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 transition period from _____ to _____.

Commission File Number: 001-31918

IDERA PHARMACEUTICALS, INC.
(Exact name of registrant as specified in its charter)

Delaware	**04-3072298**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
167 Sidney Street Cambridge, Massachusetts	**02139**
(Address of principal executive offices)	**(Zip code)**

(617) 679-5500
(Registrant's telephone number, including area code)

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ 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, 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. (Check one):

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 ☒

Common Stock, par value $.001 per share	149,631,783
Class	Outstanding as of July 31, 2017

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FORWARD-LOOKING STATEMENTS

This Quarterly Report on Form 10-Q contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act. All statements, other than statements of historical fact, included or incorporated in this report regarding our strategy, future operations, clinical trials, collaborations, intellectual property, cash resources, financial position, future revenues, projected costs, prospects, plans, and objectives of management are forward-looking statements. The words “believes,” “anticipates,” “estimates,” “plans,” “expects,” “intends,” “may,” “could,” “should,” “potential,” “likely,” “projects,” “continue,” “will,” and “would” and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. We cannot guarantee that we actually will achieve the plans, intentions or expectations disclosed in our forward-looking statements and you should not place undue reliance on our forward-looking statements. There are a number of important factors that could cause our actual results to differ materially from those indicated or implied by forward-looking statements. These important factors include those set forth under Part I, Item 1A “Risk Factors” in our Annual Report on Form 10-K for the fiscal year ended December 31, 2016, which was filed with the Securities and Exchange Commission, or the SEC, on March 15, 2017. These factors and the other cautionary statements made in this Quarterly Report on Form 10-Q should be read as being applicable to all related forward-looking statements whenever they appear in this Quarterly Report on Form 10-Q. In addition, any forward-looking statements represent our estimates only as of the date that this Quarterly Report on Form 10-Q is filed with the SEC, and should not be relied upon as representing our estimates as of any subsequent date. We do not assume any obligation to update any forward-looking statements. We disclaim any intention or obligation to update or revise any forward-looking statement, whether as a result of new information, future events or otherwise.

PART I — FINANCIAL INFORMATION

ITEM 1. FINANCIAL STATEMENTS.

IDERA PHARMACEUTICALS, INC.

CONDENSED BALANCE SHEETS
(UNAUDITED)

(In thousands, except per share amounts)	June 30, 2017	December 31, 2016
ASSETS		
Current assets:		
Cash and cash equivalents	$ 74,659	$ 80,667
Short-term investments	2,576	28,347
Prepaid expenses and other current assets	4,209	2,030
Total current assets	81,444	111,044
Property and equipment, net	1,600	1,853
Restricted cash and other assets	329	334
Total assets	$ 83,373	$ 113,231
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 529	$ 556
Accrued expenses	5,950	7,394
Current portion of note payable	309	292
Current portion of deferred revenue	563	1,111
Total current liabilities	7,351	9,353
Deferred revenue, net of current portion	235	152
Note payable, net of current portion	50	209
Other liabilities	865	168
Total liabilities	8,501	9,882
Commitments and contingencies		
Stockholders' equity:		
Preferred stock, $0.01 par value, Authorized — 5,000 shares:		
Series A convertible preferred stock; Designated — 1,500 shares, Issued and outstanding — 1 share	—	—
Common stock, $0.001 par value, Authorized — 280,000 shares; Issued and outstanding — 149,606 and 149,065 shares at June 30, 2017 and December 31, 2016, respectively	150	149
Additional paid-in capital	649,761	641,687
Accumulated deficit	(575,038)	(538,470)
Accumulated other comprehensive loss	(1)	(17)
Total stockholders' equity	74,872	103,349
Total liabilities and stockholders' equity	$ 83,373	$ 113,231

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

IDERA PHARMACEUTICALS, INC.

CONDENSED STATEMENTS OF OPERATIONS AND COMPREHENSIVE LOSS
(UNAUDITED)

(In thousands, except per share amounts)	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
Alliance revenue	$ 187	$ 301	$ 565	$ 595
Operating expenses:				
Research and development	17,891	10,128	29,376	19,424
General and administrative	3,888	3,778	7,969	7,694
Total operating expenses	21,779	13,906	37,345	27,118
Loss from operations	(21,592)	(13,605)	(36,780)	(26,523)
Other income (expense):				
Interest income	144	110	297	230
Interest expense	(13)	(21)	(29)	(44)
Foreign currency exchange gain (loss)	(10)	31	(16)	29
Net loss	$ (21,471)	$ (13,485)	$ (36,528)	$ (26,308)
Basic and diluted net loss per common share (Note 14)	$ (0.14)	$ (0.11)	$ (0.24)	$ (0.22)
Shares used in computing basic and diluted net loss per common share	149,412	121,323	149,257	121,304
Net loss	$ (21,471)	$ (13,485)	$ (36,528)	$ (26,308)
Other comprehensive gain (loss):				
Unrealized gain on available-for-sale securities	—	12	16	146
Comprehensive loss	$ (21,471)	$ (13,473)	$ (36,512)	$ (26,162)

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

IDERA PHARMACEUTICALS, INC.

CONDENSED STATEMENTS OF CASH FLOWS
(UNAUDITED)

(In thousands)	Six Months Ended June 30, 2017	2016
Cash Flows from Operating Activities:		
Net loss	$ (36,528)	$ (26,308)
Adjustments to reconcile net loss to net cash used in operating activities:		
Stock-based compensation	7,542	3,497
Issuance of common stock for services rendered	74	64
Accretion of discounts and premiums on investments	92	360
Depreciation and amortization expense	368	317
Other	—	2
Changes in operating assets and liabilities:		
Prepaid expenses and other current assets	(2,179)	(12)
Accounts payable, accrued expenses, and other liabilities	(779)	121
Deferred revenue	(465)	(555)
Net cash used in operating activities	(31,875)	(22,514)
Cash Flows from Investing Activities:		
Purchases of available-for-sale securities	—	(2,946)
Proceeds from maturity of available-for-sale securities	25,695	21,296
Proceeds from sale of available-for-sale securities	—	1,974
Purchases of property and equipment	(100)	(267)
Net cash provided by investing activities	25,595	20,057
Cash Flows from Financing Activities:		
Proceeds from exercise of common stock warrants and options and employee stock purchases	419	67
Payments on note payable	(142)	(127)
Payments on capital lease	(5)	(5)
Net cash provided by (used in) financing activities	272	(65)
Net decrease in cash and cash equivalents	(6,008)	(2,522)
Cash and cash equivalents, beginning of period	80,667	26,586
Cash and cash equivalents, end of period	$ 74,659	$ 24,064

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

IDERA PHARMACEUTICALS, INC.

NOTES TO CONDENSED FINANCIAL STATEMENTS
June 30, 2017

(UNAUDITED)

(1) Organization

Idera Pharmaceuticals, Inc. ("Idera" or the "Company") is a clinical-stage biopharmaceutical company focused on the discovery, development and commercialization of novel oligonucleotide therapeutics for oncology and rare diseases. The Company uses two distinct proprietary drug discovery technology platforms to design and develop drug candidates: its Toll-like receptor ("TLR") targeting technology and its third-generation antisense ("3GA") technology. The Company developed these platforms based on its scientific expertise and pioneering work with synthetic oligonucleotides as therapeutic agents. Using its TLR targeting technology, the Company designs synthetic oligonucleotide-based drug candidates to modulate the activity of specific TLRs. In addition, using its 3GA technology, the Company is developing drug candidates to turn off the messenger RNA ("mRNA") associated with disease causing genes. The Company believes its 3GA technology may potentially reduce the immunotoxicity and increase the potency of earlier generation antisense and RNA interference ("RNAi") technologies.

Idera is focused on the clinical development of drug candidates for oncology and rare diseases characterized by small, well-defined patient populations with serious unmet medical needs. The Company believes it can develop and commercialize these targeted therapies on its own. To the extent the Company seeks to develop drug candidates for broader disease indications, it may explore potential collaborative alliances to support development and commercialization.

The Company's pipeline of drug candidates includes IMO-2125, IMO-8400 and IDRA-008.

Toll-Like Receptors

TLRs are key receptors of the immune system and play a role in innate and adaptive immunity. As a result, the Company believes TLRs are potential therapeutic targets for the treatment of a broad range of diseases. Using its chemistry-based platform, the Company has designed TLR agonists and antagonists to act by modulating the activity of targeted TLRs. A TLR agonist is a compound that stimulates an immune response through the targeted TLR. A TLR antagonist is a compound that inhibits an immune response by blocking the targeted TLR.

The Company's TLR agonist lead drug candidate IMO-2125 is an agonist of TLR9. The Company is evaluating IMO-2125 for the treatment by intra-tumoral injection of multiple oncology indications both in combination with checkpoint inhibitors and as monotherapy. The Company is initially developing IMO-2125 for use in combination with checkpoint inhibitors for the treatment of patients with anti-PD1 refractory metastatic melanoma.

The Company's TLR antagonist lead drug candidate IMO-8400 is an antagonist of TLR7, TLR8 and TLR9. The Company is developing IMO-8400 for the treatment of a rare disease called dermatomyositis. The Company selected this indication for development based on the reported increase in TLR expression in this disease state, expression of cytokines indicative of key TLR-mediated pathways and the presence of auto-antibodies that can induce TLR-mediated immune responses.

Third-Generation Antisense

The Company is developing its 3GA technology to "turn off" the mRNA associated with disease causing genes. The Company designed 3GA oligonucleotides to specifically address challenges associated with earlier generation antisense and RNAi technologies. Although currently used technologies to silence RNA have demonstrated the ability to inhibit the expression of disease-associated proteins, the Company believes that to reach their full therapeutic potential, gene silencing technologies need to achieve an improved therapeutic index with efficient systemic delivery, reduced immunotoxicity and increased potency. The Company is designing its 3GA oligonucleotides to have these attributes.

The Company has selected IDRA-008 as its first 3GA candidate to enter clinical development. The Company is planning to develop IDRA-008 for a well-established liver target with available pre-clinical animal models and well-known clinical endpoints. The Company believes that IDRA-008 has potential for both broad and rare disease applications

At June 30, 2017, the Company had an accumulated deficit of $575.0 million. The Company expects to incur substantial operating losses in future periods. The Company does not expect to generate significant product revenue, sales-based milestones or royalties until the Company or its collaborators successfully complete development and obtain marketing approval for drug candidates, which the Company expects will take a number of years. In order to commercialize its drug candidates, the Company needs to complete clinical development and comply with comprehensive regulatory requirements.

The Company is subject to a number of risks and uncertainties similar to those of other companies of the same size within the biotechnology industry, such as uncertainty of clinical trial outcomes, uncertainty of additional funding, and history of operating losses.

The Company believes, based on its current operating plan, its existing cash, cash equivalents and investments will enable the Company to fund its operations into the fourth quarter of 2018. The Company has and will continue to evaluate available alternatives to extend its operations beyond the fourth quarter of 2018.

(2) New Accounting Pronouncements

Recently Adopted Accounting Pronouncements

In March 2016, the Financial Accounting Standards Board (the “FASB”) issued Accounting Standards Update (“ASU”) No. 2016-09, *Compensation – Stock Compensation (Topic 718)*, which is effective for fiscal years beginning after December 15, 2016 and interim periods within those fiscal years. As of January 1, 2017, the Company adopted this standard, which had the following impacts on its financial statements. (1) ASU 2016-09 requires organizations to recognize all income tax effects of awards in the statement of operations when the awards vest or are settled. The Company’s net operating loss deferred tax assets increased by $1.4 million and were offset by a corresponding increase in the valuation allowance given the Company’s continued loss position. Accordingly, the adoption of this portion of ASU 2016-09 had no impact on the Accumulated deficit. (2) ASU 2016-09 allows organizations to repurchase more shares from employees than they could previously purchase for tax withholding purposes without triggering liability accounting. The adoption of this portion of ASU 2016-09 had no impact on the Company’s financial statements. (3) ASU 2016-09 allows companies to make a policy election to account for forfeitures as they occur. The Company has made the policy election to account for forfeitures as they occurred and has used the modified retrospective transition method, resulting in less than $0.1 million reduction in Additional paid-in capital and an increase in Accumulated deficit as of January 1, 2017, to reflect the cumulative effect of previously estimated forfeitures.

