), net	18,128	(22,347)	21,546	(43,772)
Equity in net loss of affiliates	(3,333)	(5,053)	(8,280)	(10,696)
Loss before income taxes	(20,475)	(50,622)	(53,385)	(118,223)
Income tax benefit	813	591	1,346	2,872
Net loss	$ (19,662)	$ (50,031)	$ (52,039)	$ (115,351)
Net loss attributable to the noncontrolling interests	998	967	1,976	1,858
Net loss attributable to Intrexon	$ (18,664)	$ (49,064)	$ (50,063)	$ (113,493)
Net loss attributable to Intrexon per share, basic and diluted	$ (0.16)	$ (0.42)	$ (0.42)	$ (0.97)
Weighted average shares outstanding, basic and diluted	119,731,042	118,141,377	119,346,050	117,501,264

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

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Intrexon Corporation and Subsidiaries
Consolidated Statements of Comprehensive Loss
(Unaudited)

(Amounts in thousands)	Three Months Ended June 30, 2017	Three Months Ended June 30, 2016	Six Months Ended June 30, 2017	Six Months Ended June 30, 2016
Net loss	$ (19,662)	$ (50,031)	$ (52,039)	$ (115,351)
Other comprehensive income (loss):				
Unrealized gain (loss) on investments	15	152	(5)	739
Gain (loss) on foreign currency translation adjustments	8,743	(10,370)	11,995	(9,672)
Comprehensive loss	(10,904)	(60,249)	(40,049)	(124,284)
Comprehensive loss attributable to the noncontrolling interests	986	969	1,967	1,892
Comprehensive loss attributable to Intrexon	$ (9,918)	$ (59,280)	$ (38,082)	$ (122,392)

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Intrexon Corporation and Subsidiaries
Consolidated Statements of Shareholders' and Total Equity
(Unaudited)

(Amounts in thousands, except share data)	Common Stock Shares	Common Stock Amount	Additional Paid-in Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Total Intrexon Shareholders' Equity	Noncontrolling Interests	Total Equity
Balances at December 31, 2016	118,688,770	$ —	$1,325,780	$ (36,202)	$ (729,341)	$ 560,237	$ 9,011	$ 569,248
Cumulative effect of adoption of ASU 2016-09	—	—	1,461	—	(1,461)	—	—	—
Stock-based compensation expense	—	—	19,872	—	—	19,872	20	19,892
Exercises of stock options	39,048	—	650	—	—	650	28	678
Shares issued as payment for services	290,453	—	5,710	—	—	5,710	—	5,710
Shares and warrants issued in acquisition	684,240	—	16,997	—	—	16,997	—	16,997
Shares issued to acquire noncontrolling interests	221,743	—	5,082	—	—	5,082	(5,995)	(913)
Shares issued as payment of deferred consideration	480,422	—	—	—	—	—	—	—
Adjustments for noncontrolling interests	—	—	2,789	—	—	2,789	(2,802)	(13)
Noncash dividend	—	—	(22,385)	—	—	(22,385)	22,385	—
Net loss	—	—	—	—	(50,063)	(50,063)	(1,976)	(52,039)
Other comprehensive income	—	—	—	11,981	—	11,981	9	11,990
Balances at June 30, 2017	120,404,676	$ —	$1,355,956	$ (24,221)	$ (780,865)	$ 550,870	$ 20,680	$ 571,550

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

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Intrexon Corporation and Subsidiaries
Consolidated Statements of Cash Flows
(Unaudited)

(Amounts in thousands)	Six Months Ended June 30, 2017	2016
Cash flows from operating activities		
Net loss	$ (52,039)	$ (115,351)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	14,891	11,674
Loss on disposal of property, plant and equipment	967	225
Unrealized and realized (appreciation) depreciation on equity securities and preferred stock	(7,065)	45,800
Noncash dividend income	(7,980)	—
Amortization of premiums on investments	330	598
Equity in net loss of affiliates	8,280	10,696
Stock-based compensation expense	19,892	19,839
Shares issued as payment for services	5,710	5,689
Provision for bad debts	582	1,183
Deferred income taxes	(1,519)	(2,659)
Other noncash items	(3,606)	391
Changes in operating assets and liabilities:		
Receivables:		
Trade	(1,702)	(2,463)
Related parties	(1,935)	9,203
Notes	—	(24)
Other	660	626
Inventory	2,000	2,071
Prepaid expenses and other	471	1,299
Other assets	(736)	2,697
Accounts payable	(3,792)	2,834
Accrued compensation and benefits	1,246	(9,543)
Other accrued liabilities	1,997	4,807
Deferred revenue	(25,794)	(6,078)
Related party payables	284	331
Other long term liabilities	609	106
Net cash used in operating activities	(48,249)	(16,049)

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

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Intrexon Corporation and Subsidiaries
Consolidated Statements of Cash Flows
(Unaudited)

(Amounts in thousands)	Six Months Ended June 30, 2017	2016
Cash flows from investing activities		
Maturities of investments	88,000	41,987
Purchases of equity securities, preferred stock and warrants	(1,161)	(1,167)
Proceeds from sales of equity securities	235	—
Cash acquired in a business combination	2,054	—
Investments in affiliates	(4,579)	(5,054)
Cash paid in asset acquisition	(14,219)	(7,244)
Purchases of property, plant and equipment	(18,262)	(10,038)
Proceeds from sale of property, plant and equipment	1,115	140
Issuance of note receivable	(2,400)	—
Proceeds from repayment of note receivable	1,500	—
Net cash provided by investing activities	52,283	18,624
Cash flows from financing activities		
Acquisitions of noncontrolling interests	(913)	—
Advances from lines of credit	3,324	1,540
Repayments of advances from lines of credit	(3,859)	(1,640)
Proceeds from long term debt	285	—
Payments of long term debt	(252)	(685)
Payments of deferred consideration for acquisitions	(1,991)	—
Proceeds from stock option exercises	678	17,671
Payment of stock issuance costs	(10)	—
Net cash provided by (used in) financing activities	(2,738)	16,886
Effect of exchange rate changes on cash and cash equivalents	457	(162)
Net increase in cash and cash equivalents	1,753	19,299
Cash and cash equivalents		
Beginning of period	62,607	135,782
End of period	$ 64,360	$ 155,081
Supplemental disclosure of cash flow information		
Cash paid during the period for interest	$ 146	$ 140
Cash paid during the period for income taxes	377	—
Significant noncash financing and investing activities		
Stock received as consideration for collaboration agreements	$ —	$ 13,666
Preferred stock received as consideration for collaboration amendments	—	120,000
Stock and warrants issued in business combinations	16,997	—
Stock issued to acquire noncontrolling interest	5,082	—
Stock issued in asset acquisition	—	4,401
Contingent consideration assumed in asset acquisition	—	3,660
Noncash dividend to shareholders	22,385	—
Purchases of equipment included in accounts payable and other accrued liabilities	3,562	1,118

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Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Unaudited)
(Amounts in thousands, except share and per share data)

1. Organization

Intrexon Corporation ("Intrexon"), a Virginia corporation, forms collaborations to create biologically based products and processes using synthetic biology. Intrexon's primary domestic operations are in California, Florida, Maryland, and Virginia, and its primary international operations are in Belgium and Hungary. There have been no commercialized products derived from Intrexon's collaborations to date.

Trans Ova Genetics, L.C. ("Trans Ova"), a provider of bovine reproductive technologies and other genetic processes to cattle breeders and producers, is a wholly owned subsidiary of Intrexon with primary operations in Iowa, Maryland, Missouri, Oklahoma, and Texas.

Oxitec Limited ("Oxitec"), a pioneering company in biological insect control solutions, is a wholly owned subsidiary of Intrexon with primary operations in England and Brazil.

Intrexon Produce Holdings, Inc. ("IPHI") is a wholly owned subsidiary of Intrexon. Okanagan Specialty Fruits, Inc. ("Okanagan"), a company which developed and received regulatory approval for the world's first non-browning apple without the use of any flavor-altering chemical or antioxidant additives, is a wholly owned subsidiary of IPHI with primary operations in Canada. Fruit Orchard Holdings, Inc. ("FOHI") is a wholly owned subsidiary of IPHI with primary operations in Washington.

ViaGen, L.C. ("ViaGen"), a provider of genetic preservation and cloning technologies, and Exemplar Genetics, LLC ("Exemplar"), a provider of genetically engineered swine for medical and genetic research, are wholly owned subsidiaries with primary operations in Texas and Iowa, respectively.

In March 2017, Intrexon acquired the remaining 49% of the equity of Biological & Popular Culture, Inc. ("BioPop"), a California company developing artwork, children's toys and novelty goods that are derived from living organisms or enabled by synthetic biology for $900 in cash and 221,743 shares of Intrexon common stock valued at $5,082. Upon closing this transaction, BioPop became a wholly owned subsidiary of Intrexon.

As of June 30, 2017, Intrexon owned approximately 58% of AquaBounty Technologies, Inc. ("AquaBounty"), a company focused on improving productivity in commercial aquaculture. In January 2017, in conjunction with the listing by AquaBounty of their common stock on the NASDAQ Stock Market, Intrexon purchased $25,000 of additional AquaBounty common stock and subsequently distributed shares of AquaBounty common stock as a dividend to Intrexon shareholders. See Note 14 for additional discussion.

Intrexon Corporation and its consolidated subsidiaries are hereinafter referred to as the "Company."

2. Summary of Significant Accounting Policies

Basis of Presentation

The accompanying interim consolidated financial statements are unaudited and have been prepared in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP"). Certain information and footnote disclosures normally included in the Company's annual financial statements have been condensed or omitted. These interim consolidated financial statements, in the opinion of management, reflect all normal recurring adjustments necessary for fair statement of the Company's financial position as of June 30, 2017 and results of operations and cash flows for the interim periods ended June 30, 2017 and 2016. The year-end consolidated balance sheet data was derived from the Company's audited financial statements but does not include all disclosures required by U.S. GAAP. These interim financial results are not necessarily indicative of the results to be expected for the year ending December 31, 2017, or for any other future annual or interim period. The accompanying interim unaudited consolidated financial statements should be read in conjunction with the audited consolidated financial statements and related notes thereto included in the Company's Annual Report on Form 10-K for the year ended December 31, 2016.

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The accompanying consolidated financial statements reflect the operations of the Company and its subsidiaries. All intercompany accounts and transactions have been eliminated.

Investments in Preferred Stock

The Company holds preferred stock in certain of its collaborators which may be converted to common stock as described in Note 7. The Company elected the fair value option to account for its investments in preferred stock whereby the value of preferred stock is adjusted to fair value as of each reporting date and unrealized gains and losses are reported in the consolidated statement of operations. These investments are subject to fluctuation in the future due to, among other things, the likelihood and timing of conversion of the preferred stock into common stock, the volatility of each collaborator's common stock, and changes in general economic and financial conditions of the collaborators. The investments are classified as noncurrent in the consolidated balance sheet since the Company does not intend to sell the investments nor expect them to be converted into shares of common stock within one year.

Until such time as the Company converts the preferred stock into common stock, the Company is entitled to monthly dividends and records dividend income as described in Note 7.

Equity Method Investments

The Company accounts for its investments in each of its joint ventures and for its investments in start-up entities backed by the Harvest Intrexon Enterprise Fund I, LP ("Harvest"), a related party, (Note 17) using the equity method of accounting based upon relative ownership interest. The Company's investments in these entities are included in investments in affiliates in the accompanying consolidated balance sheets.

The Company accounts for its investment in Oragenics, Inc. ("Oragenics"), one of its collaborators, using the fair value option.

The fair value of the Company's investment in Oragenics was $4,807 and $7,244 as of June 30, 2017 and December 31, 2016, respectively, and is included as equity securities in the accompanying consolidated balance sheets. The Company's ownership of Oragenics was 29.4% and 29.5% as of June 30, 2017 and December 31, 2016, respectively. Unrealized depreciation in the fair value of these securities was $1,096 and $4,797 for the three months ended June 30, 2017 and 2016, respectively, and was $2,437 and $11,142 for the six months ended June 30, 2017 and 2016, respectively.

Summarized financial data as of June 30, 2017 and December 31, 2016 and for the three and six months ended June 30, 2017 and 2016, for the Company's equity method investments are shown in the following tables.

	June 30, 2017	December 31, 2016
Current assets	$ 67,361	$ 77,761
Non-current assets	13,109	11,040
Total assets	80,470	88,801
Current liabilities	12,950	11,588
Non-current liabilities	3,177	—
Total liabilities	16,127	11,588
Net assets	$ 64,343	$ 77,213

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
Revenues	$ 87	$ 47	$ 117	$ 329
Operating expenses	10,092	14,383	23,435	32,043
Operating loss	(10,005)	(14,336)	(23,318)	(31,714)
Other	(68)	1,424	(63)	1,427
Net loss	$ (10,073)	$ (12,912)	$ (23,381)	$ (30,287)

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Variable Interest Entities

As of June 30, 2017 and December 31, 2016, the Company determined that certain of its collaborators and joint ventures as well as Harvest were variable interest entities ("VIE" or "VIEs"). The Company was not the primary beneficiary for these entities since it did not have the power to direct the activities that most significantly impact the economic performance of the VIEs. The Company's aggregate investment balances of these VIEs as of June 30, 2017 and December 31, 2016 were $185,555 and $159,115, respectively, which represents the Company's maximum risk of loss related to the identified VIEs.

Self-insurance Reserves

Effective January 1, 2017, the Company commenced a self-insurance program for a significant portion of its employee health benefit programs. The Company maintains stop-loss coverage with third party insurers to limit its individual claims and total exposure under those programs. The Company estimates its accrued liability for the ultimate costs to close known claims, including claims incurred but not yet reported to the Company, as of the balance sheet date. The Company's recorded estimated liability for self-insurance is based on the insurance company's incurred loss estimates and management's judgment, including assumptions and factors related to the frequency and severity of claims and the Company's claims development history.

The assessment of self-insurance reserves is a highly subjective process that requires judgments about future events. Self-insurance reserves are reviewed at least quarterly to determine the adequacy of the accruals and related financial statement disclosure. The ultimate settlement of self-insurance reserves may differ significantly from amounts the Company has accrued in its consolidated financial statements.

Segment Information

While the Company generates revenues from multiple sources, including collaboration agreements, licensing, and products and services associated with bovine reproduction, management is organized around a singular research and development focus to further the development of the Company's underlying synthetic biology technologies. Accordingly, the Company has determined that it operates in one segment. As of June 30, 2017 and December 31, 2016, the Company had $16,499 and $13,265, respectively, of long-lived assets in foreign countries. The Company recognized revenues derived in foreign countries totaling $3,611 and $2,680 for the three months ended June 30, 2017 and 2016, respectively, and $7,325 and $5,176 for the six months ended June 30, 2017 and 2016, respectively.

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting periods. Actual results could differ from those estimates.

Recently Adopted Accounting Pronouncements

In January 2017, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2017-01, *Business Combinations (Topic 805) - Clarifying the Definition of a Business* ("ASU 2017-01"). The provisions of ASU 2017-01 clarify the definition of a business to assist entities with evaluating whether transactions should be accounted for as acquisitions (or disposals) of assets or businesses. The Company adopted this standard in the second quarter of 2017, and the implementation of this standard did not have a material impact on the Company's consolidated financial statements.

In October 2016, the FASB issued ASU 2016-17, *Consolidation (Topic 810) - Interests Held through Related Parties That Are under Common Control* ("ASU 2016-17"). The provisions of ASU 2016-17 amend the consolidation guidance on how a reporting entity that is the single decision maker of a VIE should treat indirect interests in the entity held through related parties that are under common control with the reporting entity when determining whether it is the primary beneficiary of that VIE. The Company adopted this standard effective January 1, 2017, and the implementation of this standard did not have a material impact on the Company's consolidated financial statements.

In March 2016, the FASB issued ASU 2016-09, *Stock Compensation (Topic 718) - Improvements to Employee Share-Based Payment Accounting* ("ASU 2016-09"). The provisions of ASU 2016-09 simplify various aspects of the accounting for employee share-based payment transactions, including the income tax consequences, classification of awards as either equity or liabilities, and classification on the statement of cash flows. The Company adopted this standard effective January 1, 2017. Upon adoption in the first quarter of 2017, the Company elected to recognize forfeitures as they occur and recorded an opening

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adjustment to additional paid-in capital and accumulated deficit for previously unrecognized stock-based compensation costs due to estimating forfeitures on unvested shares totaling $1,461. The Company also recognized deferred tax assets of approximately $17,900 related to the excess tax benefits that previously arose directly from tax deductions related to equity compensation greater than stock-based compensation costs recognized in the consolidated financial statements and the cumulative adjustment for forfeitures. These deferred tax assets were fully offset by a valuation allowance (Note 13). The adoption was on a modified retrospective basis and had no impact on prior periods.

In March 2016, the FASB issued ASU 2016-07, *Investments-Equity Method and Joint Ventures (Topic 323) - Simplifying the Transition to the Equity Method of Accounting* ("ASU 2016-07"). The provisions of ASU 2016-07 eliminate the requirement that when an investment qualifies for use of the equity method as a result of an increase in the level of ownership interest or degree of influence, an adjustment must be made to the investment, results of operations, and retained earnings retroactively on a step-by-step basis as if the equity method had been in effect during all previous periods that the investment had been held. The Company adopted this standard effective January 1, 2017, and the implementation of this standard did not have a material impact on the Company's consolidated financial statements.