Recently Issued Accounting Pronouncements

In May 2014, the FASB issued ASU No. 2014-09, *Revenue from Contracts with Customers (Topic 606)*, which was amended by ASU No. 2015-14 (as amended, “ASU 2014-09”). ASU No. 2014-09 requires an entity to recognize revenue from the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. In particular, this ASU addresses contracts with more than one performance obligation, as well as the accounting for some costs to obtain or fulfill a contract with a customer, and provides for additional disclosures with respect to revenues and cash flows arising from contracts with customers. This ASU is effective for public business entities for fiscal years beginning after December 15, 2017, including interim periods within that fiscal year. Early adoption of this ASU is permitted only for fiscal years beginning after December 15, 2016, including interim periods within that fiscal year. This guidance is applicable to the Company's fiscal year beginning January 1, 2018 and the Company expects to adopt ASU 2014-09 in the first quarter of 2018 using the modified retrospective transition method. The adoption of ASU 2014-09 may have a material effect on the Company’s financial statements, including the footnote disclosures. To date, the Company has derived our revenues from a limited number of license and collaboration agreements. The consideration the Company is eligible to receive under these agreements includes upfront payments, research and development funding, contingent revenues in the form

of commercial and development milestones and option payments and royalties. Each of the Company's license and collaboration agreements has unique terms that will need to be evaluated separately under the new standard. The Company is in process of assessing its two active license and collaboration agreements. ASU 2014-09 differs from the current accounting standard in many respects, such as in the accounting for variable consideration, including the timing of recognition of certain milestone payments. Accordingly, the Company expects its evaluation of the accounting for collaboration agreements under the new revenue standard could identify material changes from the current accounting treatment. In addition, the current accounting standards include a presumption that revenue from certain upfront non-refundable fees are recognized ratably over the performance period, unless another attribution method is determined to more closely approximate the delivery of the goods or services to the customer. ASU 2014-09 will require entities to determine an appropriate attribution method using either output or input methods and does not include a presumption that entities would default to a ratable attribution approach. These factors could materially impact the amount and timing of the Company's revenue recognition from its license and collaboration agreements under ASU 2014-09.

In February 2016, the FASB issued ASU No. 2016-02, *Leases (Topic 842)* ("ASU 2016-02"). ASU 2016-02 requires organizations that lease assets, with lease terms of more than 12 months, to recognize on the balance sheet the assets and liabilities for the rights and obligations created by those leases. Consistent with current U.S. Generally Accepted Accounting Principles ("U.S. GAAP"), the recognition, measurement, and presentation of expenses and cash flows arising from a lease by a lessee primarily will depend on its classification as a finance or operating lease. However, unlike current U.S. GAAP which requires only capital leases to be recognized on the balance sheet, ASU No. 2016-02 will require both types of leases to be recognized on the balance sheet. ASU 2016-02 is effective for public business entities for fiscal years beginning after December 15, 2018, including interim periods within those fiscal years. Early adoption is permitted. This guidance is applicable to the Company's fiscal year beginning January 1, 2019. The Company is currently evaluating the effect that the adoption of ASU 2016-02 will have on its financial statements.

(3) Unaudited Interim Financial Statements

The accompanying unaudited financial statements included herein have been prepared by the Company in accordance with U.S. GAAP for interim financial information and pursuant to the rules and regulations of the Securities and Exchange Commission (the "SEC"). Accordingly, certain information and footnote disclosures normally included in financial statements prepared in accordance with U.S. GAAP have been condensed or omitted pursuant to such rules and regulations. In the opinion of management, all adjustments, consisting of normal recurring adjustments, and disclosures considered necessary for a fair presentation of interim period results have been included. Interim results for the three and six months ended June 30, 2017 are not necessarily indicative of results that may be expected for the year ending December 31, 2017. For further information, refer to the financial statements and footnotes thereto included in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2016, which was filed with the SEC on March 15, 2017.

(4) Financial Instruments

The fair value of the Company's financial instruments is determined and disclosed in accordance with the three-tier fair value hierarchy specified in Note 6, "Fair Value of Assets and Liabilities." The Company is required to disclose the estimated fair values of its financial instruments. The Company's financial instruments consist of cash, cash equivalents, available-for-sale investments and a note payable. The estimated fair values of these financial instruments approximate their carrying values as of June 30, 2017 and December 31, 2016. As of June 30, 2017 and December 31, 2016, the Company did not have any derivatives, hedging instruments or other similar financial instruments except for the note issued under the Company's loan and security agreement, which is discussed in Note 5(a) to the financial statements included in the Company's Annual Report on Form 10-K for the year ended December 31, 2016, including put and call features which the Company determined are clearly and closely associated with the debt host and do not require bifurcation as a derivative liability, or the fair value of the feature is immaterial.

(5) Cash and Cash Equivalents

The Company considers all highly liquid investments with maturities of 90 days or less when purchased to be cash equivalents. Cash and cash equivalents at June 30, 2017 and December 31, 2016 consisted of cash and money market funds.

(6) Fair Value of Assets and Liabilities

The Company measures fair value at the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date using assumptions that market participants would use in pricing the asset or liability (the "inputs") into a three-tier fair value hierarchy. This fair value hierarchy gives the highest priority (Level 1) to quoted prices in active markets for identical assets or liabilities and the lowest priority (Level 3) to unobservable inputs in which little or no market data exists, requiring companies to develop their own assumptions. Observable inputs that do not meet the criteria of Level 1, and include quoted prices for similar assets or liabilities in active markets or quoted prices for identical assets and liabilities in markets that are not active, are categorized as Level 2. Level 3 inputs are those that reflect the Company's estimates about the assumptions market participants would use in pricing the asset or liability, based on the best information available in the circumstances. Valuation techniques for assets and liabilities measured using Level 3 inputs may include unobservable inputs such as projections, estimates and management's interpretation of current market data. These unobservable Level 3 inputs are only utilized to the extent that observable inputs are not available or cost-effective to obtain. The Company applies ASU No. 2011-04, *Fair Value Measurement (Topic 820)*, in its fair value measurements and disclosures.

The table below presents the assets and liabilities measured and recorded in the financial statements at fair value on a recurring basis at June 30, 2017 and December 31, 2016 categorized by the level of inputs used in the valuation of each asset and liability.

(In thousands)	Total	Quoted Prices in Active Markets for Identical Assets or Liabilities (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
June 30, 2017				
Assets				
Money market funds	$ 73,136	$ 73,136	$ —	$ —
Short-term investments – municipal bonds	2,576	—	2,576	—
Total Assets	$ 75,712	$ 73,136	$ 2,576	$ —
Total Liabilities	$ —	$ —	$ —	$ —
December 31, 2016				
Assets				
Money market funds	$ 67,580	$ 67,580	$ —	$ —
Short-term investments – corporate bonds	19,729	—	19,729	—
Short-term investments – municipal bonds	8,618	—	8,618	—
Total Assets	$ 95,927	$ 67,580	$ 28,347	$ —
Total Liabilities	$ —	$ —	$ —	$ —

The Level 1 assets consist of money market funds, which are actively traded daily. The Level 2 assets consist of corporate bond and municipal bond investments, the fair value of which may not represent actual transactions of identical securities. The fair value of corporate and municipal bonds is generally determined from quoted market prices received from pricing services based upon quoted prices from active markets and/or other significant observable market transactions at fair value. Since these fair values may not be based upon actual transactions of identical securities, they are classified as Level 2. Since all investments are classified as available-for-sale securities, any unrealized gains or losses are recorded in accumulated other comprehensive income or loss within stockholders' equity on the balance sheet. The Company did not elect to measure any other financial assets or liabilities at fair value at June 30, 2017 or December 31, 2016.

(7) Investments

The Company's available-for-sale investments at fair value consisted of the following at June 30, 2017 and December 31, 2016:

	June 30, 2017			
	Cost	Gross Unrealized (Losses)	Gross Unrealized Gains	Estimated Fair Value
	(In thousands)			
Short-term investments – municipal bonds	$ 2,577	$ (1)	$ —	$ 2,576
Total short-term investments	2,577	(1)	—	2,576
Total investments	$ 2,577	$ (1)	$ —	$ 2,576

	December 31, 2016			
	Cost	Gross Unrealized (Losses)	Gross Unrealized Gains	Estimated Fair Value
	(In thousands)			
Short-term investments – corporate bonds	$ 19,740	$ (11)	$ —	$ 19,729
Short-term investments – municipal bonds	8,624	(6)	—	8,618
Total short-term investments	28,364	(17)	—	28,347
Total investments	$ 28,364	$ (17)	$ —	$ 28,347

The Company had no realized gains or losses from available-for-sale securities during the six months ended June 30, 2017 and 2016. There were no losses or other-than-temporary declines in value included in "Interest income" on the Company's statements of operations and comprehensive loss for any securities for the six months ended June 30, 2017 and 2016. See Note 4, "Financial Instruments," and Note 6, "Fair Value of Assets and Liabilities" for additional information related to the Company's investments.

(8) Property and Equipment

At June 30, 2017 and December 31, 2016, net property and equipment at cost consisted of the following:

(In thousands)	June 30, 2017	December 31, 2016
Leasehold improvements	$ 671	$ 671
Laboratory equipment and other	5,158	5,127
Total property and equipment, at cost	5,829	5,798
Less: Accumulated depreciation and amortization	4,229	3,945
Property and equipment, net	$ 1,600	$ 1,853

Depreciation and amortization expense on property and equipment was approximately $0.2 million for both the three months ended June 30, 2017 and 2016, and $0.4 million and $0.3 million for the six months ended June 30, 2017 and 2016, respectively. There were less than $0.1 million in non-cash property additions during both the three months and six months ended June 30, 2017 and 2016.

(9) Restricted Cash

As part of the Company's lease arrangement for its office and laboratory facility in Cambridge, Massachusetts, the Company is required to restrict cash held in a certificate of deposit securing a line of credit for the lessor. As of June 30, 2017 and December 31, 2016, the restricted cash amounted to $0.3 million held in certificates of deposit securing a line of credit for the lessor. The lease expires August 2022.

(10) Accrued Expenses

At June 30, 2017 and December 31, 2016, accrued expenses consisted of the following:

(In thousands)	June 30, 2017	December 31, 2016
Payroll and related costs	$ 2,056	$ 2,498
Clinical and nonclinical trial expenses	3,392	3,577
Professional and consulting fees	424	840
Equipment purchase	—	368
Other	78	111
	$ 5,950	$ 7,394

Included in accrued payroll and related costs as of June 30, 2017 is the current portion, or $0.6 million, of the $1.2 million of salary continuation severance benefits to be paid in equal installments through May 31, 2019 to a former executive. The long-term portion of $0.6 million is included within Other liabilities in the Company's balance sheet as of June 30, 2017.

(11) Comprehensive Income (Loss)

Comprehensive income (loss) is defined as the change in equity of a business enterprise during a period from transactions and other events and circumstances from non-owner sources. Comprehensive loss for the six months ended June 30, 2017 and 2016 is comprised of reported net loss and any change in net unrealized gains and losses on investments during each period, which is included in accumulated other comprehensive income (loss) on the accompanying balance sheets.

The following table includes the changes in the accumulated balance of the component of other comprehensive income (loss) for the six months ended June 30, 2017 and 2016:

(In thousands)	Six Months Ended June 30, 2017	Six Months Ended June 30, 2016
Accumulated unrealized loss on available-for-sale securities at beginning of period	$ (17)	$ (134)
Change during the period	16	146
Accumulated unrealized loss on available-for-sale securities at end of period	$ (1)	$ 12

(12) Collaboration with GlaxoSmithKline Intellectual Property Development Limited

In November 2015, the Company entered into a collaboration and license agreement with GlaxoSmithKline Intellectual Property Development Limited ("GSK") to license, research, develop and commercialize pharmaceutical compounds from the Company's 3GA technology for the treatment of selected targets in renal disease (the "GSK Agreement"). The initial collaboration term is currently anticipated to last between two and four years. In connection with the GSK Agreement, GSK identified an initial target for the Company to attempt to identify a potential population of development candidates to address such target under a mutually agreed upon research plan, currently estimated to take 36 months to complete. From the population of identified development candidates, GSK may designate one development candidate in its sole discretion to move forward into clinical development. Once GSK designates a development candidate, GSK would be solely responsible for the development and commercialization activities for that designated development candidate.

At any time during the first two years of the GSK Agreement, GSK has the option to select up to two additional targets, for further research under mutually agreed upon research plans. GSK may then designate one development candidate for each additional target, at which time GSK would have sole responsibility to develop and commercialize each such designated development candidate.

In accordance with the GSK Agreement, a Joint Steering Committee ("JSC") was formed with equal representation from Idera and GSK. The responsibilities of the JSC, include, but are not limited to monitoring the progress of the collaboration, reviewing research plans and dealing with disputes that may arise between the parties. If a dispute cannot be resolved by the JSC, GSK has final decision making authority.

Under the terms of the GSK Agreement, the Company received a $2.5 million upfront, non-refundable, non-creditable cash payment upon the execution of the GSK Agreement. The Company is eligible to receive up to approximately $100 million in license, research, clinical development and commercialization milestone payments. Approximately $9 million of these milestone payments are payable by GSK upon the identification of the additional targets, the completion of current and future research plans and the designation of development candidates. Approximately $89 million is payable by GSK upon the achievement of clinical milestones and commercial milestones. In addition, the Company is eligible to receive royalty payments on sales upon commercialization at varying rates of up to five percent on annual net sales, as defined in the GSK Agreement.

Accounting Analysis

The Company evaluated the GSK Agreement in accordance with the provisions of ASC 605-25. The GSK Agreement contains the following initial deliverables: (i) a collaboration license for Idera's proprietary technology related to the initial target (the "Collaboration License"), (ii) research services (the "Research Services"), and (iii) participation in the JSC (the "JSC Deliverable").