In July 2015, the FASB issued ASU 2015-11, *Inventory (Topic 330) - Simplifying the Measurement of Inventory* ("ASU 2015-11"). The provisions of ASU 2015-11 provide guidance for simplifying the calculation for subsequent measurement of inventory measured using the first-in-first-out or average cost methods. The Company adopted this standard effective January 1, 2017, and the implementation of this standard did not have a material impact on the Company's consolidated financial statements.

Recently Issued Accounting Pronouncements

In July 2017, the FASB issued ASU 2017-11, *Earnings Per Share (Topic 260), Distinguishing Liabilities from Equity (Topic 480) and Derivatives and Hedging (Topic 815): I. Accounting for Certain Financial Instruments with Down Round Features; II. Replacement of the Indefinite Deferral for Mandatorily Redeemable Financial Instruments of Certain Nonpublic Entities and Certain Mandatorily Redeemable Noncontrolling Interests with a Scope Exception* ("ASU 2017-11"). The amendments in Part I of ASU 2017-11 change the classification analysis of certain equity-linked financial instruments (or embedded features) with down round features. When determining whether certain financial instruments should be classified as liabilities or equity instruments, a down round feature no longer precludes equity classification when assessing whether the instrument is indexed to an entity's own stock. The amendments also clarify existing disclosure requirements for equity-classified instruments. As a result, a freestanding equity-linked financial instrument (or embedded conversion option) no longer would be accounted for as a derivative liability at fair value as a result of the existence of a down round feature. For freestanding equity-classified financial instruments, the amendments require entities that present earnings per share ("EPS") in accordance with Topic 260 to recognize the effect of the down round feature when it is triggered. That effect is treated as a dividend and as a reduction of income available to common shareholders in basic EPS. Convertible instruments with embedded conversion options that have down round features are now subject to the specialized guidance for contingent beneficial conversion features (in Subtopic 470-20, *Debt-Debt with Conversion and Other Options*), including related EPS guidance (in Topic 260). The amendments in Part II of ASU 2017-11 re-characterize the indefinite deferral of certain provisions of Topic 480 that now are presented as pending content in the FASB codification, to a scope exception. Those amendments do not have an accounting effect. The guidance is effective for annual periods and interim periods within those annual periods beginning after December 15, 2018, with early adoption permitted, and is effective for the Company for the year ended December 31, 2019. The Company is currently evaluating the impact that the implementation of this standard will have on the Company's consolidated financial statements.

In May 2017, the FASB issued ASU 2017-09, *Compensation-Stock Compensation (Topic 718) – Scope of Modification Accounting* ("ASU 2017-09"). The provisions of ASU 2017-09 provide guidance about which changes to the terms or conditions of a share-based payment award require an entity to apply modification accounting in Topic 718. An entity should account for the effects of a modification unless (a) the fair value of the modified award is the same as the fair value of the original award, (b) the vesting conditions of the modified award are the same as the vesting conditions of the original award and (c) the classification of the modified award as an equity instrument or a liability instrument is the same as the classification of the original award immediately before the original award is modified. The guidance is effective for annual periods and interim periods within those annual periods beginning after December 15, 2017, with early adoption permitted, and is effective for the Company for the year ending December 31, 2018. The amendments in ASU 2017-09 should be applied prospectively to an award modified on or after the adoption date. The Company is currently evaluating the impact that the implementation of this standard will have on the Company's consolidated financial statements.

In January 2017, the FASB issued ASU 2017-04, *Intangibles-Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment* ("ASU 2017-04"). The provisions of ASU 2017-04 simplify how an entity is required to test goodwill for

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impairment by eliminating Step 2 from the goodwill impairment test. The guidance is effective for annual periods and interim periods within those annual periods beginning after December 15, 2019, with early adoption permitted, and is effective for the Company for the year ending December 31, 2020. The Company is currently evaluating the impact that the implementation of this standard will have on the Company's consolidated financial statements.

In November 2016, the FASB issued ASU 2016-18, *Statement of Cash Flows (Topic 230) - Restricted Cash (A Consensus of the FASB Emerging Issues Task Force)* ("ASU 2016-18"). The provisions of ASU 2016-18 require amounts generally described as restricted cash and restricted cash equivalents to be included with cash and cash equivalents when reconciling the total beginning and ending balances for the periods presented on the statement of cash flows. The guidance is effective for annual periods and interim periods within those annual periods beginning after December 15, 2017, with early adoption permitted, and is effective for the Company for the year ending December 31, 2018. The implementation of this standard is not expected to have a material impact on the Company's consolidated financial statements.

In August 2016, the FASB issued ASU 2016-15, *Statement of Cash Flows (Topic 230) - Classification of Certain Cash Receipts and Cash Payments* ("ASU 2016-15"). The provisions of ASU 2016-15 address eight specific cash flow issues and how those certain cash receipts and cash payments are presented and classified in the statement of cash flows under Topic 230, *Statement of Cash Flows*, and other Topics. The guidance is effective for annual periods and interim periods within those annual periods beginning after December 15, 2017, with early adoption permitted, and is effective for the Company for the year ending December 31, 2018. The Company is currently evaluating the impact that the implementation of this standard will have on the Company's consolidated financial statements.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)* ("ASU 2016-02"). The provisions of ASU 2016-02 set out the principles for the recognition, measurement, presentation and disclosure of leases for both parties to a contract (i.e. lessees and lessors). The new standard requires lessees to apply a dual approach, classifying leases as either finance or operating leases based on the principle of whether or not the lease is effectively a financed purchase by the lessee. This classification will determine whether lease expense is recognized based on an effective interest method or on a straight-line basis over the term of the lease, respectively. A lessee is also required to record a right-of-use asset and a lease liability for all leases with a term of greater than 12 months regardless of their classification. Leases with a term of 12 months or less will be accounted for in a similar manner as under existing guidance for operating leases today. ASU 2016-02 supersedes the previous lease standard, Topic 840, *Leases*. The guidance is effective for annual periods and interim periods within those annual periods beginning after December 15, 2018, and is effective for the Company for the year ending December 31, 2019. The Company is currently evaluating the impact that the implementation of this standard will have on the Company's consolidated financial statements.

In January 2016, the FASB issued ASU 2016-01, *Financial Instruments - Overall (Subtopic 825-10) - Recognition and Measurement of Financial Assets and Financial Liabilities* ("ASU 2016-01"). The provisions of ASU 2016-01 make targeted improvements to enhance the reporting model for financial instruments to provide users of financial statements with more decision-useful information, including certain aspects of recognition, measurement, presentation, and disclosure of financial instruments. The guidance is effective for annual periods and interim periods within those annual periods beginning after December 15, 2017, and is effective for the Company for the year ending December 31, 2018. The Company is currently evaluating the impact that the implementation of this standard will have on the Company's consolidated financial statements.

In May 2014, the FASB issued ASU 2014-09, *Revenue from Contracts with Customers* ("ASU 2014-09"). The FASB issued ASU 2014-09 to clarify the principles for recognizing revenue and to develop a common revenue standard for U.S. GAAP. The standard outlines a single comprehensive model for entities to use in accounting for revenue arising from contracts with customers and supersedes the most current revenue recognition guidance. This guidance was originally effective for annual periods and interim periods within those annual periods beginning after December 15, 2016 and early adoption was not permitted. In August 2015, the FASB issued ASU 2015-14, *Revenue from Contracts with Customers (Topic 606) - Deferral of the Effective Date*, which deferred the effective date of the guidance in ASU 2014-09 by one year to December 15, 2017 for interim and annual reporting periods beginning after that date and permitted early adoption of the standard, but not before the original effective date of December 15, 2016, and is effective for the Company for the year ending December 31, 2018. In 2016, the FASB clarified the implementation guidance on principal versus agent, identifying performance obligations, licensing, narrow-scope improvements, practical expedients, and to expedite improvements to ASU 2014-09 by issuing ASU 2016-08, *Revenue from Contracts with Customers (Topic 606) - Principal versus Agent Considerations*, ASU 2016-10, *Revenue from Contracts with Customers (Topic 606) - Identifying Performance Obligations and Licensing*, and ASU 2016-12, *Revenue from Contracts with Customers (Topic 606) - Narrow-Scope Improvements and Practical Expedients*, and ASU 2016-20, *Technical Corrections and Improvements to Topic 606, Revenue from Contracts with Customers*. The Company is currently evaluating its collaborations and licensing agreements to determine the impact, if any, that the implementation of this standard will have on the Company's consolidated financial statements as it relates to the recognition of upfront and milestone payments

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that have been deferred under the current revenue guidance, reimbursements for costs incurred by the Company for research and development services provided pursuant to collaborations, and royalties on sales of products arising from collaborations.

3. Mergers and Acquisitions

GenVec Acquisition

In June 2017, pursuant to an Agreement and Plan of Merger (the "GenVec Merger Agreement"), the Company acquired 100% of the outstanding shares of GenVec, Inc. ("GenVec"), a clinical-stage company and pioneer in the development of AdenoVerse gene delivery technology. Pursuant to the GenVec Merger Agreement, the former shareholders of GenVec received an aggregate of 684,240 shares of the Company's common stock and have the right to receive contingent consideration equal to 50% of any milestone or royalty payments received under one of GenVec's collaboration agreements, provided such payments are received within three years after the closing of the transaction. The Company also assumed warrants held by certain former shareholders of GenVec. The results of GenVec's operations subsequent to the acquisition date have been included in the consolidated financial statements.

The fair value of the total consideration transferred was $17,582. The acquisition date fair value of each class of consideration transferred is presented below:

Common shares	$	15,616
Warrants		1,381
Contingent consideration		585
	$	17,582

The fair value of the shares of the Company's common stock issued was based on the quoted closing price of the Company's common stock immediately prior to the closing of the acquisition. The fair value of the warrants assumed was estimated using the Black-Scholes option-pricing model. The fair value of the contingent consideration was determined using a probability weighted discounted cash flows model and is considered a freestanding financial instrument and is recorded at fair value each reporting period. The preliminary estimated fair value of assets acquired and liabilities assumed at the acquisition date is shown below:

Cash and cash equivalents	$	2,054
Short term investments		542
Trade receivables		75
Other receivables		97
Prepaid expenses and other		227
Property and equipment		250
Intangible assets		14,000
Other non-current assets		58
Total assets acquired		17,303
Accounts payable		2,158
Accrued compensation and benefits		1,226
Other accrued expenses		856
Other long term liabilities		92
Deferred tax liabilities		239
Total liabilities assumed		4,571
Net assets acquired		12,732
Goodwill		4,850
Total consideration	$	17,582

The fair value of assets acquired and liabilities assumed at the acquisition date are considered preliminary and are subject to revision when the valuation of intangible assets is finalized. The acquired intangible assets include developed technology, the

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fair value of which was determined using the multi-period excess earning method, which is a variation of the income approach that converts future cash flows to single discounted present value amounts. The intangible assets are being amortized over a useful life of eleven years. Goodwill, which is not expected to be deductible for tax purposes, represents the assembled workforce and the anticipated buyer-specific synergies arising from the combination of the Company's and GenVec's technology.

As of June 30, 2017, the Company had incurred $510 of acquisition related costs, of which $260 and $498 is included in selling, general and administrative expenses in the accompanying consolidated statements of operations for the three and six months ended June 30, 2017, respectively.

Condensed Pro Forma Financial Information

GenVec's results of operations subsequent to the acquisition are included in the consolidated statements of income. The following condensed pro forma financial information for the three and six months ended June 30, 2017 and 2016 is presented as if the acquisition had been consummated on January 1, 2016:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
	Pro forma			
Revenues	$ 54,551	$ 52,527	$ 108,169	$ 96,255
Loss before income taxes	(24,124)	(52,135)	(60,651)	(121,914)
Net loss	(23,500)	(51,355)	(59,494)	(118,853)
Net loss attributable to the noncontrolling interests	998	967	1,976	1,858
Net loss attributable to Intrexon	(22,502)	(50,388)	(57,518)	(116,995)

4. Investments in Joint Ventures

S & I Ophthalmic

In September 2013, the Company entered into a Limited Liability Company Agreement ("Sun LLC Agreement") with Caraco Pharmaceutical Laboratories, Ltd. ("Sun Pharmaceutical Subsidiary"), an indirect subsidiary of Sun Pharmaceutical Industries Ltd. ("Sun Pharmaceutical"), an international specialty pharmaceutical company focused on chronic diseases, to form S & I Ophthalmic, LLC ("S & I Ophthalmic"). The Sun LLC Agreement governs the affairs and the conduct of business of S & I Ophthalmic. S & I Ophthalmic leverages experience and technology from both the Company and Sun Pharmaceutical. Both the Company and Sun Pharmaceutical Subsidiary made an initial capital contribution of $5,000 in October 2013 for a 50% membership interest in S & I Ophthalmic. S & I Ophthalmic is governed by a board of managers ("S & I Ophthalmic Board") which has four members, two each from the Company and Sun Pharmaceutical Subsidiary. In cases in which the S & I Ophthalmic Board determines that additional capital contributions are necessary in order for S & I Ophthalmic to conduct business and comply with its obligations, each of the Company and Sun Pharmaceutical Subsidiary has committed to making additional capital contributions to S & I Ophthalmic subject to certain limits defined in the Sun LLC Agreement. Each has the right, but not the obligation, to make additional capital contributions above the defined limits when and if solicited by the S & I Ophthalmic Board. In 2015, both the Company and Sun Pharmaceutical Subsidiary made subsequent capital contributions of $5,000.

Beginning on the seventh anniversary of the effective date of the Sun LLC Agreement, and upon the second anniversary thereafter, the Company, as well as Sun Pharmaceutical Subsidiary, may make a cash offer to purchase all of the other party's interest in S & I Ophthalmic. Upon receipt of such an offer, the other party must either agree to tender its interests at the offered price or submit a counteroffer at a price higher than the original offer. Such offer and counteroffer may continue until one party agrees to the other's price.

The Company's investment in S & I Ophthalmic was $2,767 and $3,236 as of June 30, 2017 and December 31, 2016, respectively, and is included in investments in affiliates in the accompanying consolidated balance sheets.

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OvaXon

In December 2013, the Company and OvaScience, Inc. ("OvaScience"), a life sciences company focused on the discovery, development, and commercialization of new treatments for infertility, entered into a Limited Liability Company Agreement ("OvaXon LLC Agreement") to form OvaXon, LLC ("OvaXon"), a joint venture to create new applications for improving human and animal health. Both the Company and OvaScience made an initial capital contribution of $1,500 in January 2014 for a 50% membership interest in OvaXon. OvaXon is governed by the OvaXon board of managers ("OvaXon Board") which has four members, two each from the Company and OvaScience. In cases in which the OvaXon Board determines that additional capital contributions are necessary in order for OvaXon to conduct business and comply with its obligations, each of the Company and OvaScience has the right, but not the obligation, to make additional capital contributions to OvaXon subject to the OvaXon LLC Agreement. Through June 30, 2017, both the Company and OvaScience have made subsequent capital contributions of $3,250.

The Company's investment in OvaXon was $(811) and $65 as of June 30, 2017 and December 31, 2016, respectively, and is included in other accrued liabilities and investments in affiliates, respectively, in the accompanying consolidated balance sheets.

Intrexon Energy Partners

In March 2014, the Company and certain investors (the "IEP Investors"), including an affiliate of Third Security, LLC ("Third Security"), entered into a Limited Liability Company Agreement which governs the affairs and conduct of business of Intrexon Energy Partners, LLC ("Intrexon Energy Partners"), a joint venture formed to optimize and scale-up the Company's gas-to-liquid bioconversion platform for the production of certain fuels and lubricants. The Company also entered into an ECC with Intrexon Energy Partners providing exclusive rights to the Company's technology for the use in bioconversion, as a result of which the Company received a technology access fee of $25,000 while retaining a 50% membership interest in Intrexon Energy Partners. The IEP Investors made initial capital contributions, totaling $25,000 in the aggregate, in exchange for pro rata membership interests in Intrexon Energy Partners totaling 50%. In addition, Intrexon has committed to make capital contributions of up to $25,000, and the IEP Investors, as a group and pro rata in accordance with their respective membership interests in Intrexon Energy Partners, have committed to make additional capital contributions of up to $25,000, at the request of Intrexon Energy Partners' board of managers (the "Intrexon Energy Partners Board") and subject to certain limitations. As of June 30, 2017, the Company's remaining commitment was $8,271. Intrexon Energy Partners is governed by the Intrexon Energy Partners Board which has five members. Two members of the Intrexon Energy Partners Board are designated by the Company and three members are designated by a majority of the IEP Investors. The Company and the IEP Investors have the right, but not the obligation, to make additional capital contributions above the initial limits when and if solicited by the Intrexon Energy Partners Board.

The Company's investment in Intrexon Energy Partners was $(1,477) and $(477) as of June 30, 2017 and December 31, 2016, respectively, and is included in other accrued liabilities in the accompanying consolidated balance sheets.