The Company has determined that GSK's options to choose up to two additional targets and to purchase additional collaboration licenses for the Company's proprietary technology related to each additional target are substantive options. GSK is not contractually obligated to exercise the options. Moreover, as a result of the uncertain outcome of the research activities, there is significant uncertainty as to whether GSK will decide to exercise its options for any additional targets. Consequently, the Company is at risk with regard to whether GSK will exercise the options. The Company has determined that GSK's options to choose up to two additional targets and to purchase additional collaboration licenses for the Company's proprietary technology related to each additional target are not priced at a significant and incremental discount.

The Company has concluded that the Collaboration License does not qualify for separation from the Research Services. As it relates to the assessment of standalone value, the Company has determined that GSK cannot fully exploit the value of the Collaboration License without receipt of the Research Services from the Company. The Research Services involve unique skills and specialized expertise, particularly as it relates to the Company's proprietary technology, which is not available in the marketplace. Accordingly, GSK must obtain the Research Services from the Company which significantly limits the ability for GSK to utilize the Collaboration License for its intended purpose on a standalone basis. Therefore, the Collaboration License does not have standalone value from the Research Services. As a result, the Collaboration License and the Research Services have been combined as a single unit of accounting (the "R&D Services Unit of Accounting"). The Company has concluded that the JSC Deliverable identified at the inception of the arrangement has standalone value from the other deliverables noted based on its nature. Factors considered in this determination included, among other things, the capabilities of the collaborator, whether any other vendor sells the item separately, whether the value of the deliverable is dependent on the other elements in the arrangement, whether there are other vendors that can provide the items and if the customer could use the item for its intended purpose without the other deliverables in the arrangement.

Therefore, the Company has identified two units of accounting in connection with its initial deliverables under the GSK Agreement as follows: (i) the R&D Services Unit of Accounting, and (ii) the JSC Deliverable.

Allocable arrangement consideration at inception of the GSK Agreement is comprised of the up-front payment of $2.5 million, which was allocated to the R&D Services Unit of Accounting. No amount was allocated to the JSC Deliverable because the related best estimate of selling price was determined to be de minimis. The $2.5 million was recorded as deferred revenue in the Company's balance sheet and is being recognized as revenue on a straight-line basis over the Company's estimate of the period over which the Research Services are delivered. In the second quarter of 2017, the Company revised its estimate of the research period from 27 months to 36 months, which is being accounted for on a prospective basis.

Payments to be received in connection with GSK's identification of additional targets and designation of development candidates are considered substantive options as a result of the uncertainties related to the research, development and commercialization activities, and the uncertainty as to whether GSK will exercise the options. The substantive options are not priced at a significant incremental discount. Accordingly, the substantive options are not considered deliverables at the inception of the arrangement and the associated option exercise payments are not accounted for at inception of the agreement.

The clinical and commercial milestones provided for in the GSK Agreement are all performance obligations of GSK occurring after the Company has completed its obligations. As a result, they represent contingent revenue to the Company and will be accounted for at the time the contingencies are resolved.

The Company will recognize royalty revenue in the period of sale of the related product(s), based on the underlying contract terms, provided that the reported sales are reliably measurable and the Company has no remaining performance obligations, assuming all other revenue recognition criteria are met.

The Company recognized as revenue $0.2 million and $0.3 million of deferred revenue related to the GSK Agreement during the three months ended June 30, 2017 and 2016, respectively, and $0.5 million and $0.6 million of deferred revenue for the six months ended June 30, 2017 and 2016, respectively. This revenue is classified as alliance revenue in the accompanying statements of operations and comprehensive loss.

There was $0.8 million of deferred revenue related to the GSK Agreement at June 30, 2017, of which $0.6 million is reflected in current portion of deferred revenue and $0.2 million is reflected as long-term deferred revenue in the accompanying balance sheet.

(13) Stock-Based Compensation

The Company recognizes all stock-based payments to employees and directors as expense in the statements of operations and comprehensive loss based on their fair values. The Company records compensation expense over an award's requisite service period, or vesting period, based on the award's fair value at the date of grant. The Company's policy is to charge the fair value of stock options as an expense on a straight-line basis over the vesting period, which is generally four years for employees and three years for directors. The Company accounts for forfeitures when they occur. Ultimately, the actual expense recognized over the vesting period will be for only those shares that vest.

Total stock-based compensation expense recognized using the straight-line attribution method and included in operating expenses in the Company's statements of operations and comprehensive loss was $5.8 million and $1.8 million for the three months ended June 30, 2017 and 2016, respectively, and $7.5 million and $3.5 million for the six months ended June 30, 2017 and 2016, respectively. Included in the $5.8 million and $7.5 million recognized during the three and six months ended June 30, 2017, respectively, is $4.3 million of stock-based compensation resulting from modifications to previously issued stock option awards in connection with the resignation of an executive, which is recorded in Research and development expense. Additionally, as of June 30, 2017, there was approximately $12.5 million of unrecognized compensation expense related to non-vested stock options which is expected to be recognized over a weighted-average period of 2.3 years.

The fair value of each option award is estimated on the date of grant using the Black-Scholes option-pricing model. The following weighted average assumptions apply to the options to purchase 3,911,500 and 3,161,000 shares of common stock granted to employees and directors during the six months ended June 30, 2017 and 2016, respectively:

	Six Months Ended June 30,	
	2017	2016
Average risk free interest rate	1.7%	1.4%
Expected dividend yield	—	—
Expected lives (years)	4.0	4.2
Expected volatility	86.9%	93.0%
Weighted average grant date fair value (per share)	$ 1.00	$ 1.79
Weighted average exercise price (per share)	$ 1.60	$ 2.68

The expected lives and the expected volatility of the options granted during the six months ended June 30, 2017 and 2016 are based on historical experience. All options granted during the six months ended June 30, 2017 and 2016 were granted at exercise prices equal to the fair market value of the common stock on the dates of grant.

(14) Net Loss per Common Share

For the three and six months ended June 30, 2017 and 2016, basic and diluted net loss per common share is computed using the weighted average number of shares of common stock outstanding during the period. Diluted net loss per common share is the same as basic net loss per common share as the effects of the Company's potential common stock equivalents are antidilutive. Total antidilutive securities were 72,809,539 and 73,369,852 for the six months ended June 30, 2017 and 2016, respectively, and consist of stock options, convertible preferred stock and warrants.

(15) Stockholders' Equity

Common Stock Warrant Exercises, Stock Option Exercises and Employee Stock Purchases

The Company issued common stock as a result of stock option exercises and employee stock purchases as follows during the six months ended June 30, 2017 and 2016:

	Six Months Ended June 30, 2017		Six Months Ended June 30, 2016	
(In thousands)	Shares	Proceeds	Shares	Proceeds
Warrant exercises	409	$ 287	—	$ —
Stock option exercises	7	17	—	—
Employee stock purchases	83	115	47	67
Total	499	$ 419	47	$ 67

(16) Related Party Transactions

The Company issued 41,302 and 26,973 shares of common stock during the six months ended June 30, 2017 and 2016, respectively, in lieu of director board and committee fees of less than $0.1 million for each six-month period, pursuant to the Company's director compensation program. The number of shares issued was calculated based on the market closing price of the Company's common stock on the issuance date.

(17) Deferred Tax Assets

The Company's deferred tax assets are determined based on temporary differences between the financial reporting and tax bases of assets and are measured using the enacted tax rates and laws that will be in effect when the differences are expected to reverse. A valuation allowance is recorded against deferred tax assets if it is more likely than not that some portion or all of the deferred tax assets will not be realized. For the six months ended June 30, 2017 and

2016, the Company did not record any current or deferred income tax provisions or benefits. Due to the uncertainty surrounding the future realization of the deferred tax assets, the Company has recorded full valuation allowances against its otherwise recognizable deferred tax assets at June 30, 2017 and December 31, 2016.

(18) Subsequent Events

The Company considers events or transactions that occur after the balance sheet date but prior to the issuance of the financial statements to provide additional evidence relative to certain estimates or to identify matters that require additional disclosure.

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

Overview

We are a clinical-stage biopharmaceutical company focused on the discovery, development and commercialization of novel oligonucleotide therapeutics for oncology and rare diseases. We use two distinct proprietary drug discovery technology platforms to design and develop drug candidates: our Toll-like receptor, or TLR, targeting technology and our third-generation antisense, or 3GA, technology. We developed these platforms based on our scientific expertise and pioneering work with synthetic oligonucleotides as therapeutic agents. Using our TLR targeting technology, we design synthetic oligonucleotide-based drug candidates to modulate the activity of specific TLRs. In addition, using our 3GA technology, we are developing drug candidates to turn off the messenger RNA, or mRNA, associated with disease causing genes. We believe our 3GA technology may potentially reduce the immunotoxicity and increase the potency of earlier generation antisense and RNA interference, or RNAi, technologies.

Our business strategy is focused on the clinical development of drug candidates for oncology and rare diseases characterized by small, well-defined patient populations with serious unmet medical needs. We believe we can develop and commercialize these targeted therapies on our own. To the extent we seek to develop drug candidates for broader disease indications, we have entered into and may explore additional collaborative alliances to support development and commercialization.

TLR Modulation Technology Platform

TLRs are key receptors of the immune system and play a role in innate and adaptive immunity. As a result, we believe TLRs are potential therapeutic targets for the treatment of a broad range of diseases. Using our chemistry-based platform, we have designed TLR agonists and antagonists to act by modulating the activity of targeted TLRs. A TLR agonist is a compound that stimulates an immune response through the targeted TLR. A TLR antagonist is a compound that inhibits an immune response by blocking the targeted TLR.

Our TLR agonist lead drug candidate IMO-2125 is an agonist of TLR9. Our TLR antagonist lead drug candidate is IMO-8400, which is an antagonist of TLR7, TLR8 and TLR9.

We are evaluating IMO-2125 for the treatment by intra-tumoral injection of multiple oncology indications both in combination with checkpoint inhibitors and as monotherapy. We are developing IMO-8400 for the treatment of a rare disease called dermatomyositis.

Intra-tumoral IMO-2125 Development Program in Immuno-oncology

Advancements in cancer immunotherapy have included the approval and late-stage development of multiple checkpoint inhibitors, which are therapies that target mechanisms by which tumor cells evade detection by the immune system. Despite these advancements, many patients fail to respond to these therapies. For instance, approximately fifty percent of patients with melanoma fail to respond to therapy with approved checkpoint inhibitors. Current published data suggests that the lack of response to checkpoint inhibition is related to a non-immunogenic tumor micro environment. Because TLR9 agonists stimulate the immune system, we believe there is a scientific rationale to evaluate the combination of intra-tumoral injection of our TLR9 agonists with checkpoint inhibitors. Specifically, we believe intra-tumoral injection of our TLR9 agonists activates a local immune response in the injected tumor, which may complement the effect of the systemically administered checkpoint inhibitors. In studies in preclinical cancer models conducted in our laboratories, intra-tumoral injection of TLR9 agonists has potentiated the anti-tumor activity of multiple checkpoint inhibitors in multiple tumor models. These data have been presented at several scientific and medical conferences from 2014 through 2017. We believe these data support evaluation of combination regimens including the combination of a TLR9 agonist and a checkpoint inhibitor for the treatment of cancer.

We are initially developing IMO-2125 for use in combination with checkpoint inhibitors for the treatment of patients with anti-PD1 refractory metastatic melanoma. We believe, based on internally conducted commercial research, that in the United States, by 2025, approximately 20,000 people will have metastatic melanoma and approximately 13,000 of those people will have metastatic melanoma that is anti-PD1 refractory. We also believe TLR9 agonists may be useful in other tumor types that are unaddressable with current immunotherapy due in part to low mutation load and

low dendritic cell infiltration. These tumor types include non-small cell lung cancer, head and neck cancer, renal cell cancer and bladder cancer. We believe, based on internally conducted commercial research, that in the United States, by 2025, approximately 160,000 people will have tumor types that are addressable with current immunotherapy and approximately 70,000 of those people will have tumor types that are anti-PD1 refractory.

In June 2015, we entered into a strategic research alliance with the University of Texas, MD Anderson Cancer Center, or MD Anderson, to commence clinical development of IMO-2125 in combination with checkpoint inhibitors. In December 2015, we initiated a Phase 1/2 clinical trial to assess the safety and efficacy of IMO-2125, administered intra-tumorally, in combination with ipilimumab, a CTLA4 antibody marketed as Yervoy® by Bristol-Myers Squibb Company, in patients with metastatic melanoma (refractory to treatment with a PD1 inhibitor, also referred to as anti-PD1 refractory). We subsequently amended the trial protocol to enable an additional arm to study the combination of IMO-2125 with pembrolizumab, an anti-PD1 antibody marketed as Keytruda® by Merck & Co. in the same patient population. In the Phase 1 portion of this clinical trial, escalating doses of IMO-2125 ranging from 4 mg through 32 mg in the ipilimumab arm and ranging from 8 mg through 32 mg in the pembrolizumab arm are being administered intra-tumorally into a selected tumor lesion, together with the standard dosing regimen of ipilimumab or pembrolizumab, administered intravenously. The primary objectives of the Phase 1 portion of the trial include characterizing the safety of the combinations and determining the recommended Phase 2 dose. A secondary objective of the Phase 1 portion of the trial is describing the anti-tumor activity of IMO-2125 when administered intra-tumorally in combination with ipilimumab or pembrolizumab. The primary objectives of the Phase 2 portion of the trial are to characterize the safety of the combinations and determine the activity of the combinations utilizing immune-related response criteria. Additionally, a secondary objective of the Phase 2 portion of the trial is to assess treatment response using traditional RECIST criteria. Serial biopsies will be taken of selected injected and non-injected tumor lesions to assess immune changes and response assessments. We anticipate that the entire Phase 1/2 trial may enroll approximately 60 to 80 patients across both ipilimumab and pembrolizumab arms.

In September 2016, we disclosed early clinical results from the 4 mg and 8 mg dosing cohorts of the Phase 1 ipilimumab combination portion of the trial in which three of six evaluable patients demonstrated clinical responses (one complete response and two partial responses). We also disclosed that the drug was well tolerated through the initial dosing of the 16 mg dosing cohort. We have completed enrollment in the dose escalation phase in the ipilimumab arm of the trial as well as the 8 mg dosing cohort in the pembrolizumab arm of the trial. We presented available translational, efficacy and safety data findings from the 4 mg, 8 mg and 16 mg dosing cohorts in the ipilimumab arm during an oral presentation at the Society for Immunotherapy of Cancer (SITC) Annual Meeting in November 2016. In February 2017, we provided a further update in a poster session at the joint meeting of the American Society of Clinical Oncology (ASCO)-SITC Meeting where we disclosed that the drug was well tolerated through the initial dosing of the 32mg dosing cohort in the ipilimumab arm as well as through the initial dosing of the 8mg cohort in the pembrolizumab arm.

In April 2017, we initiated enrollment in the Phase 2 portion of the trial with the 8mg dose of intratumoral IMO-2125. The Phase 2 portion of the trial utilizes a Simon two-stage design to evaluate the objective response rate of IMO-2125 in combination with ipilimumab, compared to historical data for ipilimumab alone in the anti-PD-1 refractory metastatic melanoma population. The ipilimumab arm of IMO-2125-204 has already met the pre-specified futility assessment to advance immediately into the second stage of the Phase 2 portion of the trial given that two patients treated at the Phase 2 dose experienced confirmed responses, including one complete response. In June 2017, we began dosing patients in the second stage of the Phase 2 portion of the trial. We anticipate that the Phase 2 portion of the trial will enroll a total of 21 patients dosed at the 8mg dose. Additionally, the Phase I dose escalation of IMO-2125 in combination pembrolizumab is ongoing. The MD Anderson Cancer Center will continue to lead the trial and will be joined by additional centers.

In March 2017, we initiated a Phase 1 trial with IMO-2125 administered as a single agent intra-tumorally in multiple tumor types. We are also planning to initiate a Phase 2 clinical trial with IMO-2125 administered intra-tumorally together with other checkpoint inhibitors in multiple tumor types.

In June 2017, the U.S. Food and Drug Administration, or FDA, granted Orphan Drug Designation for IMO-2125 for the treatment of melanoma Stages IIb to IV.

IMO-8400 in Rare Diseases

We have initiated clinical development of IMO-8400 for the treatment of rare diseases and have selected dermatomyositis as our lead clinical target for which we are developing IMO-8400. We selected this indication for development based on the reported increase in TLR expression in this disease state, expression of cytokines indicative of key TLR-mediated pathways and the presence of auto-antibodies that can induce TLR-mediated immune responses.

We considered that multiple independent research studies across a broad range of autoimmune diseases, including both dermatomyositis and psoriasis, have demonstrated that the over-activation of TLRs plays a critical role in disease maintenance and progression. In autoimmune diseases, endogenous nucleic acids released from damaged or dying cells initiate signaling cascades through TLRs, leading to the induction of multiple pro-inflammatory cytokines. This inflammation causes further damage to the body's own tissues and organs and the release of more self-nucleic acids, creating a self-sustaining autoinflammatory cycle that contributes to chronic inflammation in the affected tissue, promoting disease progression.

We believe that we demonstrated proof of concept for our approach of using TLRs to inhibit the over-activation of specific TLRs for the treatment of psoriasis and potentially other autoimmune diseases in a randomized, double-blind, placebo-controlled Phase 2 clinical trial of IMO-8400 that we conducted in patients with moderate to severe plaque psoriasis, a well-characterized autoimmune disease. In this trial, we evaluated IMO-8400 at four subcutaneous dose levels of 0.075 mg/kg, 0.15 mg/kg, 0.3 mg/kg, and 0.6 mg/kg, versus placebo, administered once weekly for 12 weeks in 46 patients. The trial met its primary objective as IMO-8400 was well tolerated at all dose levels with no treatment-related discontinuations, treatment-related serious adverse events or dose reductions. The trial also met its secondary objective of demonstrating clinical activity in psoriasis patients, as assessed by the Psoriasis Area Severity Index.

Dermatomyositis is a rare, debilitating, inflammatory muscle and skin disease associated with significant morbidity, decreased quality of life and an increased risk of premature death. While the cause of dermatomyositis is not well understood, the disease process involves immune system attacks against muscle and skin that lead to inflammation and tissue damage. Major symptoms can include progressive muscle weakness, severe skin rash, calcium deposits under the skin (calcinosis), difficulty swallowing (dysphagia) and interstitial lung disease. We believe, based on internally conducted commercial research, that dermatomyositis affects approximately 25,000 people in the United States, and is about twice as common in women as men, with a typical age of onset between 45 and 65 years in adults. Dermatomyositis represents one form of myositis, a spectrum of inflammatory muscle diseases that also includes juvenile dermatomyositis, polymyositis and inclusion body myositis.

In December 2015, we initiated a Phase 2, randomized, double-blind, placebo-controlled clinical trial designed to assess the safety, tolerability and treatment effect of IMO-8400 in adult patients with dermatomyositis. Eligibility criteria include evidence of active skin involvement. Patients in the trial are randomized to one of three groups to receive once weekly subcutaneous injections of: placebo, 0.6 mg/kg of IMO-8400 or 1.8 mg/kg of IMO-8400, in each case, for a period of 24 weeks. The trial is expected to enroll up to 36 patients and is being conducted at 21 centers in the United States, the United Kingdom and Hungary. The primary efficacy endpoint is the change from baseline in the Cutaneous Dermatomyositis Disease Area and Severity Index (CDASI), a validated outcome measure of skin disease. Additional exploratory endpoints include muscle strength and function (which are among the International Myositis Assessment & Clinical Studies Group (IMACS) core set measures), patient-reported quality of life and biochemical markers of disease activity.

Third-generation Antisense (3GA)

Third-generation Antisense (3GA) Technology to Target mRNA

We are developing our 3GA technology to "turn off" the mRNA associated with disease causing genes. We have designed 3GA oligonucleotides to specifically address challenges associated with earlier generation antisense and RNAi technologies.

Our focus is on creating 3GA candidates targeted to specific genes to treat cancer and rare diseases. Our key considerations in identifying disease indications and gene targets in our 3GA program include: strong evidence that the disease is caused by a specific protein; clear criteria to identify a target patient population; biomarkers for early assessment of clinical proof of concept; a targeted therapeutic mechanism of action; unmet medical need to allow for a

rapid development path to approval and commercial opportunity. To date, we have created 22 novel 3GA compounds for specific gene targets that are potentially applicable across a wide variety of therapeutic areas. These areas include rare diseases, oncology, autoimmune disorders, metabolic conditions, single point mutations and others. Our current activities with respect to these compounds range from cell culture through investigational new drug, or IND, application-enabling toxicology.

In January 2017, we announced that we had selected IDRA-008 as our first candidate to enter clinical development. We are planning to develop IDRA-008 for a well-established liver target with available pre-clinical animal models and well-known clinical endpoints. We believe that IDRA-008 has potential for both broad and rare disease applications.

In November 2015, we entered into a collaboration and license agreement with GlaxoSmithKline Intellectual Property Development Limited, or GSK, to license, research, develop and commercialize pharmaceutical compounds from our 3GA technology for the treatment of selected targets in renal disease, which agreement we refer to as the GSK Agreement. Under this collaboration, we are creating multiple development candidates to address the initial target designated by GSK. From the population of identified development candidates, GSK may designate one development candidate in its sole discretion to move forward into clinical development. Once GSK designates a development candidate, GSK would be solely responsible for the development and commercialization activities for that designated development candidate.

Additional Programs

IMO-9200 for Autoimmune Disease. We have developed a second novel synthetic oligonucleotide antagonist of TLR7, TLR8, and TLR9, IMO-9200, as a drug candidate for potential use in selected autoimmune disease indications. In 2015, we completed a Phase 1 clinical trial of IMO-9200 in healthy subjects as well as additional preclinical studies of IMO-9200 for autoimmune diseases. In 2015, we determined not to proceed with the development of IMO-9200 because the large autoimmune disease indications for which IMO-9200 had been developed did not fit within the strategic focus of our company. In November 2016, we entered into an exclusive license and collaboration agreement with Vivelix Pharmaceuticals, Ltd., or Vivelix, granting Vivelix worldwide rights to develop and market IMO-9200 for non-malignant gastrointestinal disorders, which agreement we refer to as the Vivelix Agreement.

Collaborative Alliances

In addition to our current alliances, we may explore potential collaborative alliances to support development and commercialization of our TLR agonists and antagonists. We may also seek to enter into additional collaborative alliances with pharmaceutical companies with respect to applications of our 3GA program. We are currently party to collaborations with Vivelix, GSK, Abbott Molecular, and Merck & Co.

Accumulated Deficit

As of June 30, 2017, we had an accumulated deficit of $575.0 million. We expect to incur substantial operating losses in future periods. We do not expect to generate product revenue, sales-based milestones or royalties from our development programs until we successfully complete development and obtain marketing approval for drug candidates, either alone or in collaborations with third parties, which we expect will take a number of years. In order to commercialize our drug candidates, we need to complete clinical development and comply with comprehensive regulatory requirements.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

This management's discussion and analysis of financial condition and results of operations is based on our financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires management 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 and the reported amounts of revenues and expenses during the reporting period. On an ongoing basis, management evaluates its estimates and judgments. Management bases its estimates and judgments on historical experience and on various other factors that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

We regard an accounting estimate or assumption underlying our financial statements as a "critical accounting estimate" where:

- the nature of the estimate or assumption is material due to the level of subjectivity and judgment necessary to account for highly uncertain matters or the susceptibility of such matters to change; and

- the impact of the estimates and assumptions on financial condition or operating performance is material.

Our significant accounting policies are described in Note 2 of the notes to our financial statements in our Annual Report on Form 10-K for the year ended December 31, 2016. Not all of these significant policies, however, fit the definition of critical accounting policies and estimates. We believe that our accounting policies relating to revenue recognition, stock-based compensation and research and development prepayments, accruals and related expenses, as described under the caption "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations — Critical Accounting Policies and Estimates" in our Annual Report on Form 10-K for the year ended December 31, 2016, fit the description of critical accounting estimates and judgments. There were no changes in these policies during the six months ended June 30, 2017.

RESULTS OF OPERATIONS

Three and Six Months Ended June 30, 2017 and 2016

Alliance Revenue

Alliance revenue for the three months ended June 30, 2017 and 2016 was $0.2 million and $0.3 million, respectively. Alliance revenue for both the six months ended June 30, 2017 and 2016 was $0.6 million. Alliance revenue for all periods reported primarily relates to the recognition of deferred revenue on our collaboration with GSK. In November 2015, in connection with the execution of the GSK Agreement, we received a $2.5 million upfront payment that we recorded as deferred revenue. We are recognizing this deferred revenue as revenue on a straight line basis over the anticipated performance period under the GSK Agreement. In the second quarter of 2017, we revised our estimate of the anticipated performance period from the original estimate of 27 months to an updated estimate of 36 months. This change in estimate is being accounted for on a prospective basis.