Intrexon Energy Partners II

In December 2015, the Company and certain investors (the "IEPII Investors"), including Harvest, entered into a Limited Liability Company Agreement which governs the affairs and conduct of business of Intrexon Energy Partners II, LLC ("Intrexon Energy Partners II"), a joint venture formed to utilize the Company's natural gas bioconversion platform for the production of 1,4-butanediol, an industrial chemical used to manufacture spandex, polyurethane, plastics, and polyester. The Company also entered into an ECC with Intrexon Energy Partners II which provides exclusive rights to the Company's technology for use in the field, as a result of which the Company received a technology access fee of $18,000 while retaining a 50% membership interest in Intrexon Energy Partners II. The IEPII Investors made initial capital contributions, totaling $18,000 in the aggregate, in exchange for pro rata membership interests in Intrexon Energy Partners II totaling 50%. In December 2015, the owners of Intrexon Energy Partners II made a capital contribution of $4,000, half of which was paid by the Company. Intrexon has committed to make additional capital contributions of up to $10,000, and the IEPII Investors, as a group and pro rata in accordance with their respective membership interests in Intrexon Energy Partners II, have committed to make additional capital contributions of up to $10,000, at the request of Intrexon Energy Partners II's board of managers (the "Intrexon Energy Partners II Board") and subject to certain limitations. Intrexon Energy Partners II is governed by the Intrexon Energy Partners II Board which has five members. One member of the Intrexon Energy Partners II Board is designated by the Company and four members are designated by a majority of the IEPII Investors. The Company and the IEPII Investors have the right, but not the obligation, to make additional capital contributions above the initial limits when and if solicited by the Intrexon Energy Partners II Board.

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The Company's investment in Intrexon Energy Partners II was $855 and $1,414 as of June 30, 2017 and December 31, 2016, respectively, and is included in investments in affiliates in the accompanying consolidated balance sheets.

EnviroFlight

In February 2016, the Company entered into a series of transactions involving EnviroFlight, LLC ("Old EnviroFlight"), Darling Ingredients Inc. ("Darling") and a newly formed venture between the Company and Darling ("New EnviroFlight"). The Company determined that the series of integrated transactions to acquire substantially all of the assets of Old EnviroFlight for cash, common stock, and contingent consideration should be accounted for as a single transaction, which constituted a business, and considered New EnviroFlight to be the accounting acquirer. Consideration paid to Old EnviroFlight was $4,244 in cash, 136,340 shares of the Company's common stock valued at $4,401 and contingent consideration estimated at $3,660. Contemporaneously, all the assets acquired from Old EnviroFlight, with the exception of certain developed technology, and $3,000 of cash were contributed to New EnviroFlight in exchange for a non-controlling, 50% membership interest in New EnviroFlight. The Company's contributions to New EnviroFlight included an exclusive license to the developed technology that was retained by the Company. Darling received the remaining 50% membership interest in New EnviroFlight as consideration for terminating rights previously held in the developed technology with Old EnviroFlight. New EnviroFlight was formed to generate high-nutrition, low environmental impact animal and fish feed, as well as fertilizer products. The Company and Darling as members have each agreed to make additional capital contributions of up to $5,000 to fund ongoing operations of New EnviroFlight. As of June 30, 2017, the Company's remaining commitment was $2,750. All of the employees of Old EnviroFlight became employees of New EnviroFlight.

The Company determined that its investment in New EnviroFlight should be accounted for using the equity method of accounting. The Company recorded an estimated fair value of $5,425 for its investment in New EnviroFlight and $9,880 for the retained developed technology intangible asset. The developed technology is being amortized over a period of twenty-one years. The contingent consideration liability payable to the members of Old EnviroFlight is considered a freestanding financial instrument and is recorded at fair value each reporting period. The value of this liability was estimated at $2,241 as of June 30, 2017 (Note 8). New EnviroFlight met a regulatory milestone, as defined in the asset purchase agreement, and the members of Old EnviroFlight received a portion of the contingent consideration consisting of 59,337 shares of the Company's common stock valued at $1,583 in October 2016. The members of Old EnviroFlight may receive up to $4,000 of additional shares of the Company's common stock if certain commercial milestones are met prior to February 2019.

The Company's investment in New EnviroFlight was $5,673 and $4,189 as of June 30, 2017 and December 31, 2016, respectively, and is included in investments in affiliates in the accompanying consolidated balance sheets.

Intrexon T1D Partners

In March 2016, the Company and certain investors (the "T1D Investors"), including affiliates of Third Security, entered into a Limited Liability Company Agreement which governs the affairs and conduct of business of Intrexon T1D Partners, LLC ("Intrexon T1D Partners"), a joint venture formed to utilize the Company's proprietary ActoBiotics platform to develop and commercialize products to treat type 1 diabetes. The Company also entered into an ECC with Intrexon T1D Partners which provides the exclusive rights to the Company's technology for use in the field, as a result of which the Company received a technology access fee of $10,000 while retaining a 50% membership interest in Intrexon T1D Partners. The T1D Investors made initial capital contributions, totaling $10,000 in the aggregate, in exchange for pro rata membership interests in Intrexon T1D Partners totaling 50%. Intrexon has committed to make capital contributions of up to $5,000, and the T1D Investors, as a group and pro rata in accordance with their respective membership interests in Intrexon T1D Partners, have committed to make additional capital contributions of up to $5,000, at the request of Intrexon T1D Partners' board of managers (the "Intrexon T1D Partners Board") and subject to certain limitations. As of June 30, 2017, the Company's remaining commitment was $3,650. Intrexon T1D Partners is governed by the Intrexon T1D Partners Board, which has five members. Two members of the Intrexon T1D Partners Board are designated by the Company and three members are designated by a majority of the T1D Investors. The Company and the T1D Investors have the right, but not the obligation, to make additional capital contributions above these limits when and if solicited by the Intrexon T1D Partners Board.

The Company's investment in Intrexon T1D Partners was $(142) and $806 as of June 30, 2017 and December 31, 2016, respectively, and is included in other accrued liabilities and investments in affiliates, respectively, in the accompanying consolidated balance sheets.

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5. Collaboration and Licensing Revenue

The Company generates revenue through contractual agreements with collaborators (known as exclusive channel collaborations, "ECC" or "ECCs") and licensing agreements whereby the collaborators or the licensees obtain exclusive access to the Company's proprietary technologies for use in the research, development and commercialization of products and/or treatments in a contractually specified field of use. Upfront and milestone payments are typically deferred and recognized over the expected life of the Company's technology platform using a straight-line approach. The Company recognizes the reimbursement payments received for research and development services in the period in which the services are performed and collection is reasonably assured. The following tables summarize the amounts recorded as revenue in the consolidated statements of operations for each significant counterparty to a collaboration or licensing agreement for the three and six months ended June 30, 2017 and 2016.

	Three Months Ended June 30, 2017		
	Revenue Recognized From		
	Upfront and Milestone Payments	Research and Development Services	Total
ZIOPHARM Oncology, Inc.	$ 4,842	$ 5,122	$ 9,964
Oragenics, Inc.	261	214	475
Fibrocell Science, Inc.	605	1,348	1,953
Genopaver, LLC	68	1,445	1,513
S & I Ophthalmic, LLC	—	72	72
OvaXon, LLC	—	880	880
Intrexon Energy Partners, LLC	625	1,295	1,920
Persea Bio, LLC	125	141	266
Ares Trading S.A.	1,597	1,206	2,803
Intrexon Energy Partners II, LLC	500	456	956
Intrexon T1D Partners, LLC	272	1,016	1,288
Harvest start-up entities (1)	606	3,846	4,452
Other	923	699	1,622
Total	$ 10,424	$ 17,740	$ 28,164

(1) For the three months ended June 30, 2017, revenue recognized from collaborations with Harvest start-up entities include Thrive Agrobiotics, Inc.; Exotech Bio, Inc.; Relieve Genetics, Inc.; AD Skincare, Inc.; Genten Therapeutics, Inc.; and CRS Bio, Inc.

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	Three Months Ended June 30, 2016		
	Revenue Recognized From		
	Upfront and Milestone Payments	Research and Development Services	Total
ZIOPHARM Oncology, Inc.	$ 922	$ 6,048	$ 6,970
Oragenics, Inc.	261	246	507
Fibrocell Science, Inc.	605	789	1,394
Genopaver, LLC	68	1,569	1,637
S & I Ophthalmic, LLC	—	2,358	2,358
OvaXon, LLC	—	808	808
Intrexon Energy Partners, LLC	625	3,587	4,212
Persea Bio, LLC	125	206	331
Ares Trading S.A.	1,597	621	2,218
Intrexon Energy Partners II, LLC	500	394	894
Intrexon T1D Partners, LLC	278	32	310
Harvest start-up entities (1)	305	634	939
Other	2,769	2,134	4,903
Total	$ 8,055	$ 19,426	$ 27,481

(1) For the three months ended June 30, 2016, revenue recognized from collaborations with Harvest start-up entities include Thrive Agrobiotics, Inc.; Exotech Bio, Inc.; and Relieve Genetics, Inc.

	Six Months Ended June 30, 2017		
	Revenue Recognized From		
	Upfront and Milestone Payments	Research and Development Services	Total
ZIOPHARM Oncology, Inc.	$ 9,684	$ 11,265	$ 20,949
Oragenics, Inc.	524	520	1,044
Fibrocell Science, Inc.	1,210	2,482	3,692
Genopaver, LLC	137	3,056	3,193
S & I Ophthalmic, LLC	—	375	375
OvaXon, LLC	—	1,704	1,704
Intrexon Energy Partners, LLC	1,250	5,756	7,006
Persea Bio, LLC	250	305	555
Ares Trading S.A.	3,194	2,924	6,118
Intrexon Energy Partners II, LLC	1,000	1,105	2,105
Intrexon T1D Partners, LLC	536	1,884	2,420
Harvest start-up entities (1)	1,207	6,608	7,815
Other	2,756	1,497	4,253
Total	$ 21,748	$ 39,481	$ 61,229

(1) For the six months ended June 30, 2017, revenue recognized from collaborations with Harvest start-up entities include Thrive Agrobiotics, Inc.; Exotech Bio, Inc.; Relieve Genetics, Inc.; AD Skincare, Inc.; Genten Therapeutics, Inc.; and CRS Bio, Inc.

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	Six Months Ended June 30, 2016		
	Revenue Recognized From		
	Upfront and Milestone Payments	Research and Development Services	Total
ZIOPHARM Oncology, Inc.	$ 1,844	$ 12,107	$ 13,951
Oragenics, Inc.	524	789	1,313
Fibrocell Science, Inc.	1,210	2,041	3,251
Genopaver, LLC	137	3,078	3,215
S & I Ophthalmic, LLC	—	3,544	3,544
OvaXon, LLC	—	1,502	1,502
Intrexon Energy Partners, LLC	1,250	6,950	8,200
Persea Bio, LLC	250	405	655
Ares Trading S.A.	3,194	1,429	4,623
Intrexon Energy Partners II, LLC	1,000	444	1,444
Intrexon T1D Partners, LLC	278	32	310
Harvest start-up entities (1)	351	1,022	1,373
Other	3,789	4,384	8,173
Total	$ 13,827	$ 37,727	$ 51,554

(1) For the six months ended June 30, 2016, revenue recognized from collaborations with Harvest start-up entities include Thrive Agrobiotics, Inc.; Exotech Bio, Inc.; and Relieve Genetics, Inc.

There have been no significant changes to arrangements with our collaborators and licensees in the six months ended June 30, 2017. See Note 5 in the Company's Annual Report on Form 10-K for the year ended December 31, 2016 for additional details of the Company's existing collaboration and licensing agreements.

Deferred Revenue

Deferred revenue primarily consists of consideration received for upfront and milestone payments in connection with the Company's collaborations and licensing agreements, prepayments for research and development services performed for collaborators and licensees, and prepayments for product and service revenues. Deferred revenue consists of the following:

	June 30, 2017	December 31, 2016
Upfront and milestone payments	$ 278,262	$ 297,867
Prepaid research and development services	2,502	6,015
Prepaid product and service revenues	4,550	5,554
Other	4	706
Total	$ 285,318	$ 310,142
Current portion of deferred revenue	$ 47,662	$ 53,364
Long-term portion of deferred revenue	237,656	256,778
Total	$ 285,318	$ 310,142

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The following table summarizes the remaining balance of deferred revenue associated with upfront and milestone payments for each significant collaboration and licensing agreement.

	June 30, 2017	December 31, 2016
ZIOPHARM Oncology, Inc.	$ 129,125	$ 138,809
Oragenics, Inc.	7,242	7,766
Fibrocell Science, Inc.	17,816	19,026
Genopaver, LLC	1,840	1,977
Intrexon Energy Partners, LLC	16,875	18,125
Persea Bio, LLC	3,750	4,000
Ares Trading S.A.	43,984	47,178
Intrexon Energy Partners II, LLC	14,833	15,833
Intrexon T1D Partners, LLC	8,678	8,653
Harvest start-up entities (1)	19,400	20,208
Other	14,719	16,292
Total	$ 278,262	$ 297,867

(1) As of June 30, 2017 and December 31, 2016, the balance of deferred revenue for collaborations with Harvest start-up entities includes Thrive Agrobiotics, Inc.; Exotech Bio, Inc.; Relieve Genetics, Inc.; AD Skincare, Inc.; Genten Therapeutics, Inc.; and CRS Bio, Inc.

6. Short-term and Long-term Investments

The Company's investments are classified as available-for-sale. The following table summarizes the amortized cost, gross unrealized gains and losses, and fair value of available-for-sale investments as of June 30, 2017:

	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Aggregate Fair Value
U.S. government debt securities	$ 92,081	$ —	$ (94)	$ 91,987
Corporate notes and bonds	542	—	—	542
Certificates of deposit	275	—	—	275
Total	$ 92,898	$ —	$ (94)	$ 92,804

The following table summarizes the amortized cost, gross unrealized gains and losses, and fair value of available-for-sale investments as of December 31, 2016:

	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Aggregate Fair Value
U.S. government debt securities	$ 180,412	$ 5	$ (94)	$ 180,323
Certificates of deposit	272	—	—	272
Total	$ 180,684	$ 5	$ (94)	$ 180,595

For more information on the Company's method for determining the fair value of its assets, see Note 2 – "Fair Value of Financial Instruments" in the Company's Annual Report on Form 10-K for the year ended December 31, 2016.

As of June 30, 2017, all of the available-for-sale investments were due within one year based on their contractual maturities.

Changes in market interest rates and bond yields cause certain investments to fall below their cost basis, resulting in unrealized losses on investments. The unrealized losses of the Company's investments were primarily a result of unfavorable changes in interest rates subsequent to the initial purchase of these investments and have been in a loss position for less than 12 months.

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As of June 30, 2017 and December 31, 2016, the Company did not consider any of its investments to be other-than-temporarily impaired. When evaluating its investments for other-than-temporary impairment, the Company reviews factors such as the length of time and extent to which fair value has been below its cost basis, the financial condition of the issuer, the Company's ability and intent to hold the security and whether it is more likely than not that it will be required to sell the investment before recovery of its cost basis.

7. Investments in Preferred Stock

Investment in ZIOPHARM Preferred Stock

In June 2016, the Company received 100,000 shares of Series 1 Preferred Stock (the "Preferred Shares") of ZIOPHARM Oncology Inc. ("ZIOPHARM"), a related party, with a per share stated value of $1,200, as consideration for amending their two previously existing ECC agreements. A summary of the terms of the Preferred Shares follows.

Conversion. The Preferred Shares shall automatically convert into shares of ZIOPHARM common stock upon the date the first approval in the United States of (i) a ZIOPHARM product, as defined in and developed under one of the ECC agreements, or (ii) a product, as defined and developed under the License and Collaboration Agreement with Ares Trading S.A., a subsidiary of the biopharmaceutical business of Merck KGaA, and ZIOPHARM, is publicly announced (the "Conversion Event Date"). The Preferred Shares shall convert into a number of shares of ZIOPHARM common stock equal to the stated value of such Preferred Share, divided by the greater of: (i) the volume weighted average closing price of ZIOPHARM's common stock over the twenty trading days ending on the Conversion Event Date or (ii) $1.00. The number of converted shares is subject to certain limitations defined in the amended and restated Certificate of Designation, Preferences, and Rights of Series 1 Preferred Stock (the "A&R Certificate of Designation").

Dividend Rights. The Company shall receive a monthly dividend, payable in additional Preferred Shares, equal to $12.00 per Preferred Share held per month divided by the stated value of the Preferred Shares, which is referred to as the PIK Dividend. For any Preferred Shares that are not converted on the Conversion Event Date, the rate of PIK Dividend on these unconverted Preferred Shares will automatically increase from $12.00 to $24.00 per Preferred Share per month.

Voting Rights. The Preferred Shares do not have any voting rights except for certain protective voting rights defined in the A&R Certificate of Designation.

Liquidation Rights. In the event of any voluntary or involuntary liquidation, dissolution or winding up of ZIOPHARM or a deemed liquidation event, as defined in the A&R Certificate of Designation, including a change of control or the sale, lease transfer, or exclusive license of all or substantially all of ZIOPHARM's assets, the holders of the Preferred Shares shall be entitled to receive a portion of all funds to be distributed in proportion to the holders' proportionate share of ZIOPHARM's common stock on an as-converted to common stock basis (the "Series 1 Liquidation Amount"). For purposes of calculating the Series 1 Liquidation Amount, if such liquidation event occurs prior to the Conversion Event Date, each Preferred Share shall be deemed to be convertible into the number of shares of ZIOPHARM's common stock equal to (i) the stated value of each Preferred Share, divided by (ii) the volume weighted average price of ZIOPHARM's common stock for the twenty day period ending on the date of the public announcement of the liquidation event. In addition, ZIOPHARM may elect to redeem the Preferred Shares in connection with or following a deemed liquidation event at a price per share equal to the Series 1 Liquidation Amount.