Research and Development Expenses

In the table below, research and development expenses are set forth in the following categories which are discussed beneath the table:

	Three months ended June 30, (in thousands)		Percentage Increase (Decrease)	Six months ended June 30, (in thousands)		Percentage Increase (Decrease)
	2017	2016		2017	2016	
IMO-2125 external development expense	$ 3,437	$ 433	694%	$ 5,832	$ 1,607	263%
IMO-8400 external development expense	3,252	3,905	(17%)	5,681	6,043	(6%)
IMO-9200 external development expense	2	80	(98%)	6	286	(98%)
Other drug development expense	3,774	3,270	15%	7,840	6,422	22%
Basic discovery expense	1,849	2,440	(24%)	4,440	5,066	(12%)
Severance and option modification expense	5,577	—	100%	5,577	—	100%
	$ 17,891	$ 10,128	77%	$ 29,376	$ 19,424	51%

IMO-2125 External Development Expenses. These expenses include external expenses that we have incurred in connection with the development of IMO-2125 as part of our immuno-oncology program. These external expenses include payments to independent contractors and vendors for drug development activities conducted after the initiation of IMO-2125 clinical development in immuno-oncology, but exclude internal costs such as payroll and overhead expenses. We commenced clinical development of IMO-2125 as part of our immuno-oncology program in July 2015 and from July 2015 through June 30, 2017 we incurred approximately $11.2 million in IMO-2125 external development expenses as part of our immuno-oncology program, including costs associated with the preparation for and conduct of the ongoing Phase 1/2 clinical trial being conducted under our research alliance with MD Anderson to assess the safety and efficacy of IMO-2125 in combination with ipilimumab and with pembrolizumab in patients with metastatic melanoma, the manufacture of additional drug substance for use in our clinical trials and additional nonclinical studies. The $11.2 million in IMO-2125 external development expenses excludes costs incurred prior to July 2015 with respect to IMO-2125, including costs incurred for the development of IMO-2125 for the treatment of patients with chronic hepatitis C virus which we discontinued in the third quarter of 2011.

The increases in our IMO-2125 external development expenses during both the three and six months ended June 30, 2017, as compared to the 2016 periods, was primarily due to increases in costs associated with the design and planning for additional clinical trials of IMO-2125 and increased clinical activity under our Phase 1/2 clinical trial, including costs incurred with contract research organizations and drug manufacturing costs.

We expect our IMO-2125 external development expenses to increase during 2017, as compared to 2016, as we plan to continue our Phase 1/2 clinical trial being conducted under our research alliance with MD Anderson to assess the safety and efficacy of IMO-2125 in combination with ipilimumab and with pembrolizumab in patients with metastatic melanoma, conduct clinical trials of IMO-2125, work on the design and planning for additional clinical trials of IMO-2125 and develop our strategy to optimize IMO-2125, and continue manufacturing activities and nonclinical studies.

IMO-8400 External Development Expenses. These expenses include external expenses that we have incurred in connection with IMO-8400 since October 2012, when we commenced clinical development of IMO-8400. These external expenses include payments to independent contractors and vendors for drug development activities conducted after the initiation of IMO-8400 clinical development but exclude internal costs such as payroll and overhead expenses. Since October 2012, we have incurred approximately $39.9 million in IMO-8400 external development expenses through June 30, 2017, including costs associated with our Phase 1 clinical trial in healthy subjects, our Phase 2 clinical trial in patients with psoriasis, our Phase 1/2 clinical trial in patients with Waldenström's macroglobulinemia and our Phase 1/2 clinical trial in patients with DLBCL harboring the MYD88 L265P oncogenic mutation, which we discontinued in September 2016, the preparation for and conduct of our ongoing Phase 2 clinical trial in patients with dermatomyositis, the manufacture of additional drug substance for use in our clinical trials, and expenses associated with our collaboration with Abbott Molecular for the development of a companion diagnostic for identification of patients with B-cell lymphoma harboring the MYD88 L265P oncogenic mutation.

The decreases in our IMO-8400 external development expenses during both the three and six months ended June 30, 2017, as compared to the 2016 periods, was due primarily to lower costs incurred on clinical development of IMO-8400 for B-cell lymphomas, including our trials in Waldenström's macroglobulinemia and DLBCL in the 2017 periods, offset partially by spending on our ongoing Phase 2 clinical trial of IMO-8400 in patients with dermatomyositis.

We expect our IMO-8400 external development expenses during 2017 to be similar to 2016. In September 2016, we announced that we had suspended the internal clinical development of IMO-8400 for B-cell lymphomas, including our trials in Waldenström's macroglobulinemia and DLBCL. We are exploring strategic alternatives for IMO-8400 in these indications. We expect to continue to incur costs associated with IMO-8400 as we continue our ongoing Phase 2 clinical trial of IMO-8400 in patients with dermatomyositis, finish treating enrolled patients in our clinical trial of IMO-8400 in Waldenström's macroglobulinemia and wind down our clinical development of IMO-8400 in Waldenström's macroglobulinemia and DLBCL.

IMO-9200 External Development Expenses. These expenses include external expenses that we have incurred in connection with IMO-9200 since October 2014, when we commenced clinical development of IMO-9200. These external expenses include payments to independent contractors and vendors for drug development activities conducted after the initiation of IMO-9200 clinical development but exclude internal costs such as payroll and overhead expenses. We have incurred approximately $4.6 million in IMO-9200 external development expenses from October 2014 through June 30, 2017 including costs associated with our Phase 1 clinical trial in healthy subjects, the manufacture of additional drug substance for use in our clinical and nonclinical trials and additional nonclinical studies.

The decreases in IMO-9200 external development expenses during both the three and six months ended June 30, 2017, as compared to the 2016 periods, reflects lower spending on manufacturing and nonclinical toxicology. We expect our IMO-9200 external development expenses to decrease during 2017, as compared to 2016, and remain nominal going forward, as in September 2016 we determined not to proceed with the development of IMO-9200 and, in November 2016, we entered into the Vivelix Agreement, granting Vivelix worldwide rights to develop and market IMO-9200 for non-malignant gastrointestinal disorders.

Other Drug Development Expenses. These expenses include external expenses associated with preclinical development of identified compounds in anticipation of advancing these compounds into clinical development. In addition, these expenses include internal costs, such as payroll and overhead expenses, associated with preclinical development and products in clinical development. The external expenses associated with preclinical compounds include payments to contract vendors for manufacturing and the related stability studies, preclinical studies, including animal toxicology and pharmacology studies, and professional fees. Other drug development expenses also include costs associated with compounds that were previously being developed but are not currently being developed.

The increase in other drug development expenses during both the three and six months ended June 30, 2017, as compared to the 2016 periods, was primarily due to increases in external costs of preclinical programs, including toxicology studies, storage fees and awareness and education programs, in addition to higher overhead costs.

Basic Discovery Expenses. These expenses include our internal and external expenses relating to our discovery efforts with respect to our TLR-targeted programs, including agonists and antagonists of TLR3, TLR7, TLR8 and TLR9, and our 3GA program. These expenses reflect payments for laboratory supplies, external research, and professional fees, as well as payroll and overhead expenses.

The decrease in basic discovery expenses during both the three and six months ended June 30, 2017, as compared to the 2016 periods, was primarily due to lower payroll expenses, including salaries and non-cash stock-based compensation resulting from the retirement of our President of Research in May 2017 (see discussion of Severance and Option Modification Expenses below) as well as lower overhead expenses.

We do not know if we will be successful in developing any drug candidate from our research and development programs. At this time, and without knowing the results from our ongoing clinical trial of IMO-8400, our ongoing clinical trial of IMO-2125, and our ongoing development of compounds in our 3GA program, we cannot reasonably estimate or know the nature, timing, and costs of the efforts that will be necessary to complete the remainder of the development of, or the period, if any, in which material net cash inflows may commence from, any drug candidate from our research and development programs. Moreover, the clinical development of any drug candidate from our research and development programs is subject to numerous risks and uncertainties associated with the duration and cost of clinical trials, which vary significantly over the life of a project as a result of unanticipated events arising during clinical development.

Severance and Option Modification Expenses. These expenses include charges for severance benefits provided pursuant to a separation agreement entered into in April 2017 in connection with the resignation of our former President of Research, effective May 31, 2017. Of the $5.6 million incurred, $1.3 million relates to severance pay in the form of salary continuation payments which will be paid over a two-year period through May 31, 2019 and a pro-rated 2017 bonus payment, and $4.3 million relates to non-cash stock-based compensation expense resulting from modifications to previously issued stock option awards.

General and Administrative Expenses

General and administrative expenses consist primarily of payroll, stock-based compensation expense, consulting fees and professional legal fees associated with our patent applications and maintenance, our corporate regulatory filing requirements, our corporate legal matters, and our business development initiatives.

General and administrative expenses increased by $0.1 million, or 3%, from $3.8 million in the three months ended June 30, 2016 to $3.9 million in the three months ended June 30, 2017 and increased by $0.3 million, or 4%, from $7.7 million in the six months ended June 30, 2016 to $8.0 million in the six months ended June 30, 2017. The increases for both the three- and six-month periods was primarily due to increases in legal and professional fees, patent preparation fees and commercial research costs.

We expect general and administrative expenses to increase during 2017, as compared to 2016, due to additional headcount to support our drug development programs.

Interest Income

Interest income for both the three months ended June 30, 2017 and 2016 was $0.1 million. Interest income for the six months ended June 30, 2017 and 2016 was $0.3 million and $0.2 million. The $0.1 million increase during the six months ended June 30, 2017 over the 2016 period was primarily the result of an increase in average investment balances during the 2017 period resulting from our follow-on underwritten public offering in October 2016.

Net Loss

As a result of the factors discussed above, our net loss was $21.5 million for the three months ended June 30, 2017, compared to $13.5 million for the three months ended June 30, 2016 and $36.5 million for the six months ended June 30, 2017, compared to $26.3 million for the six months ended June 30, 2016. Since January 1, 2001, we have primarily been involved in the development of our TLR pipeline. From January 1, 2001 through June 30, 2017, we incurred losses of $314.8 million. We also incurred net losses of $260.2 million prior to December 31, 2000 during which time we were primarily involved in the development of earlier generation antisense technology. Since our inception, we had an accumulated deficit of $575.0 million through June 30, 2017. We expect to continue to incur substantial operating losses in the future.

LIQUIDITY AND CAPITAL RESOURCES

Sources of Liquidity

We require cash to fund our operating expenses and to make capital expenditures. Historically, we have funded our cash requirements primarily through the following:

- sale of common stock, preferred stock and warrants;
- exercise of warrants;
- debt financing, including capital leases;
- license fees, research funding and milestone payments under collaborative and license agreements; and
- interest income.

Cash Flows

Six Months Ended June 30, 2017

As of June 30, 2017, we had $77.2 million in cash, cash equivalents and investments, a net decrease of $31.8 million from December 31, 2016.

Net cash used in operating activities totaled $31.9 million during the six months ended June 30, 2017, reflecting our $36.5 million net loss for the period, as adjusted for non-cash income and expenses, including stock-based compensation, depreciation and amortization expense and accretion of investment premiums. Net cash used in operating activities also reflects changes in our prepaid expenses, accounts payable, accrued expenses and other liabilities and the recognition of deferred revenue.

The $25.6 million net cash provided by investing activities during the six months ended June 30, 2017 reflects proceeds from the maturity of $25.7 million of available-for-sale securities, partially offset by payments for the purchase of $0.1 million in property and equipment.

The $0.3 million net cash providing by financing activities during the six months ended June 30, 2017 reflects $0.4 million in net proceeds from the exercise of common stock warrants and options and employee stock purchases under our 1995 Employee Stock Purchase Plan, or ESPP, partially offset by payments on our note payable and capital leases payable totaling $0.1 million.

Six Months Ended June 30, 2016

As of June 30, 2016, we had approximately $64.1 million in cash, cash equivalents and investments, a net decrease of approximately $23.1 million from December 31, 2015.

Net cash used in operating activities totaled approximately $22.5 million during the six months ended June 30, 2016, reflecting our $26.3 million net loss for the period, as adjusted for non-cash income and expenses, including stock-based compensation, depreciation and amortization expense and accretion of investment premiums. Net cash used in operating activities also reflects changes in our prepaid expenses, accounts payable, accrued expenses and other liabilities and the recognition of deferred revenue.

The $20.1 million net cash provided by investing activities during the six months ended June 30, 2016 reflects proceeds from the maturity of approximately $21.3 million of available-for-sale securities and proceeds from the sale of approximately $2.0 million of available-for-sale securities, partially offset by the purchase of approximately $2.9 million of available-for-sale securities and payments for the purchase of approximately $0.3 million in property and equipment.

The $0.1 million net cash used in financing activities during the six months ended June 30, 2016 reflects $0.1 million in payments on our note payable and capital leases, partially offset by less than $0.1 million in net proceeds from employee stock purchases under our ESPP.

Funding Requirements

We have incurred operating losses in all fiscal years since our inception except 2002, 2008 and 2009, and we had an accumulated deficit of $575.0 million at June 30, 2017. We expect to incur substantial operating losses in future periods. These losses, among other things, have had and will continue to have an adverse effect on our stockholders' equity, total assets and working capital. To date, we have received no revenues from the sale of drugs and substantially all of our revenues have been from collaboration and license agreements. We have devoted substantially all of our efforts to research and development, including clinical trials, and we have not completed development of any drugs. Because of the numerous risks and uncertainties associated with developing drugs, we are unable to predict the extent of any future losses, whether or when any of our products will become commercially available or when we will become profitable, if at all.

We do not expect to generate significant additional funds internally until we successfully complete development and obtain marketing approval for products, either alone or in collaboration with third parties, which we expect will take a number of years. In addition, we have no committed external sources of funds.