The investment in ZIOPHARM preferred stock is categorized as Level 3 as there are significant unobservable inputs and the Preferred Shares are not traded on a public exchange. The fair value of the investment in ZIOPHARM preferred stock is estimated using a probability-weighted expected return ("PWERM") model. The key inputs used in the PWERM model are (i) estimating the future returns for conversion of the Preferred Shares for both product approval and a change in control of ZIOPHARM (the "conversion events") using market data of the change in value for guideline companies as a result of these conversion events; (ii) estimating the expected date and likelihood of each conversion event; and (iii) discounting these estimated future returns using a discount rate for the Preferred Shares considering industry debt issuances originated by public funds and venture capital rates of return. A significant change in unobservable inputs discussed above could result in a significant impact on the fair value of the Company's investment in ZIOPHARM preferred stock. The fair value of the Company's investment in ZIOPHARM preferred stock, including additional Preferred Shares received as dividends, was $142,326 and $129,545 as of June 30, 2017 and December 31, 2016, respectively. During the three and six months ended June 30, 2017, the Company received 3,313 shares and 6,529 shares, respectively, of additional Preferred Shares and recognized $4,042 and $7,965, respectively, of dividend income in the accompanying consolidated statements of operations.

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Investment in Fibrocell Preferred Stock

In March 2017, Fibrocell Science, Inc. ("Fibrocell"), one of the Company's collaborators and a related party, sold Series A Convertible Preferred Stock (the "Convertible Preferred Shares") convertible into shares of Fibrocell common stock and warrants to purchase shares of Fibrocell common stock to certain institutional and accredited investors, including the Company and affiliates of Third Security. The Company paid $1,161 in exchange for 1,161 Convertible Preferred Shares and warrants to acquire 498,843 shares of Fibrocell common stock, reflective of the 1-for-3 reverse stock split of Fibrocell's common stock effective March 10, 2017. The Convertible Preferred Shares are convertible at any time at the election of the Company and accrue dividends at 4% per annum, compounded quarterly, increasing the stated value of the shares. The investment in Fibrocell preferred stock is categorized as Level 3 as there are significant unobservable inputs and the Convertible Preferred Shares are not traded on a public exchange. The fair value of the investment in Fibrocell preferred stock is estimated using a conversion plus dividend approach utilizing the trading value of the underlying common stock and an estimated premium for the preferred stock dividend and other preferences. Market price volatility of Fibrocell's common stock and a significant change in the estimated preferred stock premium could result in a significant impact to the fair value of the investment in Fibrocell preferred stock. As of June 30, 2017, the fair value of the Company's investment in Fibrocell preferred stock totaled $2,416. See Note 17 for additional discussion of the warrants.

Changes in the Fair Value of Investments in Preferred Stock

The following table summarizes the changes in the Level 3 investments in preferred stock during the six months ended June 30, 2017.

	Six Months Ended June 30, 2017
Beginning balance	$ 129,545
Purchase of preferred stock	766
Dividend income from investments in preferred stock	7,980
Unrealized appreciation in the fair value of the investments in preferred stock	6,451
Ending balance	$ 144,742

8. Fair Value Measurements

The carrying amount of cash and cash equivalents, restricted cash, receivables, prepaid expenses and other current assets, accounts payable, accrued compensation and benefits, other accrued liabilities, and related party payables approximate fair value due to the short maturity of these instruments.

The following table presents the placement in the fair value hierarchy of financial assets that are measured at fair value on a recurring basis, including the items for which the fair value option has been elected, at June 30, 2017:

	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	June 30, 2017
Assets				
U.S. government debt securities	$ —	$ 91,987	$ —	$ 91,987
Equity securities	18,042	5,859	—	23,901
Preferred stock	—	—	144,742	144,742
Other	—	9,129	—	9,129
Total	$ 18,042	$ 106,975	$ 144,742	$ 269,759

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The following table presents the placement in the fair value hierarchy of financial assets that are measured at fair value on a recurring basis, including the items for which the fair value option has been elected, at December 31, 2016:

	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	December 31, 2016
Assets				
U.S. government debt securities	$ —	$ 180,323	$ —	$ 180,323
Equity securities	15,544	7,978	—	23,522
Preferred stock	—	—	129,545	129,545
Other	—	1,917	—	1,917
Total	$ 15,544	$ 190,218	$ 129,545	$ 335,307

The method used to estimate the fair value of the Level 1 assets in the tables above is based on observable market data as these equity securities are publicly-traded. The method used to estimate the fair value of the Level 2 short-term and long-term investments in the tables above is based on professional pricing sources for identical or comparable instruments, rather than direct observations of quoted prices in active markets. The method used to estimate the fair value of the Level 2 equity securities in the tables above is based on the quoted market price of the publicly-traded security, adjusted for a discount for lack of marketability. The methods used to estimate the fair value of the Level 3 assets are discussed in Note 7.

There were no transfers between levels of the fair value hierarchy during the six months ended June 30, 2017.

The carrying values of the Company's long term debt approximates fair value due to the length of time to maturity and/or the existence of interest rates that approximate prevailing market rates. The Company's contingent consideration liabilities (Notes 3 and 4) are measured on a recurring basis and were $2,826 and $2,081 at June 30, 2017 and December 31, 2016, respectively. These fair value measurements were based on significant inputs not observable in the market and thus represented a Level 3 measurement. A significant change in unobservable inputs discussed above could result in a significant impact on the fair value of the Company's contingent consideration liabilities. The contingent consideration liabilities are remeasured to fair value at each reporting date until the contingencies are resolved, and those changes in fair value are recognized in earnings. The changes in the fair value of the Level 3 liabilities during the six months ended June 30, 2017 were as follows:

	Six Months Ended June 30, 2017
Beginning balance	$ 2,081
Acquisition date fair value of contingent consideration liability (Note 3)	585
Change in fair value of contingent consideration recognized in selling, general and administrative expenses	160
Ending balance	$ 2,826

9. Inventory

Inventory consists of the following:

	June 30, 2017	December 31, 2016
Supplies, embryos and other production materials	$ 2,112	$ 1,835
Work in process	4,883	5,466
Livestock	10,850	11,752
Feed	1,301	2,086
Total inventory	$ 19,146	$ 21,139

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10. Property, Plant and Equipment, Net

Property, plant and equipment consist of the following:

	June 30, 2017	December 31, 2016
Land and land improvements	$ 11,581	$ 10,904
Buildings and building improvements	15,205	8,123
Furniture and fixtures	2,243	2,176
Equipment	56,526	44,392
Leasehold improvements	17,579	15,105
Breeding stock	4,045	3,893
Computer hardware and software	8,179	6,844
Trees	4,613	2,772
Construction and other assets in progress	12,490	4,513
	132,461	98,722
Less: Accumulated depreciation and amortization	(39,581)	(34,050)
Property, plant and equipment, net	$ 92,880	$ 64,672

Depreciation expense was $2,852 and $2,304 for the three months ended June 30, 2017 and 2016, respectively, and $5,634 and $4,437 for the six months ended June 30, 2017 and 2016, respectively.

In June 2017, AquaBounty purchased a land-based aquaculture facility to be used in the production of its AquAdvantage Salmon in Indiana for $14,219.

11. Goodwill and Intangible Assets, Net

The changes in the carrying amount of goodwill for the six months ended June 30, 2017 are as follows:

Balance at December 31, 2016	$ 157,175
Acquisitions	4,850
Foreign currency translation adjustments	2,906
Balance at June 30, 2017	$ 164,931

No goodwill or accumulated impairment losses existed as of June 30, 2017 and December 31, 2016.

Intangible assets consist of the following at June 30, 2017:

	Weighted Average Useful Life (Years)	Gross Carrying Amount	Accumulated Amortization	Net
Patents, developed technologies and know-how	15.7	$ 260,819	$ (38,462)	$ 222,357
Customer relationships	6.5	10,700	(5,639)	5,061
Trademarks	9.3	6,800	(2,179)	4,621
In-process research and development		8,321	—	8,321
Total		$ 286,640	$ (46,280)	$ 240,360

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Intangible assets consist of the following at December 31, 2016:

	Gross Carrying Amount	Accumulated Amortization	Net
Patents, developed technologies and know-how	$ 236,401	$ (29,748)	$ 206,653
Customer relationships	10,700	(4,672)	6,028
Trademarks	6,800	(1,792)	5,008
Covenant not to compete	370	(339)	31
In-process research and development	7,895	—	7,895
Total	$ 262,166	$ (36,551)	$ 225,615

The balance of in-process research and development as of June 30, 2017 includes certain in-process research and development technology acquired in the Company's acquisition of Oxitec in September 2015, and amortization will begin once certain regulatory approvals have been obtained for the in-process programs.

Amortization expense was $4,639 and $3,722 for the three months ended June 30, 2017 and 2016, respectively, and $9,257 and $7,237 for the six months ended June 30, 2017 and 2016, respectively.

12. Lines of Credit and Long Term Debt

Lines of Credit

Trans Ova has a $5,000 revolving line of credit with First National Bank of Omaha which matures on May 1, 2018. The line of credit bears interest at the greater of 2.95% above the London Interbank Offered Rate or 3.00% and the actual rate was 4.01% as of June 30, 2017. As of June 30, 2017, there were no amounts outstanding. The amount available under the line of credit is based on eligible accounts receivable and inventory up to the maximum principal amount. The line of credit is collateralized by certain of Trans Ova's assets and contains certain restricted covenants that include maintaining minimum tangible net worth and working capital and maximum allowable annual capital expenditures. Trans Ova was in compliance with these covenants as of June 30, 2017.

Exemplar has a $700 revolving line of credit with American State Bank which matures on October 30, 2017. The line of credit bears interest at 4.50% per annum. As of June 30, 2017, there was an outstanding balance of $285.

Long Term Debt

Long term debt consists of the following:

	June 30, 2017	December 31, 2016
Notes payable	$ 5,233	$ 5,453
Royalty-based financing	2,012	1,896
Other	873	599
Long term debt	8,118	7,948
Less current portion	434	386
Long term debt, less current portion	$ 7,684	$ 7,562

Trans Ova has a note payable to American State Bank which matures in April 2033 and has an outstanding principal balance of $5,060 as of June 30, 2017. Trans Ova pays monthly installments of $39, which includes interest at 3.95%. The note payable is collateralized by certain of Trans Ova's real estate and non-real estate assets.

AquaBounty has a royalty-based financing grant from the Atlantic Canada Opportunities Agency, a Canadian government agency, to provide funding of a research and development project. The total amount available under the award was $2,212, which AquaBounty claimed over a five year period. All amounts claimed by AquaBounty must be repaid in the form of a 10% royalty on any products commercialized out of this research and development project until fully paid. Because the timing of

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commercialization is subject to additional regulatory considerations, the timing of repayment is uncertain. As of the date of the acquisition by Intrexon in March 2013, AquaBounty had claimed $1,952 of the available funds and this amount was recorded at its acquisition date fair value of $1,107. The Company accretes the difference of $845 between the face value of amounts drawn and the acquisition date fair value over the expected period of repayment. Since the acquisition date, AquaBounty has claimed the remaining balance available under the grant, resulting in total long term debt of $2,012 as of June 30, 2017.

Future maturities of long term debt are as follows:

2017	$	213
2018		459
2019		397
2020		368
2021		813
2022		358
Thereafter		3,498
Total	$	6,106

The AquaBounty royalty-based financing grant is not included in the table above due to the uncertainty of the timing of repayment.

13. Income Taxes

Tax provisions for interim periods are calculated using an estimate of actual taxable income or loss for the respective period, rather than estimating the Company's annual effective income tax rate, as the Company is currently unable to reliably estimate its income for the full year. For the three and six months ended June 30, 2017, the Company had U.S. taxable income of approximately $7,950 and $19,750, respectively, for which $159 and $395, respectively, in current income tax expense was recognized due to the alternative minimum tax. For the three and six months ended June 30, 2017, the Company recognized $91 and $222, respectively, of current foreign income tax benefit. For the three and six months ended June 30, 2016, the Company had U.S. taxable loss of approximately $7,780 and $17,680, respectively, for which no current income tax benefit was recognized. For the three and six months ended June 30, 2016, the Company recognized $120 and $213, respectively, of current foreign income tax benefit. For the three and six months ended June 30, 2017, the Company recorded deferred tax benefit of $881 and $1,519, respectively. For the three and six months ended June 30, 2016, the Company recorded deferred tax benefit of $471 and $2,659, respectively. The Company's net deferred tax assets, excluding certain deferred tax liabilities totaling $16,266, are offset by a valuation allowance due to the Company's history of net losses combined with an inability to confirm recovery of the tax benefits of the Company's losses and other net deferred tax assets. In assessing the realizability of deferred tax assets, management considers whether it is more likely than not that some portion or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible. Management considers the scheduled reversal of deferred tax liabilities, projected future taxable income and tax planning strategies in making this assessment.

At June 30, 2017, the Company has loss carryforwards for U.S. federal income tax purposes of approximately $248,300 available to offset future taxable income, including approximately $13,400 obtained via the acquisition of GenVec, and federal and state research and development tax credits of approximately $7,700, prior to consideration of annual limitations that may be imposed under Section 382 of the Internal Revenue Code of 1986, as amended. These carryforwards will begin to expire in 2022. The Company's direct foreign subsidiaries have foreign loss carryforwards of approximately $137,000, most of which do not expire.

14. Shareholders' Equity

Dividend to Shareholders

In January 2017, the Company distributed to its shareholders 1,776,557 shares of AquaBounty common stock valued at $22,385. The distribution constituted a dividend to shareholders of record as of January 9, 2017. In connection with the distribution and pursuant to the terms of the Company's equity incentive plans, the conversion terms of all outstanding options for shares of the Company's common stock as of January 9, 2017 were adjusted to reflect the value of the distribution with

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respect to shares of the Company's common stock by decreasing the exercise prices and increasing the number outstanding options. This adjustment resulted in 46,766 additional outstanding options at a weighted average exercise price of $31.11.

Components of Accumulated Other Comprehensive Loss

The components of accumulated other comprehensive loss are as follows:

	June 30, 2017	December 31, 2016
Unrealized loss on investments	$ (94)	$ (89)
Loss on foreign currency translation adjustments	(24,127)	(36,113)
Total accumulated other comprehensive loss	$ (24,221)	$ (36,202)

15. Share-Based Payments

The Company records the fair value of stock options issued to employees and non-employees as of the grant date as stock-based compensation expense. Stock-based compensation expense for employees and non-employees is recognized over the requisite service period, which is typically the vesting period. Stock-based compensation costs included in the consolidated statements of operations are presented below:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
Cost of products	$ 30	$ 20	$ 56	$ 40
Cost of services	82	70	160	138
Research and development	2,442	2,178	4,635	4,743
Selling, general and administrative	9,444	4,383	15,041	14,918
Total	$ 11,998	$ 6,651	$ 19,892	$ 19,839

Intrexon Stock Option Plans

In April 2008, Intrexon adopted the 2008 Equity Incentive Plan (the "2008 Plan") for employees and nonemployees pursuant to which Intrexon's board of directors granted share based awards, including stock options, to officers, key employees and nonemployees. Upon the effectiveness of the 2013 Omnibus Incentive Plan (the "2013 Plan"), no new awards may be granted under the 2008 Plan. As of June 30, 2017, there were 563,337 stock options outstanding under the 2008 Plan.

Intrexon adopted the 2013 Plan for employees and nonemployees pursuant to which Intrexon's board of directors may grant share based awards, including stock options and shares of common stock, to employees, officers, consultants, advisors, and nonemployee directors. The 2013 Plan became effective upon the closing of the Company's initial public offering in August 2013, and as of June 30, 2017, there were 18,000,000 shares authorized for issuance under the 2013 Plan, of which 12,258,214 stock options were outstanding and 3,783,076 shares were available for grant.

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Stock option activity was as follows:

	Number of Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (Years)
Balances at December 31, 2016	11,640,383	$ 31.25	8.21
Granted	3,672,950	21.46	
Adjustment due to dividend (Note 14)	46,766	31.11	
Exercised	(39,048)	(16.65)	
Forfeited	(2,375,366)	(30.22)	
Expired	(124,134)	(31.95)	
Balances at June 30, 2017	12,821,551	28.56	8.04
Exercisable at June 30, 2017	4,545,590	28.59	6.69

Intrexon currently uses authorized and unissued shares to satisfy share award exercises.