We had cash, cash equivalents and investments of approximately $77.2 million at June 30, 2017. We believe that, based on our current operating plan, our existing cash, cash equivalents and investments will enable us to fund our operations into the fourth of 2018. Specifically, we believe our available funds will be sufficient to enable us to:

- complete the dose-finding portion of our ongoing Phase 1/2 clinical trial in IMO-2125 in combination with ipilimumab or pembrolizumab in anti-PD1 refractory metastatic melanoma and continue enrollment in the Phase 2 portion of this trial;
- prepare for the initiation of a pivotal Phase 3 clinical trial of IMO-2125 in combination with a checkpoint inhibitor for the treatment of anti-PD1 refractory metastatic melanoma;
- continue to enroll patients in our Phase 1 intra-tumoral monotherapy clinical trial of IMO-2125 in multiple refractory tumor types;
- initiate a Phase 2 multi-arm clinical trial of IMO-2125 in combination with a checkpoint inhibitor in multiple refractory tumor types;
- complete our ongoing Phase 2 clinical trial of IMO-8400 in patients with dermatomyositis; and
- submit an IND and initiate a Phase 1 human clinical proof-of-concept trial of IDRA-008.

We expect that we will need to raise additional funds in order to conduct any other clinical development of our TLR drug candidates or to conduct any other development of our 3GA technology, and to fund our operations. We are seeking and expect to continue to seek additional funding through collaborations, the sale or license of assets or financings of equity or debt securities. We believe that the key factors that will affect our ability to obtain funding are:

- the results of our clinical and preclinical development activities in our rare disease program, our immuno-oncology program and our 3GA program, and our ability to advance our drug candidates and 3GA technology on the timelines anticipated;
- the cost, timing, and outcome of regulatory reviews;
- competitive and potentially competitive products and technologies and investors' receptivity to our drug candidates and the technology underlying them in light of competitive products and technologies;
- the receptivity of the capital markets to financings by biotechnology companies generally and companies with drug candidates and technologies such as ours specifically; and
- our ability to enter into additional collaborations with biotechnology and pharmaceutical companies and the success of such collaborations.

In addition, increases in expenses or delays in clinical development may adversely impact our cash position and require additional funds or cost reductions.

Financing may not be available to us when we need it or may not be available to us on favorable or acceptable terms or at all. We could be required to seek funds through collaborative alliances or through other means that may require us to relinquish rights to some of our technologies, drug candidates or drugs that we would otherwise pursue on our own. In addition, if we raise additional funds by issuing equity securities, our then existing stockholders will experience dilution. The terms of any financing may adversely affect the holdings or the rights of existing stockholders. An equity financing that involves existing stockholders may cause a concentration of ownership. 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, and are likely to include rights that are senior to the holders of our common stock. Any additional debt or equity financing may contain terms which are not favorable to us or to our stockholders, such as liquidation and other preferences, or liens or other restrictions on our assets. As discussed in Note 10 to the financial statements appearing in our Annual Report on Form 10-K for the year ended December 31, 2016 that was filed with the SEC, additional equity financings may also result in cumulative changes in ownership over a three-year period in excess of 50% which would limit the amount of net operating loss and tax credit carryforwards that we may utilize in any one year.

If we are unable to obtain adequate funding on a timely basis or at all, we will be required to terminate, modify or delay preclinical or clinical trials of one or more of our drug candidates, significantly curtail or terminate discovery or development programs for new drug candidates or relinquish rights to portions of our technology, drug candidates and/or products.

Contractual Obligations

During the six months ended June 30, 2017, there were no material changes outside the ordinary course of our business to our contractual obligations as disclosed in our Annual Report on Form 10-K for the year ended December 31, 2016.

Off-Balance Sheet Arrangements

As of June 30, 2017, we had no off-balance sheet arrangements.

New Accounting Pronouncements

New accounting pronouncements are discussed in Note 2 in the notes to the financial statements in this Quarterly Report on Form 10-Q.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK.

As of June 30, 2017, all material assets and liabilities are in U.S. dollars, which is our functional currency.

We maintain investments in accordance with our investment policy. The primary objectives of our investment activities are to preserve principal, maintain proper liquidity to meet operating needs and maximize yields. Although our investments are subject to credit risk, our investment policy specifies credit quality standards for our investments and limits the amount of credit exposure from any single issue, issuer or type of investment. We regularly review our investment holdings in light of the then current economic environment. At June 30, 2017, all of our invested funds were invested in a money market fund, classified in cash and cash equivalents on the accompanying balance sheet, and municipal bonds, classified in short-term investments on the accompanying balance sheet.

Based on a hypothetical ten percent adverse movement in interest rates, the potential losses in future earnings, fair value of risk sensitive financial instruments, and cash flows are immaterial, although the actual effects may differ materially from the hypothetical analysis.

ITEM 4. CONTROLS AND PROCEDURES.

(a) *Evaluation of Disclosure Controls and Procedures.* Our management, with the participation of our principal executive officer and principal financial officer, evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) as of June 30, 2017. In designing and evaluating our disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and our management necessarily applied its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on this evaluation, our principal executive officer and principal financial officer concluded that as of June 30, 2017, our disclosure controls and procedures were (1) designed to ensure that material information relating to us is made known to our principal executive officer and principal financial officer by others, particularly during the period in which this report was prepared, and (2) effective, in that they provide reasonable assurance that information required to be disclosed by us in the reports 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.

(b) *Changes in Internal Controls*. No change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) occurred during the fiscal quarter ended June 30, 2017 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II — OTHER INFORMATION

ITEM 1A. RISK FACTORS.

Investing in our securities involves a high degree of risk. In addition to the other information contained elsewhere in this report, you should carefully consider the factors discussed in "Part I, Item 1A. Risk Factors" in our most recent Annual Report filed on Form 10-K, 2016, and any updates thereto contained in the Quarterly Report on form 10-Q for the period ending March 31, 2017, which could materially affect our business, financial condition or future results.

ITEM 6. EXHIBITS.

The list of Exhibits filed as part of this Quarterly Report on Form 10-Q is set forth on the Exhibit Index immediately preceding such Exhibits and is incorporated herein by this reference.

SIGNATURES

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

IDERA PHARMACEUTICALS, INC.

Date: August 7, 2017

/s/ Vincent J. Milano

Vincent J. Milano
President and Chief Executive Officer
(Principal Executive Officer)

Date: August 7, 2017

/s/ Louis J. Arcudi, III

Louis J. Arcudi, III
Chief Financial Officer
(Principal Financial and Accounting Officer)

Exhibit Index

Exhibit No.		Description
*10.1		Separation Agreement and Release of Claims dated April 18, 2017 between Idera Pharmaceuticals, Inc. and Sudhir Agrawal
10.2	╬	Amendment to Idera Pharmaceuticals, Inc. 2013 Stock Incentive Plan, as amended (incorporated by reference to Exhibit 10.1 to our Current Report on Form 8-K, filed on June 9, 2017)
10.3	╬	Idera Pharmaceuticals, Inc. 2017 Employee Stock Purchase Plan (incorporated by reference to Exhibit 10.2 to our Current Report on Form 8-K, filed on June 9, 2017)
*31.1		Certification of Chief Executive Officer pursuant to Exchange Act Rules 13a-14 and 15d-14, as adopted pursuant to Section 302 of Sarbanes-Oxley Act of 2002.
*31.2		Certification of Chief Financial Officer pursuant to Exchange Act Rules 13a-14 and 15d-14, as adopted pursuant to Section 302 of Sarbanes-Oxley Act of 2002.
*32.1		Certification of Chief Executive Officer 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 Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS		XBRL Instance Document
101.SCH		XBRL Taxonomy Extension Schema
101.CAL		XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF		XBRL Taxonomy Extension Definition Linkbase Document
101.LAB		XBRL Taxonomy Extension Labels Linkbase Document
101.PRE		XBRL Taxonomy Extension Presentation Linkbase Document

* Filed or furnished, as applicable, herewith.
╬ Indicates a management contract or compensatory plan or arrangement.

SEPARATION AGREEMENT AND RELEASE OF CLAIMS

This Separation Agreement and Release of Claims (the "Agreement") is made as of the Effective Date (as defined below) between Idera Pharmaceuticals, Inc. (the "Company") and Sudhir Agrawal ("Executive") (together, the "Parties").

WHEREAS, the Company and Executive are parties to the Employment Agreement dated as of October 19, 2005, as amended December 17, 2008 and December 1, 2014 (together, the "Employment Agreement"), under which Executive currently serves as President of Research of the Company;

WHEREAS, Executive joined the Company as a founding scientist in 1990 and has served in various leadership roles at the Company since then;

WHEREAS, the Parties have decided to end their employment relationship resulting in the Separation of the Executive from the Company and wish to establish mutually agreeable terms for Executive's orderly transition and separation from the Company effective on the Separation Date (as defined below); and

WHEREAS, the Parties agree that the payments, benefits and rights set forth in this Agreement shall be the exclusive payments, benefits and rights due Executive with respect to his Separation of employment from the Company;

NOW, THEREFORE, in consideration of the mutual covenants and agreements contained herein, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties hereby agree as follows:

1. **Separation Date; Post-Employment Arrangement** –

(a) Executive's effective date of separation from employment with the Company as a result of his Separation will be May 31, 2017 (the "Separation Date"). Executive hereby resigns, as of the Separation Date, from his employment with the Company and as an officer and a member of the board of directors of the Company. Executive agrees to execute and deliver any documents reasonably necessary to effectuate such resignation, including a letter of resignation to the chairman of the board of directors of the Company, provided that nothing in any such document is inconsistent with any terms set forth in this Agreement. As of the Separation Date, all salary payments from the Company will cease, and any benefits Executive had as of the Separation Date under Company-provided benefit plans, programs, or practices will terminate, except as required by federal or state law or as otherwise specifically set forth in this Agreement.

(b) Upon the Separation Date, the Company and Executive shall enter into a consulting agreement in the form attached to this Agreement as Attachment A (the "Scientific Advisor Agreement").

(c) Within thirty (30) days following the Separation Date, the Company shall pay to Executive in one lump sum an amount equal to the sum of (i) any salary earned by

Executive through the Separation Date but not previously paid, and (ii) reimbursement of any reimbursable expenses incurred by Executive through the Separation Date but not previously reimbursed, less all applicable taxes and withholdings.

2. **Severance Benefits** – In return for Executive's execution of this Agreement as set forth in Section 15 below and not revoking this Agreement, and subject to Executive's compliance with all terms hereof, the Company will provide Executive with the following severance benefits (the "Severance Benefits"):

(a) Salary Continuation – Commencing with the first regular payroll date after the Separation Date (the "Payment Commencement Date"), the Company will, for the period beginning on the Payment Commencement Date and ending on May 31, 2019 (the "Severance Period"), provide Executive with severance pay in the form of salary continuation payments at Executive's current annualized base salary rate of five hundred eighty eight thousand one hundred dollars ($588,100), less all applicable taxes and withholdings, and in accordance with the Company's regular payroll practices.

(b) Group Health Insurance – Provided the Executive is eligible for and timely elects to continue receiving group health and dental insurance under the law known as "COBRA", the Company will pay on Executive's behalf, until the earliest of (x) the last day of the Severance Period, (y) the date that Executive is no longer eligible for COBRA continuation coverage, and (z) the end of the calendar month in which Executive becomes eligible to enroll in group health insurance through another employer (as applicable, the "COBRA Contribution Period"), the share of the premium for such coverage that is paid by the Company for active and similarly-situated employees who receive the same type of coverage. Should Executive cease during the Severance Period to be eligible to continue receiving group health insurance under COBRA for reasons other than becoming enrolled in another employer's group health plan, the Company shall provide Executive with an additional monthly payment in an amount equal to the monthly employer premium paid during the final month of his COBRA continuation coverage until the earlier of (x) the last day of the Severance Period and (y) the end of the calendar month in which Executive becomes eligible to enroll in group health or dental insurance coverage under another employer's benefit plan(s), as applicable. For the avoidance of doubt, the Company's assistance with health coverage costs shall in no event extend beyond the Severance Period. Executive shall immediately inform the Company in writing if he becomes eligible to enroll in group health and/or dental insurance through another employer prior to the end of the Severance Period.

(c) Disability and Life Insurance – Until the earlier of (x) the last day of the Severance Period and (y) the date Executive becomes eligible through other employment for disability and/or life insurance, the Company will reimburse Executive for the costs of his obtaining life and/or disability insurance substantially comparable to such benefits as were being provided to him by the Company immediately prior to the Separation Date. Executive shall immediately inform the Company in writing if he becomes eligible for disability and/or life insurance through another employer prior to the end of the Severance Period; provided, however, that if the disability and/or life insurance for which Executive is eligible through the other employer, as applicable, is not substantially

comparable, the Company shall reimburse Executive for the cost of supplemental coverage that would render it substantially comparable.

(d) Pro-Rata 2017 Bonus – On the Payment Commencement Date, the Company shall provide Executive with a pro-rated 2017 bonus payment of one hundred twenty one thousand six hundred forty eight dollars ($121,648), less all applicable taxes and withholdings.

Equity – Any stock options or other equity incentive awards previously granted to Executive by the Company and held by Executive on the Separation Date shall, to the extent not already vested as of the Separation Date, vest to the extent such options or equity incentive awards, as applicable, would have vested had Executive continued to be an employee of the Company through October 19, 2019. Executive shall be permitted to exercise any such vested stock options until the earlier of the expiration of such stock option or October 19, 2022; provided that such provision shall not affect and shall be subject to the Option Limitation Provisions (as set forth in the Employment Agreement).

Reimbursement of Legal Fees – upon presentation of an invoice evidencing such charges, the Company agrees to reimburse Executive up to eight thousand dollars ($8,000) in legal fees associated with the review, negotiation and execution of this Agreement within five days after the Effective Date or fifteen days after receipt of such invoice whichever is later. The Company understands that the invoice may redact narrative entries to protect the attorney-client privilege.

Other than the Severance Benefits, Executive will not be eligible for, nor shall he have a right to receive, any payments or benefits from the Company following the Separation Date, other than reimbursement for any outstanding business expenses in accordance with Company policy and any payments that may become due pursuant to Section 9 of the Employment Agreement. The Company agrees to an hourly rate of $500 for work to be performed by Executive pursuant to Section 9 of the Employment Agreement.

3. **Release of Claims** – In exchange for the consideration set forth in this Agreement, which Executive acknowledges he would not otherwise be entitled to receive, Executive hereby fully, forever, irrevocably and unconditionally releases, remises and discharges the Company, its affiliates, subsidiaries, parent companies, predecessors, and successors, and all of its and their respective past and present officers, directors, stockholders, investors, partners, members, managers, employees, agents, representatives, plan administrators, attorneys, insurers and fiduciaries (each in their individual and corporate capacities) (collectively, the "Released Parties") from any and all claims, complaints, demands, actions, causes of action, suits, rights, debts, sums of money, costs, accounts, reckonings, covenants, contracts, agreements, promises, doings, omissions, damages, executions, obligations, liabilities, and expenses (including attorneys' fees and costs), of every kind and nature that Executive ever had or now has against any or all of the Released Parties, whether known or unknown, including, but not limited to, any and all claims arising out of or relating to Executive's employment with, and separation from, and/or ownership of securities of, the Company, including, but not limited to, all claims under Title VII of the Civil Rights Act of 1964, 42 U.S.C. § 2000e et seq., the Americans With Disabilities Act

of 1990, 42 U.S.C. § 12101 et seq., the Age Discrimination in Employment Act, 29 U.S.C. § 621 et seq., the Genetic Information Nondiscrimination Act of 2008, 42 U.S.C. § 2000ff et seq., the Family and Medical Leave Act, 29 U.S.C. § 2601 et seq., the Worker Adjustment and Retraining Notification Act ("WARN"), 29 U.S.C. § 2101 et seq., the Rehabilitation Act of 1973, 29 U.S.C. § 701 et seq., Executive Order 11246, Executive Order 11141, the Fair Credit Reporting Act, 15 U.S.C. § 1681 et seq., and the Employee Retirement Income Security Act of 1974 ("ERISA"), 29 U.S.C. § 1001 et seq., all as amended; all claims arising out of the Massachusetts Fair Employment Practices Act, Mass. Gen. Laws ch. 151B, § 1 et seq., the Massachusetts Wage Act, Mass. Gen. Laws ch. 149, § 148 et seq. (Massachusetts law regarding payment of wages and overtime), the Massachusetts Civil Rights Act, Mass. Gen. Laws ch. 12, §§ 11H and 11I, the Massachusetts Equal Rights Act, Mass. Gen. Laws. ch. 93, § 102 and Mass. Gen. Laws ch. 214, § 1C, the Massachusetts Labor and Industries Act, Mass. Gen. Laws ch. 149, § 1 et seq., Mass. Gen. Laws ch. 214, § 1B (Massachusetts right of privacy law), the Massachusetts Maternity Leave Act, Mass. Gen. Laws ch. 149, § 105D, and the Massachusetts Small Necessities Leave Act, Mass. Gen. Laws ch. 149, § 52D, all as amended; all common law claims including, but not limited to, actions in defamation, intentional infliction of emotional distress, misrepresentation, fraud, wrongful discharge, and breach of contract (including, without limitation, all claims arising out of or related to the Employment Agreement); all claims to any non-vested ownership interest in the Company, contractual or otherwise; all state and federal whistleblower claims to the maximum extent permitted by law; and any claim or damage arising out of Executive's employment with and/or separation from the Company (including a claim for retaliation) under any common law theory or any federal, state or local statute or ordinance not expressly referenced above; *provided, however, that nothing in this release of claims prevents Executive from filing a charge with, cooperating with, or participating in any investigation or proceeding before, the Equal Employment Opportunity Commission or a state fair employment practices agency (except that Executive acknowledges that he may not recover any monetary benefits in connection with any such charge, investigation, or proceeding, and Executive further waives any rights or claims to any payment, benefit, attorneys' fees or other remedial relief in connection with any such charge, investigation or proceeding).* Further, nothing herein shall prevent Executive from bringing claims to enforce this Agreement, or release (i) any rights Executive may have under the Company's certificate of incorporation, by-laws, insurance and/or any indemnification agreement between him and the Company (and/or otherwise under law) for indemnification and/or defense as an employee, officer or director of the Company for his service to the Company (recognizing that such indemnification and/or defense is not guaranteed by this Agreement and shall be governed by the instrument or law, if any, providing for such indemnification and/or defense), (ii) any rights Executive may have arising from any vested stock options; (iii) any rights Executive may have to vested pension or 401(K) benefits or interests under any ERISA-Covered benefit plan (excluding severance) provided by the Company, or (iv) any rights or claims that cannot be waived by law, including claims for unemployment benefits. In exchange for and in order to receive the consideration set forth in this Agreement, which Executive acknowledges he would not otherwise be entitled to receive, Executive further agrees to execute on the Separation Date, the release set forth in Attachment B.

4. **Continuing Obligations** – Executive acknowledges and reaffirms his obligation, to the extent permitted by law and except as otherwise permitted by Section 8 below, to keep confidential and not to use or disclose any and all non-public information concerning the Company that Executive acquired during the course of his employment with the Company, including, but not limited to, any non-public information concerning the Company's business affairs, business prospects, and financial condition. Executive further acknowledges and reaffirms his ongoing obligations pursuant to Sections 7-10 of the Employment Agreement (*i.e.*, those with respect to Proprietary Information, Company Documents and Materials, Non-Solicitation, Non-Competition and Assignment of Rights), which remain in full force and effect and which survive his separation from employment with the Company, provided however that Executive agrees that the period for which Executive agrees to be bound by the Non-Competition and Non-Solicitation provision of the Employment Agreement shall be extended by one year from that set forth in the Employment Agreement so that the restrictive period is now two (2) years from the Separation Date (the "Non-Competition Period"). Nothing in the provisions of Sections 7-10 of the Employment Agreement, however, shall be interpreted as preventing Executive from pursuing opportunities of any kind or nature involving the use of nucleic acids in CRISPR and/or the use of nucleic acids to target RNA by non-catalytic MoA, and/or from utilizing technology claimed in expired patents owned or controlled by Idera so long as such technology is not employed to develop compounds to targets currently under development or consideration by Idera. Furthermore, Executive agrees that during the Non-Competition Period, if Idera identifies any additional targets to Executive after the Separation Date, then Executive shall be prohibited from developing compounds to such newly identified targets utilizing Idera's gene silencing oligonucleotides (GSOs) or utilizing Idera's proprietary compounds for toll like receptor (TLR) modulation, and shall cease any such activity associated therewith that may already be in progress, unless otherwise agreed to in writing by Idera; provided, however, that any targets identified after the Separation Date hereunder must be subject to a bona fide research and development plan at Idera for these restrictions to apply. Such newly identified target shall be treated as confidential information under Section 8 of this Agreement. For the avoidance of doubt, the aforementioned prohibition regarding targets identified after the Separation date shall not prevent Executive from working on such targets utilizing technologies other than Idera's GSOs or TLR modulation.

5. **Non-Disparagement** – Executive understands and agrees that, to the extent permitted by law and except as otherwise permitted by Section 9 below, he will not, in public or private, make any false, disparaging, derogatory or defamatory statements to any person or entity, including, but not limited to, any media outlet, industry group, financial institution or current or former employee, board member, Advisor, client or customer of the Company, regarding the Company or any of the other Released Parties, or regarding the Company's business affairs, business prospects, or financial condition. The Company agrees that it will not, in public or private, make any false, disparaging, derogatory or defamatory statements to any person or entity, including, but not limited to, any media outlet, industry group, financial institution or current or former employee, board member, Advisor, client or customer of the Company, regarding Executive. Nothing herein, however, shall be construed as preventing Executive or the Company from making

truthful disclosures in any litigation or arbitration or as may be compelled or required by law.

6. **Press Release –** The Company and Executive will jointly draft an appropriate press release and Form 8-K to announce Executive's separation from the Company.

7. **Return of Company Property** – Executive confirms that he has returned to the Company all keys, files, records (and copies thereof), equipment (including, but not limited to, computer hardware, software and printers, wireless handheld devices, cellular phones, tablets, etc.), Company identification and any other Company-owned property in his possession or control and that he has left intact all electronic Company documents, including but not limited to those that he developed or helped to develop during his employment. Executive further confirms that he has cancelled all accounts for his benefit, if any, in the Company's name, including but not limited to, credit cards, telephone charge cards, cellular phone and/or wireless data accounts and computer accounts. Notwithstanding the foregoing Executive shall be entitled to keep any and all Company documents in the public domain and any Company documents necessary to any work to be performed pursuant to Section 9 of the Employment Agreement. Executive shall further have the option to destroy rather than return any Company documents required to be returned under this Agreement. Further, Executive may keep his Company issued laptop computer and cellphone subject to the Company removing all Company related information from each.

8. **Confidentiality** – Executive understands and agrees that, to the extent permitted by law and except as otherwise permitted by Section 9 below, the contents of the negotiations and discussions resulting in this Agreement, shall be maintained as confidential by Executive and his agents and representatives and shall not be disclosed except as otherwise agreed to in writing by the Company; provided, however, that nothing herein shall be construed as preventing Executive from making truthful disclosures in any litigation or arbitration.

9. **Scope of Disclosure Restrictions** – Nothing in this Agreement, or in the Employment Agreement, Scientific Advisor Agreement or elsewhere, prohibits Executive from communicating with government agencies about possible violations of federal, state, or local laws or otherwise providing information to government agencies, filing a complaint with government agencies, or participating in government agency investigations or proceedings. Executive is not required to notify the Company of any such communications; provided, however, that nothing herein authorizes the disclosure of information Executive obtained through a communication that was subject to the attorney-client privilege. Further, notwithstanding Executive's confidentiality and nondisclosure obligations, Executive is hereby advised as follows pursuant to the Defend Trade Secrets Act: "An individual shall not be held criminally or civilly liable under any Federal or State trade secret law for the disclosure of a trade secret that (A) is made (i) in confidence to a Federal, State, or local government official, either directly or indirectly, or to an attorney; and (ii) solely for the purpose of reporting or investigating a suspected violation of law; or (B) is made in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal. An individual who files a lawsuit for

retaliation by an employer for reporting a suspected violation of law may disclose the trade secret to the attorney of the individual and use the trade secret information in the court proceeding, if the individual (A) files any document containing the trade secret under seal; and (B) does not disclose the trade secret, except pursuant to court order."

10. **Cooperation** – Executive agrees that, to the extent permitted by law, he shall cooperate fully with the Company in the investigation, defense or prosecution of any claims or actions which already have been brought, are currently pending, or which may be brought in the future against the Company by a third party or by or on behalf of the Company against any third party, whether before a state or federal court, any state or federal government agency, or a mediator or arbitrator. Executive's full cooperation in connection with such claims or actions shall include, but not be limited to, being available to meet with the Company's counsel, at reasonable times and locations designated by the Company, to investigate or prepare the Company's claims or defenses, to prepare for trial or discovery or an administrative hearing, mediation, arbitration or other proceeding and to act as a witness when requested by the Company. The Company shall reimburse Executive for expenses reasonably incurred in connection with such matters, including travel expenses and legal expenses if Executive is required to obtain separate counsel. Executive further agrees that, to the extent permitted by law, he will notify the Company promptly in the event that he is served with a subpoena (other than a subpoena issued by a government agency), or in the event that he is asked to provide a third party (other than a government agency) with information concerning any actual or potential complaint or claim against the Company.

11. **Business Expenses and Final Compensation** – Except with respect to reimbursement for expenses Executive submitted in accordance with Company policy prior to the Separation Date but that are not yet due to be paid in accordance with Company policy,Executive acknowledges that he has been reimbursed by the Company for all business expenses incurred in conjunction with the performance of his employment and that no other reimbursements are owed to him. Executive acknowledges that he has received all compensation due to him from the Company, including, but not limited to, all wages, bonuses and accrued, unused vacation time, and that, other than pursuant to Section 9 of the Employment Agreement, he is not eligible or entitled to receive any additional payments or consideration from the Company beyond that provided for in Section 2 of this Agreement.