In October 2015, the compensation committee and the independent members of Intrexon's board of directors approved a compensation arrangement whereby the Company's Chief Executive Officer ("CEO") would receive a monthly salary. Previously, the CEO did not receive compensation for his services as an employee of the Company other than through his participation in the Company's Annual Executive Incentive Plan which became effective January 1, 2015. Pursuant to the compensation agreement, the CEO receives a base salary of $200 per month payable in fully vested shares of Intrexon common stock with such shares subject to a three-year lock-up on resale. The monthly number of shares of common stock is calculated based on the closing price on the last trading day of each month and the shares are issued pursuant to the terms of a Restricted Stock Unit Agreement ("RSU Agreement") which was executed between Intrexon and the CEO pursuant to the terms of the 2013 Plan. The RSU Agreement became effective in November 2015, and had an initial term of 12 months. In October 2016, the independent members of Intrexon's board of directors, with the recommendation of the compensation committee of the board of directors, approved an extension of the RSU Agreement through December 31, 2016, and in December 2016 further approved an extension of the RSU Agreement to expire on March 31, 2017, both of which were on the same terms as the original RSU Agreement. In March 2017, the independent members of Intrexon's board of directors, with the recommendation of the compensation committee of the board of directors, approved a renewal of the RSU Agreement through March 31, 2018 on the same terms as the original RSU Agreement. The fair value of the shares issued as compensation for services is included in selling, general and administrative expenses in the Company's consolidated statements of operations and totaled $477 and $463 for the three months ended June 30, 2017 and 2016, respectively, and $948 and $934 for the six months ended June 30, 2017 and 2016, respectively.

AquaBounty Stock Option Plans

In March 2016, AquaBounty's board of directors adopted the AquaBounty 2016 Equity Incentive Plan ("AquaBounty 2016 Plan") to replace the AquaBounty 2006 Equity Incentive Plan ("AquaBounty 2006 Plan"). The AquaBounty 2016 Plan provides for the issuance of incentive stock options, non-qualified stock options and awards of restricted and direct stock purchases to directors, officers, employees, and consultants of AquaBounty. The AquaBounty 2016 Plan was approved by AquaBounty's shareholders at its annual meeting in April 2016. Upon the effectiveness of the AquaBounty 2016 Plan, no new awards may be granted under the AquaBounty 2006 Plan.

As of June 30, 2017, there were 227,203 options outstanding under both AquaBounty plans, of which 179,500 were exercisable, at a weighted average exercise price of $9.39 per share. As of December 31, 2016, there were 185,951 options outstanding under these plans, of which 181,766 were exercisable, at a weighted average exercise price of $7.89 per share. The AquaBounty stock option data reflect a 1-for-30 reverse stock split of AquaBounty's common stock effective January 5, 2017.

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16. Commitments and Contingencies

Operating Leases

The Company leases certain facilities and equipment under noncancelable operating leases. The equipment leases are renewable at the option of the Company. At June 30, 2017, future minimum lease payments under operating leases having initial or remaining noncancelable lease terms in excess of one year are as follows:

2017	$	3,158
2018		7,982
2019		7,901
2020		7,921
2021		7,012
2022		5,985
Thereafter		25,572
Total	$	65,531

Rent expense, including other facility expenses, was $2,298 and $2,302 for the three months ended June 30, 2017 and 2016, respectively, and $4,599 and $4,334 for the six months ended June 30, 2017 and 2016, respectively.

The Company maintains subleases for certain of its facilities. Rental income under sublease agreements was $34 and $335 for the three months ended June 30, 2017 and 2016, respectively, and $75 and $670 for the six months ended June 30, 2017 and 2016, respectively. Future rental income is expected to be $33 for 2017, $80 for 2018, and $67 for 2019.

Purchase Commitments

As of June 30, 2017, the Company had outstanding contractual purchase commitments of $8,236, which primarily relate to amounts that will be paid in 2018 and 2019 upon delivery of commercial non-browning apple trees.

Contingencies

In March 2012, Trans Ova was named as a defendant in a licensing and patent infringement suit brought by XY, LLC ("XY") alleging that certain of Trans Ova's activities breached a 2004 licensing agreement and infringed on patents that XY allegedly owned. Trans Ova filed a number of counterclaims in the case. In Colorado District Court, the matter proceeded to a jury trial in January 2016. The jury determined that XY and Trans Ova had each breached the licensing agreement and that Trans Ova had infringed XY's patents. In April 2016, the court issued its post-trial order, awarding $528 in damages to Trans Ova and $6,066 in damages to XY. The order also provided Trans Ova with a compulsory license to XY's technology, subject to an ongoing royalty obligation. Both parties appealed the court's order, which appeal is pending before the Court of Appeals for the Federal Circuit. Since the inception of the 2004 agreement, Trans Ova has remitted payments to XY pursuant to the terms of that agreement and has recorded these payments in cost of services in the consolidated statements of operations for the respective periods. For the period from inception of the 2004 agreement through the court's April 2016 order, aggregate royalty and license payments were $3,170, of which $2,759 had not yet been deposited by XY. For the six months ended June 30, 2016, the Company recorded litigation expense of $4,228, which is included in selling, general and administrative expenses on the accompanying consolidated statement of operations and represents the excess of the net damages awarded to XY, including prejudgment interest, over the liability previously recorded by Trans Ova for uncashed checks previously remitted to XY. In August 2016, Trans Ova deposited the net damages amount, including prejudgment interest, into the court's treasury, to be held until the appeals process is complete and final judgment amounts are determined. As of June 30, 2017, this amount is included in restricted cash on the accompanying consolidated balance sheet. In December 2016, Trans Ova elected to void the outstanding checks discussed above, and these amounts have been reclassified to other accrued liabilities on the accompanying consolidated balance sheets as of June 30, 2017 and December 31, 2016. Depending on the outcome of an appeal decision, the damages awarded to either party could decrease, increase, or be eliminated. The appeal decision may also remand to the Colorado District Court all, or a portion, of the issues being appealed. In December 2016, XY filed a complaint for patent infringement and trade secret misappropriation against Trans Ova in the District Court of Waco, Texas. Since the claims in this 2016 complaint directly relate to the 2012 licensing dispute and patent issues, Trans Ova filed and was granted a motion for change of venue to Colorado District Court. Trans Ova also filed a motion to dismiss, which is now pending before the Colorado court. Trans Ova and the Company could elect to enter into a settlement agreement in order to avoid the further costs

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and uncertainties of litigation, to modify the court-ordered license to XY's technologies, or to recover monetary damages stemming from Trans Ova's counterclaims for antitrust violations by XY and its parent company, Inguran.

In May 2016, two putative shareholder class action lawsuits, captioned *Hoffman v. Intrexon Corporation et al.* and *Gibrall v. Intrexon Corporation et al.*, were filed in the U.S. District Court for the Northern District of California on behalf of purchasers of Intrexon's common stock between May 12, 2015 and April 20, 2016 (the "Class Period"). In July 2016, the court consolidated the lawsuits and appointed a lead plaintiff. The consolidated amended complaint names as defendants Intrexon and certain of Intrexon's current and former officers (the "Defendants"). It alleges, among other things, that the Defendants made materially false and/or misleading statements during the Class Period with respect to the Company's business, operations, and prospects in violation of Sections 10(b) and 20(a) of the Securities Exchange Act of 1934, as amended. The plaintiffs' claims are based in part upon allegations in a report published in April 2016 on the Seeking Alpha financial blog. The plaintiffs seek compensatory damages, interest and an award of reasonable attorneys' fees and costs. The Defendants moved to dismiss the case. On February 24, 2017, the court granted the Company's motion to dismiss the lawsuit on the grounds that the plaintiff failed to state a claim, while granting the plaintiff leave to amend. The plaintiff subsequently notified the court that it would seek to appeal the court's ruling rather than amend its complaint. On April 26, 2017, the court entered final judgment in the case. Notice of appeal was filed by the plaintiff on May 26, 2017. The Company intends to continue to defend the lawsuit vigorously; however, there can be no assurance regarding the ultimate outcome of this case.

In July 2016, a putative shareholder derivative action captioned *Basile v. Kirk et al.* was filed in the Circuit Court of Fairfax County, Virginia, against certain of the Company's directors, the Company's CEO, and Third Security, and naming the Company as a nominal defendant. The complaint alleges causes of action for breaches of fiduciary duty and unjust enrichment relating to the entry by the Company into the Services Agreement with Third Security. The plaintiff seeks, among other things, damages in an unspecified amount, disgorgement of improper benefits, appropriate equitable relief, and an award of attorney fees and other costs and expenses. The complaint is substantially similar to two separate demands made by shareholders concerning the Services Agreement and Mr. Kirk's compensation. The board of directors of the Company appointed a Special Litigation Committee ("SLC") consisting of independent directors to investigate the claims and allegations made in the derivative action and in the two shareholder demands and to decide on behalf of the Company whether the claims and allegations should be pursued. The *Basile* case was stayed pending the report of the SLC. In November 2016, the SLC completed its review and evaluation and unanimously determined that the claims were without merit because the compensation arrangements were the result of an informed and disinterested decision-making process and were fair to the Company, and that prosecution of the asserted claims was not in the best interest of Intrexon or its shareholders. Based upon the determination of the SLC, on February 24, 2017, the Company moved to dismiss the court action pursuant to Virginia statute. On June 8, 2017, the court granted the Company's motion to dismiss while granting the plaintiff leave to amend. The Company intends to continue to defend the lawsuit vigorously. There can be no assurance, however, regarding the ultimate outcome of the case.

In addition to the shareholder demands above, in June and July 2016, two shareholders made separate demands under Virginia law demanding that the Company file suit against certain of its current officers and directors for alleged breaches of fiduciary duty and other claims. The demands were based upon and asserted the allegations previously published in April 2016 in the Seeking Alpha financial blog. In July 2016, the Company's board of directors authorized the SLC to expand its review to include all such allegations. In February 2017, the SLC completed its review and evaluation and unanimously determined that there was no basis for any of the allegations, that the Company's officers and directors did not breach their fiduciary duties or any other applicable law, and that prosecution of the asserted claims was not in the best interest of Intrexon or its shareholders. Following the SLC's determination, in March 2017, one of the putative shareholders filed a derivative complaint captioned *Luger v. Kirk et al.* in the Circuit Court of Fairfax County, Virginia. The Company is a nominal defendant in this action, and other defendants include certain of the Company's directors, the Company's CEO, and Third Security. The complaint alleges causes of action for breaches of fiduciary duty and unjust enrichment relating to the entry by the Company into the Services Agreement with Third Security, Mr. Kirk's compensation, and certain allegations contained in the April 2016 Seeking Alpha financial blog piece. Based on the determination of the SLC and a review of applicable law, the Company intends to defend the lawsuit vigorously; however, there can be no assurance regarding the ultimate outcome of this case.

The Division of Enforcement of the U.S. Securities and Exchange Commission ("SEC") is conducting an investigation which the Company believes concerns certain issues raised by the foregoing matters. The Company has met with the SEC staff and is voluntarily cooperating with their investigation. The Company's board of directors has authorized the SLC to monitor the Company's interaction with the SEC staff.

The Company may become subject to other claims and assessments from time to time in the ordinary course of business. Such matters are subject to many uncertainties and outcomes are not predictable with assurance. The Company accrues liabilities for such matters when it is probable that future expenditures will be made and such expenditures can be reasonably estimated. As

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of June 30, 2017 and December 31, 2016, the Company does not believe that any such matters, individually or in the aggregate, will have a material adverse effect on the Company's business, financial condition, results of operations, or cash flows.

17. Related Party Transactions

Third Security and Affiliates

The Company's CEO and Chairman of the board of directors of the Company is also the Senior Managing Director and CEO of Third Security and owns 100% of the equity interests of Third Security.

In November 2015, the independent members of Intrexon's board of directors, with the recommendation of the audit committee of the board of directors, approved the execution of a Services Agreement ("Services Agreement") with Third Security pursuant to which Third Security provides the Company with certain professional, legal, financial, administrative, and other support services necessary to support the Company and its CEO. As consideration for providing these services, Third Security is entitled to a fee of $800 per month to be paid in the form of fully-vested shares of the Company's common stock. The number of shares of common stock is calculated based on the closing price of the Company's common stock on the 15th day of each month. The payments made by the Company under the Services Agreement constitute, in the aggregate, an award under the 2013 Plan and are subject to the terms of the 2013 Plan (Note 15). The Services Agreement had a term of one year, can be terminated by the Company at any time, and may be extended only by agreement of the parties, including approval of a majority of the independent members of Intrexon's board of directors. In October 2016, the independent members of Intrexon's board of directors, with the recommendation of the audit committee of the board of directors, approved an extension of the Services Agreement through December 31, 2016. In December 2016, the independent members of Intrexon's board of directors, with the recommendation of the audit committee of the board of directors, approved an extension of the Services Agreement through December 31, 2017. For the three months ended June 30, 2017 and 2016, the Company issued 106,891 shares and 85,300 shares, respectively, with values of $2,216 and $2,143, respectively, to Third Security as payment for services pursuant to the Services Agreement. For the six months ended June 30, 2017 and 2016, the Company issued 210,821 shares and 165,170 shares, respectively, with values of $4,255 and $4,410, respectively, to Third Security as payment for services pursuant to the Services Agreement. In addition to the foregoing Services Agreement, the Company reimburses Third Security for certain out-of-pocket expenses incurred on the Company's behalf, and the total expenses incurred by the Company under this arrangement were $358 and $99 for the three months ended June 30, 2017 and 2016, respectively, and $424 and $145 for the six months ended June 30, 2017 and 2016, respectively.

See also Note 15 regarding compensation arrangements between the Company and its CEO.

Transactions with ECC Parties

In addition to entities controlled by Third Security, any entity in which the Company holds equity securities, including securities received as upfront or milestone consideration, and which also are party to a collaboration with the Company are considered to be related parties.

The Company holds promissory notes convertible into shares of Fibrocell common stock ("convertible note") and warrants to purchase shares of Fibrocell common stock. As of June 30, 2017 and December 31, 2016, the value of the convertible note and warrants totaled $5,912 and $1,642, respectively, and is included in other assets on the accompanying consolidated balance sheets. See Note 7 for additional discussion of the Company's investments in Fibrocell.

In May 2017, the Company purchased a promissory note from Oragenics with a principal value of $2,400 which matures in May 2019 and accrues interest at a rate of 12% per annum. This note is included in other assets on the accompanying consolidated balance sheet as of June 30, 2017.

Other Related Parties

In June 2015, the Company entered into an agreement with Harvest, an investment fund sponsored by Harvest Capital Strategies, LLC, and a related party based on ownership in the fund by affiliates of Third Security. Harvest was established to invest in life science research and development opportunities that the Company offers to Harvest. These are investment proposals that are suitable for pursuit by a start-up venture, characterized by the agreement as "start-up opportunities." For such start-up opportunities, the Company provides Harvest with exclusive rights of first-look and first negotiation. For any opportunities it decides to pursue, Harvest establishes new collaboration entities which enter into an ECC with the Company in a designated field. The terms of such ECCs are negotiated between the Company and Harvest. In addition, the agreement provides the Company the right to present to Harvest the opportunity to invest in other ventures, including investment

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opportunities with respect to the Company's existing collaborations. Any such opportunities are presented at the Company's discretion on a non-exclusive basis. The agreement with Harvest does not limit the Company's ability to execute other collaborations and joint ventures with third parties. As consideration for providing exclusive rights of first-look and first negotiation for start-up opportunities, the Company receives a portion of the management fee collected by the fund sponsor of Harvest. These fees are included in other income in the accompanying consolidated statements of operations and totaled $623 and $613 for the three months ended June 30, 2017 and 2016, respectively, and $1,226 and $1,258 for the six months ended June 30, 2017 and 2016, respectively.

18. Net Loss per Share

The following table presents the computation of basic and diluted net loss per share:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
Historical net loss per share:				
Numerator:				
Net loss attributable to Intrexon	$ (18,664)	$ (49,064)	$ (50,063)	$ (113,493)
Denominator:				
Weighted average shares outstanding, basic and diluted	119,731,042	118,141,377	119,346,050	117,501,264
Net loss attributable to Intrexon per share, basic and diluted	$ (0.16)	$ (0.42)	$ (0.42)	$ (0.97)

The following potentially dilutive securities as of June 30, 2017 and 2016, have been excluded from the above computations of diluted weighted average shares outstanding for the three and six months then ended as they would have been anti-dilutive:

	June 30,	
	2017	2016
Options	12,821,551	11,311,525
Warrants	133,264	45,716
Total	12,954,815	11,357,241

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

The following "Management's Discussion and Analysis of Financial Condition and Results of Operations" should be read in conjunction with the unaudited financial information and the notes thereto included in this Quarterly Report on Form 10-Q and our Annual Report on Form 10-K.

The following discussion contains forward-looking statements that reflect our plans, estimates and beliefs. Our actual results could differ materially from those discussed in the forward-looking statements and you are cautioned not to place undue reliance on forward-looking statements. Factors that could cause or contribute to these differences include those discussed below and elsewhere in this Quarterly Report on Form 10-Q, particularly in "Special Note Regarding Forward-Looking Statements" and "Risk Factors." The forward-looking statements included in this Quarterly Report on Form 10-Q are made only as of the date hereof.

Overview

We believe we are a leader in the field of synthetic biology, an emerging and rapidly evolving discipline that applies engineering principles to biological systems to enable rational, design-based control of cellular function for a specific purpose. Using our suite of proprietary and complementary technologies, we design, build and regulate gene programs, which are DNA sequences that consist of key genetic components. A single gene program or a complex, multi-genic program are fabricated and stored within a DNA vector. Vectors are segments of DNA used as a vehicle to transmit genetic information. DNA vectors can, in turn, be introduced into cells in order to generate a simple or complex cellular system, which are the basic and complex cellular activities that take place within a cell and the interaction of those systems in the greater cellular environment. It is these genetically modified cell systems that can be used to produce biological effector molecules, or be employed directly to enable the development of new and improved products and manufacturing processes across a variety of end markets, including health, food, energy, environment, and consumer. Our synthetic biology capabilities include the ability to precisely control the amount, location and modification of biological molecules to control the function and output of living cells and optimize for desired results at an industrial scale.

We believe that because synthetic biology has applicability across many diverse end markets, we cannot take full advantage of synthetic biology with internal development programs alone. To address this, we have devised our business model to allow us to focus on our core expertise in synthetic biology while bringing many different commercial products to market via collaborations in a broad range of industries or end markets, thus minimizing and leveraging the use of our own capital.

Our business model is built primarily around the formation of exclusive channel collaborations, or ECCs. An ECC is an agreement with a collaborator to develop products based on technologies in a specifically defined field. We seek collaborators that have expertise within a specific industry sector and the commitment to provide resources for the commercialization of products within that industry sector. In our ECCs, we provide expertise in the engineering of gene programs and cellular systems, and our collaborators are responsible for providing market and product development expertise, as well as sales and marketing capabilities.

This business model allows us to leverage our capabilities and capital across numerous product development programs and a broader landscape of end markets than we would be capable of addressing on our own. Our ECC business model also allows us to participate in the potential upside from products that are enabled by our technologies across an extensive range of industries, without the need for us to invest considerable resources in bringing individual products to market. Additionally, the flexibility of the business model allows us to collaborate with a range of counterparts, from small innovative companies to global multinational conglomerates.

Alternatively, we may execute a research collaboration to develop an early-stage program pursuant to which we receive reimbursement for our development costs but the exclusive commercial rights, and related access fees, are deferred until completion of an initial research program.

In certain strategic circumstances, we may enter into a joint venture, or JV, with a third party collaborator whereby we may contribute access to our technology, cash or both into the JV which we will jointly control with our collaborator. Pursuant to a JV agreement, we may be required to contribute additional capital to the JV, and we may be able to receive a higher financial return than we would normally receive from an ECC to the extent that we and our collaborator are successful in developing one or more products. For a discussion of our JVs, see the "Notes to the Consolidated Financial Statements (Unaudited) - Note 4" appearing elsewhere in this Quarterly Report on Form 10-Q.

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As we consider the broad potential applications of our synthetic biology technologies, we have identified a number of ventures that are already enabling products that benefit from the application of such technology. We believe that the strategic acquisition of certain such companies will allow us to develop and commercialize innovative products and create significant value for us. Our business model therefore includes the acquisition of certain product-focused companies that may leverage our technologies and expertise in order to expand their respective product applications.

As a means to further the development of our business model, in June 2015, we entered into an agreement with Harvest Intrexon Enterprise Fund I, LP, or Harvest, an investment fund sponsored by Harvest Capital Strategies, LLC, and a related party based on ownership in the fund by affiliates of Third Security, LLC, or Third Security. Harvest was established to invest in life science research and development opportunities that we offer to Harvest. These are investment proposals that are suitable for pursuit by a start-up venture, characterized by the agreement as "start-up opportunities." For such start-up opportunities, we provide Harvest with exclusive rights of first-look and first negotiation. For any opportunities it decides to pursue, Harvest establishes new collaboration entities which enter into an ECC with us in a designated field. The terms of such ECCs are negotiated between us and Harvest. In addition, the agreement provides us the right to present to Harvest the opportunity to invest in other ventures, including investment opportunities with respect to our existing collaborations. Any such opportunities are presented at our discretion on a non-exclusive basis. The agreement with Harvest does not limit our ability to execute other collaborations and JVs with third parties. As consideration for providing exclusive rights of first-look and first negotiation for start-up opportunities, we receive a portion of the management fee collected by the fund sponsor of Harvest.

Pursuant to our business model, we may receive equity in lieu of cash for technology access fees and milestones and also may participate in capital raises to allow earlier-stage collaborators to focus their resources on product development. However, when such a collaborator develops greater operational or financial resources, its shares become a financial asset within Intrexon that is independent of our operational or collaborative purposes.

Mergers, acquisitions, and technology in-licensing

We may augment our suite of proprietary technologies through mergers or acquisitions of technologies which then become available to new or existing collaborators. Among other things, we pursue technologies that we believe will be generally complementary to our existing technologies and also meet our desired return on investment and other economic criteria. In certain cases, such technologies may already be applied in the production of products or services and in these cases we may seek to expand the breadth or efficacy of such products or services through the use of our technologies. See "Notes to the Consolidated Financial Statements (Unaudited) - Note 3" appearing elsewhere in this Quarterly Report on Form 10-Q, for further discussion of mergers, acquisitions or significant technology in-licensing activities in 2017.

Financial overview

We have incurred significant losses since our inception. We anticipate that we may continue to incur significant losses for the foreseeable future, and we may never achieve or maintain profitability. We have never generated any royalty revenues from sales of products by our collaborators and may never be profitable. Certain of our consolidated subsidiaries require regulatory approval and/or commercial scale-up before they may commence significant product sales and operating profits.

We expect our future capital requirements will be substantial, particularly as we continue to develop our business and expand our synthetic biology technology platform. We believe that our existing cash and cash equivalents, short-term investments, and cash expected to be received through our current collaborators and for sales of products and services provided by our consolidated subsidiaries will enable us to fund our operating expenses and capital expenditure requirements for at least the next 12 months.

Sources of revenue

We derive our collaboration and licensing revenues through the execution of agreements with counterparties for the development and commercialization of products enabled by our technologies. Generally, the terms of these collaborations provide that we receive some or all of the following: (i) technology access fees upon signing; (ii) reimbursements of costs incurred by us for our research and development and/or manufacturing efforts related to specific applications provided for in the collaboration; (iii) milestone payments upon the achievement of specified development, regulatory and commercial activities; and (iv) royalties on sales of products arising from the collaboration.

Our technology access fees and milestone payments may be in the form of cash or securities of the collaborator. Our collaborations contain multiple arrangements and we typically defer revenues from the technology access fees and milestone

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payments received and recognize such revenues in the future over the anticipated performance period. We are also entitled to sublicensing revenues in those situations where our collaborators choose to license our technologies to other parties.

From time to time, we and certain collaborators may cancel the agreements, relieving us of any further performance obligations under the agreement. When no further performance obligations are required of us under an agreement, we recognize any remaining deferred revenue.

We generate product and service revenues primarily through sales of products or services which are created from technologies developed or owned by us. Our current offerings include sales of advanced reproductive technologies, including our bovine embryo transfer and in vitro fertilization processes and from genetic preservation and sexed semen processes and applications of such processes to other livestock, as well as sales of livestock and embryos produced using these processes and used in production. Revenue is recognized when (i) persuasive evidence of an arrangement exists, (ii) services have been rendered or delivery has occurred such that risk of loss has passed to the customer, (iii) the price is fixed or determinable, and (iv) collection from the customer is reasonably assured.

In future periods, our revenues will depend on the number of collaborations to which we are party, the advancement and creation of programs within our collaborations and the extent to which our collaborators bring products enabled by our technologies to market. Our revenues will also depend upon our ability to maintain or improve the volume and pricing of our current product and service offerings and to develop new offerings from the various technologies of our subsidiaries. Our future revenues may also include additional revenue streams we may acquire through mergers and acquisitions. In light of our limited operating history and experience, there can be no assurance as to the timing, magnitude and predictability of revenues to which we might be entitled.

Cost of products and services

Cost of products and services includes primarily labor and related costs, drugs and supplies used primarily in the embryo transfer and in vitro fertilization processes, livestock and feed used in production, and facility charges, including rent and depreciation. Fluctuations in the price of livestock and feed have not had a significant impact on our operating margins and no derivative financial instruments are used to mitigate the price risk.

Research and development expenses

We recognize research and development expenses as they are incurred. Our research and development expenses consist primarily of:

- salaries and benefits, including stock-based compensation expense, for personnel in research and development functions;
- fees paid to consultants and contract research organizations who perform research on our behalf and under our direction;
- costs related to laboratory supplies used in our research and development efforts;
- costs related to certain in-licensed technology rights;
- depreciation of leasehold improvements and laboratory equipment;
- amortization of patents and related technologies acquired in mergers and acquisitions; and
- rent and utility costs for our research and development facilities.

We have no individually significant research and development projects and our research and development expenses primarily relate to either the costs incurred to expand or otherwise improve our multiple platform technologies, the costs incurred to develop a specific application of our technologies in support of current or prospective collaborators, or costs incurred to expand or otherwise improve our products and services. Research and development expenses, including costs for preclinical and clinical development, incurred for programs we support pursuant to an ECC agreement are typically reimbursed by the collaborator at cost and all other research and development programs may be terminated or otherwise deferred at our discretion. The amount of our research and development expenses may be impacted by, among other things, the number of ECCs and the number and size of programs we may support on behalf of an ECC.

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The table below summarizes our research and development expenses incurred to expand or otherwise improve our multiple platform technologies, the costs incurred to develop a specific application of our technologies in support of current or prospective collaborators and licensees, or costs incurred to expand or otherwise improve our products and services for the three and six months ended June 30, 2017 and 2016. Other research and development expenses for these periods include indirect salaries and overhead expenses that are not allocated to either expanding or improving our multiple platform technologies, specific applications of our technologies in support of current or prospective collaborators and licensees, or expanding or improving our product and services offerings.

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
	(In thousands)			
Expansion or improvement of our platform technologies	$ 4,021	$ 2,998	$ 6,824	$ 5,867
Specific applications of our technologies in support of current and prospective collaborators and licensees	17,833	16,214	37,006	30,167
Expansion or improvement of our product and service offerings	6,761	4,774	13,113	8,767
Other	5,396	4,389	11,248	9,430
Total research and development expenses	$ 34,011	$ 28,375	$ 68,191	$ 54,231

We expect that our research and development expenses will increase as we continue to enter into collaborations and as we expand our offerings across additional market sectors. We believe these increases will likely include increased costs related to the hiring of additional personnel in research and development functions, increased costs paid to consultants and contract research organizations and increased costs related to laboratory supplies. Research and development expenses may also increase as a result of ongoing research and development operations which we might assume through mergers and acquisitions.

Selling, general and administrative expenses

Selling, general and administrative, or SG&A, expenses consist primarily of salaries and related costs, including stock-based compensation expense, for employees in executive, operational, finance, sales and marketing, information technology, legal and corporate communications functions. Other significant SG&A expenses include rent and utilities, insurance, accounting and legal services and expenses associated with obtaining and maintaining our intellectual property.

We expect that our SG&A expenses will increase as we continue to operate as a public company and expand our operations. We believe that these increases will likely include costs related to the hiring of additional personnel and increased fees for business development functions, costs associated with defending the Company in litigation matters, the costs of outside consultants and other professional services, including costs to comply with corporate governance, internal controls and similar requirements applicable to public companies. SG&A expenses may also increase as a result of ongoing operations which we might assume through mergers and acquisitions.

Other income (expense), net

We hold equity securities and preferred stock received and/or purchased from certain collaborators. Other than investments accounted for using the equity method discussed below, we elected the fair value option to account for our equity securities and preferred stock held in these collaborators. These equity securities and preferred stock are recorded at fair value at each reporting date. Unrealized appreciation (depreciation) resulting from fair value adjustments are reported as other income (expense) in the consolidated statement of operations. As such, we bear the risk that fluctuations in the securities' share prices may significantly impact our results of operations.

Interest income consists of interest earned on our cash and cash equivalents and short-term and long-term investments. Dividend income consists of the monthly preferred stock dividends received from our investments in preferred stock.

Interest expense pertains to deferred consideration payable to the former members of Trans Ova Genetics, L.C., or Trans Ova, and long term debt.

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As consideration for providing exclusive rights of first-look and first negotiation, we receive a portion of the management fee collected by the fund sponsor of Harvest for our obligation to provide Harvest with investment proposals that are suitable for pursuit by a start-up. These fees are included in other income.

Equity in net income (loss) of affiliates

Equity in net income or loss of affiliates is our pro-rata share of our equity method investments' operating results, adjusted for accretion of basis difference. We account for investments in our JVs and start-up entities backed by Harvest using the equity method of accounting since we have the ability to exercise significant influence, but not control, over the operating activities of these entities.

Results of operations

Comparison of the three months ended June 30, 2017 and the three months ended June 30, 2016

The following table summarizes our results of operations for the three months ended June 30, 2017 and 2016, together with the changes in those items in dollars and as a percentage:

	Three Months Ended June 30,		Dollar Change	Percent Change
	2017	2016		
	(In thousands)			
Revenues				
Collaboration and licensing revenues	$ 28,164	$ 27,481	$ 683	2.5 %
Product revenues	9,980	10,884	(904)	(8.3)%
Service revenues	15,884	13,927	1,957	14.1 %
Other revenues	405	209	196	93.8 %
Total revenues	54,433	52,501	1,932	3.7 %
Operating expenses				
Cost of products	8,861	10,753	(1,892)	(17.6)%
Cost of services	7,988	6,332	1,656	26.2 %
Research and development	34,011	28,375	5,636	19.9 %
Selling, general and administrative	38,843	30,263	8,580	28.4 %
Total operating expenses	89,703	75,723	13,980	18.5 %
Operating loss	(35,270)	(23,222)	(12,048)	51.9 %
Total other income (expense), net	18,128	(22,347)	40,475	181.1 %
Equity in loss of affiliates	(3,333)	(5,053)	1,720	(34.0)%
Loss before income taxes	(20,475)	(50,622)	30,147	(59.6)%
Income tax benefit	813	591	222	37.6 %
Net loss	(19,662)	(50,031)	30,369	(60.7)%
Net loss attributable to noncontrolling interests	998	967	31	3.2 %
Net loss attributable to Intrexon	$ (18,664)	$ (49,064)	$ 30,400	(62.0)%

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Collaboration and licensing revenues

The following table shows the collaboration and licensing revenues for the three months ended June 30, 2017 and 2016, together with the changes in those items. See "Notes to the Consolidated Financial Statements (Unaudited) - Note 5" appearing elsewhere in this Quarterly Report on Form 10-Q for further discussion of our collaboration and licensing revenues.

	Three Months Ended June 30,		Dollar Change
	2017	2016	
	(In thousands)		
ZIOPHARM Oncology, Inc.	$ 9,964	$ 6,970	$ 2,994
Oragenics, Inc.	475	507	(32)
Fibrocell Science, Inc.	1,953	1,394	559
Genopaver, LLC	1,513	1,637	(124)
S & I Ophthalmic, LLC	72	2,358	(2,286)
OvaXon, LLC	880	808	72
Intrexon Energy Partners, LLC	1,920	4,212	(2,292)
Persea Bio, LLC	266	331	(65)
Ares Trading S.A.	2,803	2,218	585
Intrexon Energy Partners II, LLC	956	894	62
Intrexon T1D Partners, LLC	1,288	310	978
Harvest Start-up Entities (1)	4,452	939	3,513
Other	1,622	4,903	(3,281)
Total	$ 28,164	$ 27,481	$ 683

(1) For the three months ended June 30, 2017, revenue recognized from collaborations with Harvest start-up entities include Thrive Agrobiotics, Inc.; Exotech Bio, Inc.; Relieve Genetics, Inc.; AD Skincare, Inc.; Genten Therapeutics, Inc.; and CRS Bio, Inc. For the three months ended June 30, 2016, revenue recognized from collaborations with Harvest start-up entities include Thrive Agrobiotics, Inc.; Exotech Bio, Inc.; and Relieve Genetics, Inc.

Collaboration and licensing revenues increased $0.7 million, or 2 percent, over the three months ended June 30, 2016 due to the recognition of deferred revenue associated with the payment received in June 2016 from ZIOPHARM Oncology, Inc., or ZIOPHARM, to amend our collaborations which was partially offset by a decrease in research and development services as we temporarily redeployed certain resources towards supporting prospective new platforms and additional collaborations.

Product revenues and gross margin

Product revenues decreased $0.9 million, or 8 percent, from the three months ended June 30, 2016. The decrease in product revenues primarily relates to a decrease in the quantities of pregnant cows and live calves sold due to lower customer demand for these products. Gross margin on products improved in the current period primarily due to a decline in the average cost of cows.

Service revenues and gross margin

Service revenues increased $2.0 million, or 14 percent, over the three months ended June 30, 2016. The increase in service revenues relates to an increase in the number of bovine in vitro fertilization cycles performed due to higher customer demand. Gross margin on services decreased slightly in the current period primarily due to an increase in royalties and commissions due to vendors.

Research and development expenses

Research and development expenses increased $5.6 million, or 20 percent, over the three months ended June 30, 2016. The increase is due primarily to increases in (i) salaries, benefits and other personnel costs for research and development employees, (ii) lab supplies and consulting expenses, and (iii) depreciation and amortization. Salaries, benefits and other

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personnel costs increased $2.2 million due to an increase in research and development headcount to support new, expanded, and prospective collaborations, and to support additional platform technology development. Lab supplies and consulting expenses increased $1.7 million as a result of (i) the progression of certain programs into the preclinical and clinical phases with certain of our collaborators, and (ii) the expansion or improvement of certain of our platform technologies. Depreciation and amortization increased $1.0 million primarily as a result of amortization of developed technology acquired from Oxitec Limited, or Oxitec, which began in November 2016 upon the completion of certain operational and regulatory events.

Selling, general and administrative expenses

SG&A expenses increased $8.6 million, or 28 percent, over the three months ended June 30, 2016. Salaries, benefits and other personnel costs increased $6.4 million primarily due to (i) increased headcount to support our expanding operations, and (ii) the reversal of previously recognized stock-based compensation expense for departed employees in the three months ended June 30, 2016. Legal and professional fees increased $1.7 million primarily due to (i) increased legal fees to defend ongoing litigation and (ii) our acquisition of GenVec, Inc., or GenVec, in June 2017.

Total other income (expense), net

Total other income (expense), net, increased $40.5 million or 181 percent, over the three months ended June 30, 2016. This increase was primarily attributable to (i) increases in fair market value of our equity securities portfolio, investments in preferred stock, and other convertible instruments and (ii) dividend income from our investments in preferred stock.

Comparison of the six months ended June 30, 2017 and the six months ended June 30, 2016

The following table summarizes our results of operations for the six months ended June 30, 2017 and 2016, together with the changes in those items in dollars and as a percentage:

	Six Months Ended June 30,		Dollar Change	Percent Change
	2017	2016		
	(In thousands)			
Revenues				
Collaboration and licensing revenues	$ 61,229	$ 51,554	$ 9,675	18.8 %
Product revenues	18,110	19,439	(1,329)	(6.8)%
Service revenues	27,915	24,592	3,323	13.5 %
Other revenues	683	354	329	92.9 %
Total revenues	107,937	95,939	11,998	12.5 %
Operating expenses				
Cost of products	17,624	20,315	(2,691)	(13.2)%
Cost of services	14,792	12,004	2,788	23.2 %
Research and development	68,191	54,231	13,960	25.7 %
Selling, general and administrative	73,981	73,144	837	1.1 %
Total operating expenses	174,588	159,694	14,894	9.3 %
Operating loss	(66,651)	(63,755)	(2,896)	4.5 %
Total other income (expense), net	21,546	(43,772)	65,318	149.2 %
Equity in loss of affiliates	(8,280)	(10,696)	2,416	(22.6)%
Loss before income taxes	(53,385)	(118,223)	64,838	(54.8)%
Income tax benefit	1,346	2,872	(1,526)	(53.1)%
Net loss	(52,039)	(115,351)	63,312	(54.9)%
Net loss attributable to noncontrolling interests	1,976	1,858	118	6.4 %
Net loss attributable to Intrexon	$ (50,063)	$ (113,493)	$ 63,430	(55.9)%

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Collaboration and licensing revenues

The following table shows the collaboration and licensing revenues for the six months ended June 30, 2017 and 2016, together with the changes in those items. See "Notes to the Consolidated Financial Statements (Unaudited) - Note 5" appearing elsewhere in this Quarterly Report on Form 10-Q for further discussion of our collaboration and licensing revenues.

	Six Months Ended June 30,		Dollar Change
	2017	2016	
	(In thousands)		
ZIOPHARM Oncology, Inc.	$ 20,949	$ 13,951	$ 6,998
Oragenics, Inc.	1,044	1,313	(269)
Fibrocell Science, Inc.	3,692	3,251	441
Genopaver, LLC	3,193	3,215	(22)
S & I Ophthalmic, LLC	375	3,544	(3,169)
OvaXon, LLC	1,704	1,502	202
Intrexon Energy Partners, LLC	7,006	8,200	(1,194)
Persea Bio, LLC	555	655	(100)
Ares Trading S.A.	6,118	4,623	1,495
Intrexon Energy Partners II, LLC	2,105	1,444	661
Intrexon T1D Partners, LLC	2,420	310	2,110
Harvest Start-up Entities (1)	7,815	1,373	6,442
Other	4,253	8,173	(3,920)
Total	$ 61,229	$ 51,554	$ 9,675

(1) For the six months ended June 30, 2017, revenue recognized from collaborations with Harvest start-up entities include Thrive Agrobiotics, Inc.; Exotech Bio, Inc.; Relieve Genetics, Inc.; AD Skincare, Inc.; Genten Therapeutics, Inc.; and CRS Bio, Inc. For the six months ended June 30, 2016, revenue recognized from collaborations with Harvest start-up entities include Thrive Agrobiotics, Inc.; Exotech Bio, Inc.; and Relieve Genetics, Inc.

Collaboration and licensing revenues increased $9.7 million, or 19 percent, over the six months ended June 30, 2016 due to the recognition of deferred revenue associated with the payment received in June 2016 from ZIOPHARM to amend our collaborations.

Product revenues and gross margin

Product revenues decreased $1.3 million, or 7 percent, from the six months ended June 30, 2016. The decrease in product revenues primarily relates to a decrease in the quantities of pregnant cows and live calves sold due to lower customer demand for these products. Gross margin on products improved in the current period primarily due to a decline in the average cost of cows.

Service revenues and gross margin

Service revenues increased $3.3 million, or 14 percent, over the six months ended June 30, 2016. The increase in service revenues relates to an increase in the number of bovine in vitro fertilization cycles performed due to higher customer demand. Gross margin on services decreased slightly in the current period primarily due to an increase in royalties and commissions due to vendors.

Research and development expenses

Research and development expenses increased $14.0 million, or 26 percent, over the six months ended June 30, 2016. The increase is due primarily to increases in (i) salaries, benefits and other personnel costs for research and development employees, (ii) lab supplies and consulting expenses, and (iii) depreciation and amortization. Salaries, benefits and other personnel costs increased $4.7 million due to an increase in research and development headcount to support new, expanded,

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and prospective collaborations, and to support additional platform technology development. Lab supplies and consulting expenses increased $5.2 million due to (i) the progression of certain programs into the preclinical and clinical phases with certain of our collaborators, and (ii) the expansion or improvement of certain of our platform technologies. Depreciation and amortization increased $2.3 million primarily as a result of amortization of developed technology acquired from Oxitec, which began in November 2016 upon the completion of certain operational and regulatory events.

Selling, general and administrative expenses

SG&A expenses increased $0.8 million, or 1 percent, over the six months ended June 30, 2016. Salaries, benefits and other personnel costs increased $1.5 million primarily due to increased headcount to support our expanding operations. Legal and professional fees increased $3.9 million primarily due to (i) increased legal fees to defend ongoing litigation and (ii) our acquisition of GenVec in June 2017. These increases were offset by $4.2 million in litigation expenses recorded in the prior period arising from the entrance of a court order in our trial with XY, LLC.

Total other income (expense), net

Total other income (expense), net, increased $65.3 million, or 149 percent, over the six months ended June 30, 2016. This increase was primarily attributable to (i) increases in fair market value of our equity securities portfolio, investments in preferred stock, and other convertible instruments and (ii) dividend income from our investments in preferred stock.

Liquidity and capital resources

Sources of liquidity

We have incurred losses from operations since our inception and as of June 30, 2017, we had an accumulated deficit of $780.9 million. From our inception through June 30, 2017, we have funded our operations principally with proceeds received from private and public offerings, cash received from our collaborators and through product and service sales made directly to customers. As of June 30, 2017, we had cash and cash equivalents of $64.4 million and short-term investments of $92.8 million. Cash in excess of immediate requirements is invested primarily in money market funds and U.S. government debt securities in order to maintain liquidity and preserve capital.

We currently generate cash receipts primarily from technology access fees, reimbursement of research and development services performed by us and sales of products and services.

Cash flows

The following table sets forth the significant sources and uses of cash for the periods set forth below:

	Six Months Ended June 30,	
	2017	2016
	(In thousands)	
Net cash provided by (used in):		
Operating activities	$ (48,249)	$ (16,049)
Investing activities	52,283	18,624
Financing activities	(2,738)	16,886
Effect of exchange rate changes on cash and cash equivalents	457	(162)
Net increase in cash and cash equivalents	$ 1,753	$ 19,299

Cash flows from operating activities:

Our current period net loss of $52.0 million, after deduction of significant noncash items of (i) $19.9 million of stock-based compensation expense, (ii) $14.9 million of depreciation and amortization expense, (iii) $8.3 million of equity in net loss of affiliates, (iv) $8.0 million of noncash dividend income, (v) $7.1 million of noncash net unrealized and realized gains on our equity securities and preferred stock, and (vi) $5.7 million of shares issued as payment for services, was $18.3 million. Additionally, we had a $26.7 million net increase in our operating assets and liabilities primarily as a result of the recognition of previously deferred revenue. Our prior period net loss of $115.4 million, after deduction of significant noncash items of (i)

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$45.8 million of noncash unrealized losses on our equity securities, (ii) $19.8 million of stock-based compensation expense, (iii) $11.7 million of depreciation and amortization expense, (iv) $5.7 million of shares issued as payment for services, and (v) $10.7 million of equity in net loss of affiliates, was $21.7 million. Also during the six months ended June 30, 2016, we received a $10.0 million technology access fee pursuant to a new collaboration and had an additional $4.1 million net increase in our operating assets and liabilities primarily as a result of the recognition of previously deferred revenue and payments of accrued compensation.

Cash flows from investing activities:

During the six months ended June 30, 2017, we received proceeds of $88.0 million from the maturity of short-term investments and used $18.3 million for purchases of property, plant and equipment, $14.2 million for the purchase of a land-based aquaculture facility by AquaBounty Technologies, Inc., or AquaBounty, and $4.6 million for investments in our JVs. During the six months ended June 30, 2016, we received proceeds of $42.0 million from the maturity of short-term and long-term investments and used $10.0 million in purchases of property, plant and equipment, $7.2 million to acquire the assets of EnviroFlight, LLC, and $5.1 million for investments in our JVs.

Cash flows from financing activities:

During the six months ended June 30, 2017, we paid $2.0 million of deferred consideration to former shareholders of an acquired business and $0.9 million to acquire the remaining noncontrolling interest of one of our subsidiaries. During the six months ended June 30, 2016, we received $17.7 million from stock option exercises.

Future capital requirements

We established our current strategy and business model of commercializing our technologies through collaborations with development expertise in 2010, and we consummated our first collaboration in January 2011. We believe that we will continue to consummate collaborations with new companies across our various market sectors, which will result in additional upfront, milestone and cost recovery payments in the future.

We believe that our existing cash and cash equivalents, short-term investments, and cash expected to be received from our current collaborators and for sales of products and services provided by our consolidated subsidiaries will enable us to fund our operating expenses and capital expenditure requirements for at least the next 12 months.

We have based our estimates on assumptions that may prove to be wrong, and we may use our available capital resources sooner than we currently expect. Our future capital requirements will depend on many factors, including:

- progress in our research and development programs, as well as the magnitude of these programs;
- the timing, receipt and amount of upfront, milestone and other payments, if any, from present and future collaborators, if any;
- the timing, receipt and amount of sales and royalties, if any, from our potential products;
- our ability to maintain or improve the volume and pricing of our current product and service offerings and to develop new offerings, including those which may incorporate new technologies;
- the timing, receipt and amount of funding under future government contracts, if any;
- our ability to maintain and establish additional collaborative arrangements and/or new business initiatives;
- the timing of regulatory approval of products of our collaborations and operations;
- the resources, time and cost required for the preparation, filing, prosecution, maintenance and enforcement of patent claims;
- investments we may make in current and future collaborators, including JVs;

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- strategic mergers and acquisitions, including both the upfront acquisition cost as well as the cost to integrate, maintain, and expand the strategic target; and

- the costs associated with legal activities, including litigation, arising in the course of our business activities and our ability to prevail in any such legal disputes.

Until such time, if ever, as we can regularly generate positive operating cash flows, we may finance our cash needs through a combination of equity offerings, debt financings, government or other third-party funding, strategic alliances and licensing arrangements. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the ownership interests of our common shareholders will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our common shareholders. Debt financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends. If we raise additional funds through government or other third-party funding, marketing and distribution arrangements or other collaborations, strategic alliances or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams, research programs or product candidates or to grant licenses on terms that may not be favorable to us.

Contractual obligations and commitments

The following table summarizes our significant contractual obligations and commitments as of June 30, 2017 and the effects such obligations are expected to have on our liquidity and cash flows in future periods:

	Total	Less Than 1 Year	1 - 3 Years	3 - 5 Years	More Than 5 Years
			(In thousands)		
Operating leases	$ 65,531	$ 7,153	$ 15,861	$ 13,969	$ 28,548
Deferred consideration	6,967	6,967	—	—	—
Purchase commitments	8,236	3,047	5,189	—	—
Long term debt	6,106	428	830	1,169	3,679
Contingent consideration	2,826	—	2,826	—	—
	$ 89,666	$ 17,595	$ 24,706	$ 15,138	$ 32,227

In addition to the obligations in the table above, as of June 30, 2017 we also have the following significant contractual obligations described below.

In conjunction with the formation of our JVs, we committed to making future capital contributions of at least $45.0 million to the JVs, subject to certain conditions and limitations. As of June 30, 2017, our remaining capital contribution commitments to our JVs were $24.7 million. These future capital contributions are not included in the table above due to the uncertainty of the timing and amounts of such contributions.

We are party to in-licensed research and development agreements with various academic and commercial institutions where we could be required to make future payments for annual maintenance fees as well as for milestones and royalties we might receive upon commercial sales of products which incorporate their technologies. These agreements are generally subject to termination by us and therefore no amounts are included in the tables above. At June 30, 2017, we also had research and development commitments with third parties totaling $11.0 million that had not yet been incurred.

In January 2015, we and ZIOPHARM jointly entered into a license agreement with the University of Texas MD Anderson Cancer Center, or MD Anderson, whereby we received an exclusive license to certain technologies owned by MD Anderson. ZIOPHARM will receive access to these technologies pursuant to the terms of our ECC. We and ZIOPHARM are obligated to reimburse MD Anderson for out of pocket expenses for maintaining patents covering the licensed technologies. These reimbursements are not included in the table above due to the uncertainty of the timing and amounts of such reimbursements.

As part of our August 2014 acquisition of Trans Ova, we agreed to pay a portion of certain cash proceeds received from the litigation with XY. These amounts are not included in the table above due to the uncertainty of whether and when any amounts may be due.

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In conjunction with a prior transaction associated with Trans Ova's subsidiary, ViaGen, L.C., or ViaGen, in September 2012, we may be obligated to make certain future contingent payments to the former equity holders of ViaGen, up to a total of $3.0 million if certain revenue targets, as defined in the share purchase agreement, are met. This amount is not included in the table above due to the uncertainty of when we will make any of these future payments, if ever.

In January 2009, AquaBounty was awarded a grant to provide funding of a research and development project from the Atlantic Canada Opportunities Agency, a Canadian government agency. Amounts claimed by AquaBounty must be repaid in the form of a 10 percent royalty on any products commercialized out of this research and development project until fully paid. Because the timing of commercialization is subject to additional regulatory considerations, the timing of repayment is uncertain. AquaBounty has claimed all amounts available under the grant, resulting in total long term debt of $2.0 million on our consolidated financial statements as of June 30, 2017. This amount is not included in the table above due to the uncertainty of the timing of repayment.

Net operating losses

As of June 30, 2017, we had net operating loss carryforwards of approximately $248.3 million for U.S. federal income tax purposes available to offset future taxable income, including approximately $13.4 million obtained via the acquisition of GenVec, and U.S. federal and state research and development tax credits of $7.7 million, prior to consideration of annual limitations that may be imposed under Section 382 of the Internal Revenue Code of 1986, as amended, or Section 382. These carryforwards begin to expire in 2022. Our direct foreign subsidiaries have foreign loss carryforwards of approximately $137.0 million, most of which do not expire. Excluding certain deferred tax liabilities totaling $16.3 million, our remaining net deferred tax assets, which primarily relate to these loss carryforwards, are offset by a valuation allowance due to our history of net losses.

Our past issuances of stock and mergers and acquisitions have resulted in ownership changes within the meaning of Section 382. As a result, the utilization of portions of our net operating losses may be subject to annual limitations. As of June 30, 2017, approximately $15.1 million of our domestic net operating losses generated prior to 2008 are limited by Section 382 to annual usage limits of approximately $1.5 million. As of June 30, 2017, approximately $33.6 million of domestic net operating losses were inherited via acquisition and are limited based on the value of the respective targets at the time of the transaction. Future changes in stock ownership may also trigger an ownership change and, consequently, a Section 382 limitation.

Off-balance sheet arrangements

We did not have during the periods presented, and we do not currently have, any off-balance sheet arrangements, other than operating leases and purchase commitments as mentioned above, as defined under Securities and Exchange Commission, or SEC, rules.

Critical accounting policies and estimates

Our management's discussion and analysis of our financial condition and results of operations is based on our consolidated financial statements, which we have prepared in accordance with generally accepted accounting principles in the United States, or U.S. GAAP. The preparation of these consolidated financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements, as well as the reported revenues and expenses during the reporting periods. We evaluate these estimates and judgments on an ongoing basis. We base our estimates on historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Our actual results may differ from these estimates under different assumptions or conditions.

There have been no material changes to our critical accounting policies from those described in "Management's Discussion and Analysis of Financial Condition and Results of Operations" included in our Annual Report on Form 10-K for the year ended December 31, 2016.

Recent accounting pronouncements

For information with respect to recent accounting pronouncements and the impact of these pronouncements on our consolidated financial statements, see "Notes to the Consolidated Financial Statements (Unaudited) - Note 2" appearing elsewhere in this Quarterly Report on Form 10-Q.

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Item 3. Quantitative and Qualitative Disclosures About Market Risk

The following sections provide quantitative information on our exposure to interest rate risk, stock price risk, and foreign currency exchange risk. We make use of sensitivity analyses which are inherently limited in estimating actual losses in fair value that can occur from changes in market conditions.

Interest rate risk

We had cash, cash equivalents and short-term and long-term investments of $157.2 million and $243.2 million at June 30, 2017 and December 31, 2016, respectively. Our cash and cash equivalents and short-term and long-term investments consist of cash, money market funds, U.S. government debt securities, corporate notes and bonds, and certificates of deposit. The primary objective of our investment activities is to preserve principal, maintain liquidity and maximize income without significantly increasing risk. Our investments consist of U.S. government debt securities, corporate notes and bonds, and certificates of deposit which may be subject to market risk due to changes in prevailing interest rates that may cause the fair values of our investments to fluctuate. We believe that a hypothetical 100 basis point increase in interest rates would not materially affect the fair value of our interest-sensitive financial instruments and any such losses would only be realized if we sold the investments prior to maturity.

Investments in publicly traded companies' common stock

We have common stock investments in several publicly traded companies that are subject to market price volatility. We have adopted the fair value method of accounting for these investments, except for our investment in AquaBounty as further described below, and therefore, have recorded them at fair value at the end of each reporting period with the unrealized gain or loss recorded as a separate component of other income (expense), net for the period. As of June 30, 2017 and December 31, 2016, the original aggregate cost basis of these investments was $102.6 million and $104.0 million, respectively, and the market value was $23.9 million and $23.5 million, respectively. The fair value of these investments is subject to fluctuation in the future due to the volatility of the stock market, changes in general economic conditions and changes in the financial conditions of these companies. The fair value of these investments as of June 30, 2017 would be approximately $26.3 million and $19.1 million, respectively, based on a hypothetical 10 percent increase or 20 percent decrease in the value of the investments. The fair value of these investments as of December 31, 2016 would be approximately $25.9 million and $18.8 million, respectively, based on a hypothetical 10 percent increase or 20 percent decrease in the value of the investments.

The common stock of AquaBounty commenced trading on the NASDAQ Stock Market in January 2017 and ceased trading on the London Stock Exchange in May 2017. As of June 30, 2017, we owned 5,162,277 shares or approximately 58 percent. The fair value of our investment in AquaBounty as of June 30, 2017 and December 31, 2016 was $41.4 million and $40.1 million, respectively, based on AquaBounty's quoted closing price on the NASDAQ Stock Market and London Stock Exchange, respectively. The fair value of our investment in AquaBounty as of June 30, 2017 would be approximately $45.5 million and $33.1 million, respectively, based on a hypothetical 10 percent increase or 20 percent decrease in the share price of AquaBounty. The fair value of our investment in AquaBounty as of December 31, 2016 would be approximately $44.1 million and $32.1 million, respectively, based on a hypothetical 10 percent increase or 20 percent decrease in the share price of AquaBounty.

Investments in publicly traded companies' preferred stock

We have preferred stock investments in two publicly traded companies, which may be converted to common stock in the future. We have adopted the fair value method of accounting for these investments whereby the value of preferred stock is adjusted to fair value as of each reporting date. As of June 30, 2017 and December 31, 2016, the original cost basis of these investments, including dividends, was $136.2 million and $127.4 million, respectively, and the fair value of these investments was $144.7 million and $129.5 million, respectively. The fair value of these investments is subject to fluctuation in the future due to, among other things, the likelihood and timing of conversion of the preferred stock into common stock, the volatility of each company's common stock, and changes in general economic and financial conditions of these companies. The fair value of these investments as of June 30, 2017 would be approximately $159.2 million and $115.8 million, respectively, based on a hypothetical 10 percent increase or 20 percent decrease in the value of the investments. The fair value of these investments as of December 31, 2016 would be approximately $142.5 million and $103.6 million, respectively, based on a hypothetical 10 percent increase or 20 percent decrease in the value of the investments.

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Foreign currency exchange risk

We have international subsidiaries in Belgium, Brazil, Canada, England, and Hungary. These subsidiaries' assets, liabilities, and current revenues and expenses are denominated in their respective foreign currency. We do not hedge our foreign currency exchange rate risk. The effect of a hypothetical 10 percent change in foreign currency exchange rates applicable to our business would not have a material impact on our consolidated financial statements.

Item 4. Controls and Procedures

Pursuant to Rule 13a-15(b) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), we carried out an evaluation, under supervision and with the participation of our management, including our Chief Executive Officer ("CEO"), who is our principal executive officer, and our Chief Financial Officer ("CFO"), who is our principal financial officer, of the effectiveness of the design and operation of our disclosure controls and procedures (as defined under Rule 13a-15(e) and 15(d)-15(e) under the Exchange Act) as of the end of the period covered by this report. Based upon that evaluation, as of the end of the period covered by this report, our CEO and CFO concluded that our disclosure controls and procedures are effective to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act, is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including our CEO and CFO, as appropriate, to allow timely decisions regarding required disclosure.

There has been no change in our internal control over financial reporting during the three months ended June 30, 2017, that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

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PART II. OTHER INFORMATION

Item 1. Legal Proceedings

We are involved in litigation or legal matters incidental to our business activities. While the outcome of these matters cannot be predicted with certainty, we do not currently expect that any of these matters will have a material adverse effect on our business or financial position. However, should one or more of these matters be resolved in a manner adverse to our current expectation, the effect on our results of operations for a particular fiscal reporting period could be material.

In May 2016, two putative shareholder class action lawsuits, captioned *Hoffman v. Intrexon Corporation et al.* and *Gibrall v. Intrexon Corporation et al.*, were filed in the U.S. District Court for the Northern District of California on behalf of purchasers of our common stock between May 12, 2015 and April 20, 2016, or the Class Period. In July 2016, the court consolidated the lawsuits and appointed a lead plaintiff. The consolidated amended complaint names as defendants us and certain of our current and former officers, or the Defendants. It alleges, among other things, that the Defendants made materially false and/or misleading statements during the Class Period with respect to our business, operations, and prospects in violation of Sections 10(b) and 20(a) of the Securities Exchange Act of 1934, as amended. The plaintiffs' claims are based in part upon allegations in a report published in April 2016 on the Seeking Alpha financial blog. The plaintiffs seek compensatory damages, interest and an award of reasonable attorneys' fees and costs. The Defendants moved to dismiss the case. On February 24, 2017, the court granted our motion to dismiss the lawsuit on the grounds that the plaintiff failed to state a claim, while granting the plaintiff leave to amend. The plaintiff subsequently notified the court that it would seek to appeal the court's ruling rather than amend its complaint. On April 26, 2017, the court entered final judgment in the case. Notice of appeal was filed by the plaintiff on May 26, 2017. We intend to continue to defend the lawsuit vigorously; however, there can be no assurance regarding the ultimate outcome of this case.

In July 2016, a putative shareholder derivative action captioned *Basile v. Kirk et al.* was filed in the Circuit Court of Fairfax County, Virginia, against certain of our directors, our CEO, and Third Security, and naming us as a nominal defendant. The complaint alleges causes of action for breaches of fiduciary duty and unjust enrichment relating to the entry by us into the Services Agreement with Third Security. The plaintiff seeks, among other things, damages in an unspecified amount, disgorgement of improper benefits, appropriate equitable relief, and an award of attorney fees and other costs and expenses. The complaint is substantially similar to two separate demands made by shareholders concerning the Services Agreement and Mr. Kirk's compensation. Our board of directors appointed a Special Litigation Committee, or the SLC, consisting of independent directors to investigate the claims and allegations made in the derivative action and in the two shareholder demands and to decide on our behalf whether the claims and allegations should be pursued. The *Basile* case was stayed pending the report of the SLC. In November 2016, the SLC completed its review and evaluation and unanimously determined that the claims were without merit because the compensation arrangements were the result of an informed and disinterested decision-making process and were fair to the Company, and that prosecution of the asserted claims was not in our or our shareholders' best interest. Based upon the determination of the SLC, on February 24, 2017 we moved to dismiss the court action pursuant to Virginia statute. On June 8, 2017, the court granted our motion to dismiss while granting the plaintiff leave to amend. We intend to continue to defend the lawsuit vigorously. There can be no assurance, however, regarding the ultimate outcome of the case.

In addition to the shareholder demands described above, in June and July 2016, two shareholders made separate demands under Virginia law demanding that we file suit against certain of our current officers and directors for alleged breaches of fiduciary duty and other claims. The demands were based upon and asserted the allegations previously published in April 2016 in the Seeking Alpha financial blog. In July 2016, our board of directors authorized the SLC to expand its review to include all such allegations. In February 2017, the SLC completed its review and evaluation and unanimously determined that there was no basis for any of the allegations, that our officers and directors did not breach their fiduciary duties or any other applicable law, and that prosecution of the asserted claims was not in our or our shareholders' best interest. Following the SLC's determination, in March 2017, one of the putative shareholders filed a derivative complaint captioned *Luger v. Kirk et al.* in the Circuit Court of Fairfax County, Virginia. We are a nominal defendant in this action, and other defendants include certain of our directors, our CEO, and Third Security. The complaint alleges causes of action for breaches of fiduciary duty and unjust enrichment relating to our entry into the Services Agreement with Third Security, our CEO's compensation, and certain allegations contained in the April 2016 Seeking Alpha financial blog piece. Based on the determination of the SLC and a review of applicable law, we intend to defend the lawsuit vigorously; however, there can be no assurance regarding the ultimate outcome of this case.

The Division of Enforcement of the SEC is conducting an investigation which we believe concerns certain issues raised by the foregoing matters. We have met with the SEC staff and are voluntarily cooperating with their investigation. Our board of directors has authorized the SLC to monitor our interaction with the SEC staff.

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Item 1A. Risk Factors

As disclosed in "Item 1A. Risk Factors" in our Annual Report on Form 10-K for the year ended December 31, 2016, there are a number of risks and uncertainties that may have a material effect on the operating results of our business and our financial condition. There are no additional material updates or changes to our risk factors since the filing of our Annual Report on Form 10-K for the year ended December 31, 2016.

In evaluating our risks, readers should carefully consider the risk factors discussed in our Annual Report on Form 10-K for the year ended December 31, 2016, which could materially affect our business, financial condition or operating results, in addition to the other information set forth in this report and in our other filings with the SEC.

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

(a) Sales of Unregistered Securities

From April 1, 2017 through June 30, 2017, we consummated the following transactions involving the issuance of unregistered securities:

- the issuance of 106,891 unregistered shares of our common stock in April, May, and June 2017, as payment under the Services Agreement entered into and effective as of November 1, 2015, as amended, by and between us and Third Security as previously discussed in our Current Report on Form 8-K filed on October 30, 2015, and

- the issuance of 2,049 unregistered shares of our common stock at a weighted average issuance price of $21.94 per share in May and June 2017 as payment under a consulting agreement between us and Hyphen Fund Management LLC. We issued these shares in reliance on exemptions from registration under Section 4(a)(2) of the Securities Act.

(b) Use of Proceeds

On January 27, 2015, we closed a public offering of 4,312,500 shares of our common stock (inclusive of 562,500 shares of common stock sold by us pursuant to the full exercise of an option granted to the underwriters in connection with the offering) at a public offering price of $27.00 per share for aggregate gross offering proceeds of approximately $116.4 million. J.P. Morgan Securities LLC and Merrill Lynch, Pierce, Fenner & Smith Incorporated acted as joint book-running managers. Net proceeds to us were approximately $110.0 million after deducting underwriting discounts and commissions of approximately $6.1 million and other offering expenses of approximately $0.3 million. No payments were made by us to directors, officers or persons owning ten percent or more of our common stock or to their associates, or to our affiliates. We invested the funds received in cash equivalents and other short-term and long-term investments in accordance with our investment policy. There has been no material change in the planned use of proceeds from this offering as described in our final prospectus, dated January 21, 2015, and filed with the SEC on January 22, 2015 pursuant to Rule 424(b).

On August 26, 2015, we closed a public offering of 5,609,756 shares of our common stock (inclusive of 731,707 shares of common stock sold by us pursuant to the full exercise of an option granted to the underwriters in connection with the offering) at a public offering price of $41.00 per share for aggregate gross offering proceeds of approximately $230.0 million. JMP Securities LLC acted as sole book-running manager. Stifel, Nicolaus & Company, Incorporated acted as lead manager. Griffin Securities, Inc. and Wunderlich Securities, Inc. acted as co-managers. Net proceeds to us were approximately $218.2 million after deducting underwriting discounts and commissions of approximately $11.5 million and other offering expenses of approximately $0.3 million. No payments were made by us to directors, officers or persons owning ten percent or more of our common stock or to their associates, or to our affiliates. We invested the funds received in cash equivalents and other short-term and long-term investments in accordance with our investment policy. There has been no material change in the planned use of proceeds from this offering as described in our final prospectus, dated August 21, 2015, and filed with the SEC on August 25, 2015 pursuant to Rule 424(b).

(c) Issuer Purchases of Equity Securities

Not applicable.

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Item 6. Exhibits

Exhibit No.	Description
10.1*†	Amendment to the Intrexon Corporation 2013 Amended and Restated Omnibus Incentive Plan, effective as of June 28, 2017 (incorporated by reference to Exhibit 10.1 to Intrexon Corporation's Current Report on Form 8-K filed on June 30, 2017 with the Securities and Exchange Commission).
31.1	Certification of Randal J. Kirk, Chairman and Chief Executive Officer (Principal Executive Officer) of Intrexon Corporation, pursuant to Rules 13a-14(a) and 15d-14(a) promulgated under the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification of Rick L. Sterling, Chief Financial Officer (Principal Financial Officer) of Intrexon Corporation, pursuant to Rules 13a-14(a) and 15d-14(a) promulgated under the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1**	Certification of Randal J. Kirk, Chairman and Chief Executive Officer (Principal Executive Officer) of Intrexon Corporation, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2**	Certification of Rick L. Sterling, Chief Financial Officer (Principal Financial Officer) of Intrexon Corporation, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.0	Interactive Data File (Quarterly Report on Form 10-Q, for the quarterly period ended June 30, 2017, formatted in XBRL (eXtensible Business Reporting Language)). Attached as Exhibit 101.0 to this Quarterly Report on Form 10-Q are the following documents formatted in XBRL: (i) the Consolidated Balance Sheets at June 30, 2017 and December 31, 2016, (ii) the Consolidated Statements of Operations for the three and six months ended June 30, 2017 and 2016, (iii) the Consolidated Statements of Comprehensive Loss for the three and six months ended June 30, 2017 and 2016, (iv) the Consolidated Statements of Shareholders' and Total Equity for the six months ended March 31, 2017, (v) the Consolidated Statements of Cash Flows for the six months ended June 30, 2017 and 2016, and (vi) the Notes to Consolidated Financial Statements.

* Previously filed.

** Furnished herewith.

† Indicates management contract or compensatory plan.

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SIGNATURES

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

Intrexon Corporation
(Registrant)

Date: August 9, 2017

By: /s/ Rick L. Sterling
Rick L. Sterling
Chief Financial Officer
(Principal Financial and Accounting Officer)

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Exhibit 31.1

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Randal J. Kirk, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Intrexon Corporation;

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

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

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

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

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

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

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

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

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

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

Date: August 9, 2017

/s/ RANDAL J. KIRK

Randal J. Kirk

Chairman and Chief Executive Officer

(Principal Executive Officer)

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Exhibit 31.2

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Rick L. Sterling, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Intrexon Corporation;

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

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

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

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

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

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

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

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

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

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

Date: August 9, 2017

/s/ RICK L. STERLING

Rick L. Sterling

Chief Financial Officer

(Principal Financial Officer)

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Exhibit 32.1

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO SECTION 906
OF THE SARBANES-OXLEY ACT OF 2002

I, Randal J. Kirk, Chairman and Chief Executive Officer of Intrexon Corporation (the "Company"), do hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of my knowledge:

- the Quarterly Report on Form 10-Q of the Company for the quarter ended June 30, 2017 (the "Report") fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

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

Date: August 9, 2017

/s/ RANDAL J. KIRK

Randal J. Kirk
Chairman and Chief Executive Officer
(Principal Executive Officer)

A signed original of this written statement required by Section 906, or other document authenticating, acknowledging or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906, has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

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

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Exhibit 32.2

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO SECTION 906
OF THE SARBANES-OXLEY ACT OF 2002

I, Rick L. Sterling, Chief Financial Officer of Intrexon Corporation (the "Company"), do hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of my knowledge:

- the Quarterly Report on Form 10-Q of the Company for the quarter ended June 30, 2017 (the "Report") fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

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

Date: August 9, 2017

/s/ RICK L. STERLING

Rick L. Sterling
Chief Financial Officer
(Principal Financial Officer)

A signed original of this written statement required by Section 906, or other document authenticating, acknowledging or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906, has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

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

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