12. **Amendment and Waiver** – This Agreement shall be binding upon the Parties and may not be modified in any manner, except by an instrument in writing of concurrent or subsequent date signed by duly authorized representatives of the Parties. This Agreement is binding upon and shall inure to the benefit of the Parties and their respective agents, assigns, heirs, executors/administrators/personal representatives, and successors. No delay or omission by the Company in exercising any right under this Agreement shall operate as a waiver of that or any other right. A waiver or consent given by the Company on any one occasion shall be effective only in that instance and shall not be construed as a bar to or waiver of any right on any other occasion.

13. **Validity** – Should any provision of this Agreement be declared or be determined by any court of competent jurisdiction to be illegal or invalid, the validity of the remaining parts, terms or provisions shall not be affected thereby and said illegal or invalid part, term or provision shall be deemed not to be a part of this Agreement.

14. **Nature of Agreement –** Both Parties understand and agree that this Agreement has been reached in light of Executive's separation and does not constitute an admission of liability or wrongdoing on the part of the Company or Executive.

15. **Time for Consideration and Revocation –**Executive understands that this Agreement shall be of no force or effect, and that he shall not be eligible for the consideration described herein, unless he signs and returns this Agreement to Idera and does not revoke his acceptance in the subsequent seven (7) day period following his execution of this Agreement (the day immediately following expiration of such revocation period, the "Effective Date").

16. **Acknowledgments –** Executive acknowledges that he has been given at least twenty-one (21) days to consider this Agreement, and that the Company is hereby advising him to consult with an attorney of his own choosing prior to signing this Agreement. Executive further acknowledges and agrees that any changes made to this Agreement following his initial receipt of this Agreement, whether material or immaterial, did not re-start or affect in any manner the original twenty-one (21) day consideration period. Executive understands that he may revoke this Agreement for a period of seven (7) days after he signs it by notifying the Company in writing, and this Agreement shall not be effective or enforceable until the expiration of this seven (7) day revocation period. Executive understands and agrees that by entering into this Agreement he will be waiving any and all rights or claims he might have under the Age Discrimination in Employment Act, as amended by the Older Workers Benefit Protection Act, and that he has received consideration beyond that to which he was previously entitled.

17. **Voluntary Assent –** Executive affirms that no other promises or agreements of any kind have been made to or with Executive by any person or entity whatsoever to cause him to sign this Agreement, and that he fully understands the meaning and intent of this Agreement. Executive further states and represents that he has carefully read this Agreement, understands the contents herein, freely and voluntarily assents to all of the terms and conditions hereof, and signs his name of his own free act.

18. **Applicable Law** – This Agreement shall be interpreted and construed by the laws of the Commonwealth of Massachusetts, without regard to conflict of laws provisions. Executive hereby irrevocably submits to and acknowledges and recognizes the jurisdiction of the courts of the Commonwealth of Massachusetts, or if appropriate, a federal court located in the Commonwealth of Massachusetts (which courts, for purposes of this Agreement, are the only courts of competent jurisdiction), over any suit, action or other proceeding arising out of, under or in connection with this Agreement or the subject matter hereof. The Company and Executive each hereby irrevocably waives any right to a trial by jury in any action, suit or other legal proceeding arising under or relating to this Agreement or Executive's employment with or separation from the Company.

19. **Entire Agreement** – This Agreement contains and constitutes the entire understanding and agreement between the Parties hereto with respect to Executive's separation from the Company, severance benefits and the settlement of claims against the Company, and cancels all previous oral and written negotiations, agreements, commitments and writings in connection therewith; provided, however, that nothing in this Section shall modify, cancel or supersede Executive's obligations set forth in Section 4 above;**.**

20. **Tax Acknowledgement** – In connection with the Severance Benefits provided to Executive pursuant to this Agreement, the Company shall withhold and remit to the tax authorities the amounts required under applicable law, and Executive shall be responsible for all applicable taxes owed by him with respect to such Severance Benefits under applicable law. Executive acknowledges that he is not relying upon the advice or representation of the Company with respect to the tax treatment of any of the Severance Benefits set forth in this Agreement.

21. **Section 409A** - This Agreement, and all payments hereunder, are intended to be exempt from, or if not so exempt, to comply with the requirements of, Section 409A of the Internal Revenue Code of 1986, as amended, and the guidance issued thereunder ("Section 409A"), and this Agreement shall be interpreted and administered accordingly. Notwithstanding anything to the contrary in this Agreement, if at the time of Executive's termination of employment, he is a "specified employee" as defined under Section 409A, any and all amounts payable hereunder on account of such termination of employment that would (but for this provision) be payable within six (6) months following the Separation Date, shall instead be paid on the next business day following the expiration of such six (6) month period or, if earlier, upon Executive's death; except to the extent of amounts that do not constitute a deferral of compensation within the meaning of Treasury regulation Section 1.409A – 1(b) or other amounts or benefits that are exempt from or otherwise not subject to the requirements of Section 409A. For purposes of this Agreement, whether or not a termination of employment has occurred shall be determined consistently with Section 409A. In addition, each payment made pursuant to the Agreement shall be treated as a separate payment and the right to a series of installment payments hereunder is to be treated as a right to a series of separate payments.

22. **Assignment; Successors and Assigns** – Neither the Company nor Executive may make any assignment of this Agreement or any interest herein, by operation of law or otherwise, without the prior written consent of the other party; provided, however, that the Company may assign its rights under this Agreement without the consent of the Executive in the event the Company shall effect a reorganization, consolidate with or merge into any other corporation, partnership, organization or other entity, or transfer all or substantially all of its properties or assets to any other corporation, partnership, organization or other entity ("Change of Control"); provided further, however, that, in the event of a Change of Control, the balance of any amounts due to Executive under Section 2(a) of this Agreement shall be accelerated and due in a lump sum to be paid to Executive immediately prior to the closing of any event that constitutes a Change of Control. This Agreement shall be binding upon each of the parties and upon their respective heirs, administrators, representatives, executors, successors and assigns, and shall inure to the benefit of each party and to their heirs, administrators, representatives, executors,

successors and assigns. Any payments due to Executive under the terms of this Agreement (excluding payments relating to health, disability and life insurance under Sections 2(b) and (c)) shall, in the event of Executive's death, be payable to Executive's estate as directed by the administrator or executor of his estate in a single, lump sum payment as soon as practicable (but in an event within ninety (90) days) following Executive's death.

23. **Indemnification** – The Company shall indemnify Executive to the fullest extent permitted by the Company's certificate of incorporation, by-laws, insurance and/or any indemnification agreement between him and the Company, in the event he was, is or becomes a party, or is threatened to be made a party, to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative, and whether brought by a third party or by or in the right of the Company, by reason of the fact that he is or was an officer or director of the Company, against expenses (including attorneys' fees), liabilities, losses, judgments, fines, excise taxes assessed on Executive with respect to any employee benefit plan, and amounts paid in settlement actually and reasonably incurred by Executive in connection with such action, suit or proceeding (collectively, "Expenses"). Such indemnity shall be paid promptly after written demand is presented to the Company.

24. **Counterparts** – This Agreement may be executed in several counterparts, each of which shall be deemed to be an original, but all of which together will constitute one and the same Agreement. Facsimile and PDF signatures shall be deemed to be of equal force and effect as originals.

[Signature Page To Follow]

IN WITNESS WHEREOF, the Parties have set their hands and seals to this Agreement as of the date(s) written below.

Idera Pharmaceuticals, Inc.

/s/ Vincent J. Milano Date: April 18, 2017

By: Vincent J. Milano

I hereby agree to the terms and conditions set forth above. I have been given at least twenty-one (21) days to consider this Agreement and I have chosen to execute this on the date below. I intend that this Agreement will become a binding agreement if I do not revoke my acceptance within seven (7) days.

Sudhir Agrawal

/s/ Sudhir Agrawal Date: April 18, 2017

ATTACHMENT A

SCIENTIFIC ADVISOR AGREEMENT

THIS SCIENTIFIC ADVISOR AGREEMENT (the "Agreement") is made and entered into this 1st day of June 2017 (the "Effective Date") by and between **Idera Pharmaceuticals, Inc.**, having a place of business at 167 Sidney Street, Cambridge, Massachusetts 02139, USA (hereinafter referred to as "Idera") and **Sudhir Agrawal,** of Shrewsbury, Massachusetts (hereinafter referred to as the "Advisor"). Idera and Advisor may be referred to herein individually as a "Party" and collectively as the "Parties."

BACKGROUND

WHEREAS, Idera wishes to engage the Advisor to provide the Services described herein and Advisor agrees to provide the Services for the compensation and otherwise in accordance with the terms and conditions contained in this Agreement.

NOW THEREFORE, in consideration of the foregoing, and for other good and valuable consideration, Idera and the Advisor, intending to be legally bound, agree to the terms set forth below.

1. TERM.

Commencing as of the Effective Date, and ending on the date that is six (6) calendar months thereafter (the "Term"), Advisor agrees that he will serve as an Advisor to Idera. This Agreement may be renewed or extended for any period as may be agreed in writing by the Parties.

2. SERVICES.

(a) Advisor's duties and responsibilities shall be to provide the following services: a) serving as a member of the Joint Steering Committee for the GSK – Idera collaboration, b) serving as a member of the Joint Steering Committee for the Vivelix – Idera collaboration, c) assisting Idera in its efforts to enter into a second collaboration agreement with GSK and d) and such other consulting services as the parties may mutually agree in connection with Idera's business requirements (the "Services"). The Services, if any, will be scheduled on an as-needed basis.

(b) Advisor represents and warrants to Idera that Advisor is under no contractual or other restrictions or obligations that are inconsistent with the execution of this Agreement, or that will interfere with the performance of the Services. Advisor represents and warrants that the execution and performance of this Agreement will not violate any policies or procedures of any other person or entity for which it performs Services concurrently with those performed herein.

(c) In performing the Services, Advisor shall comply, to the best of his knowledge, with all business conduct, regulatory, ethical, and health and safety guidelines established by any governmental authority with respect to Idera's business.

3. CONSULTING FEE.

Subject to the provisions hereof, Idera shall pay Advisor the following:

(a) A monthly retainer fee of ten thousand dollars ($10,000) for professional services.

(b) The aggregate amount of all invoices hereunder shall not exceed $60,000 (sixty thousand United States dollars) without Idera's written approval.

(c) Advisor shall submit monthly invoices indicating the services provided during the previous month. Such invoices shall be substantially the same as the Invoice/Report provided in **Exhibit A**, and Advisor shall submit all invoices to:

Idera Pharmaceuticals, Inc.
Attn: Accounts Payable
167 Sidney Street
Cambridge, MA 02139
Fax: 617-679-5560
e-mail: accountspayable@iderapharma.com

The Consulting Fee shall be paid within thirty (30) days after Idera's receipt of the invoice/report.

(d) Advisor shall be entitled to prompt reimbursement for all pre-approved reasonable expenses incurred in the performance of the Services, upon submission and approval of written statements and receipts in accordance with the then regular procedures of Idera, which are attached hereto as **Exhibit B**.

4. INDEPENDENT CONTRACTOR.

Advisor agrees that all Services will be rendered by Advisor as independent contractor and that this Agreement does not create an employer-employee relationship between Advisor and Idera. Unless otherwise provided for in a separate agreement, Advisor shall have no right to receive any employee benefits including, but not limited to, health and accident insurance, life insurance, sick leave, and/or vacation time. Advisor agrees to pay all taxes including, self-employment taxes due in respect of the Consulting Fee and to indemnify Idera in the event Idera is required to pay any such taxes on behalf of Advisor.

5. EARLY TERMINATION.

(a) If Advisor: (i) voluntarily ceases performing the Services; (ii) becomes physically

or mentally unable to perform the Services; or (iii) is terminated for cause, then, in each instance, the Consulting Fee shall cease and terminate as of such date. Any termination "For Cause" shall be made in good faith by Idera. Upon termination under Section 5(a)(ii) and (iii), Idera will pay advisor the full monthly retainer fee for the month in which the Agreement is terminated.

(b) This Agreement may be terminated without cause by Idera upon not less than thirty (30) days prior written notice by either Party to the other. Upon termination under Section 5(b), Idera will pay advisor on a pro rata basis for any work performed in the month following the date on which Idera provided the notice of termination. By way of example only, if Idera were to provide notice of termination on July 20, 2017 and Advisor were to provide consulting services through August 19, 2017, Idera would pay Advisor $6,129 for work performed in August (calculated as $10,000/31 * 19).

(c) Except as provided above, upon termination under Sections 5(a) or 5(b), neither Party shall have any further obligations under this Agreement, except for the obligations which by their terms survive this termination as noted in Section 18 hereof. Upon termination and, in any case, upon Idera's request, Advisor shall immediately return to Idera all Confidential Information, as hereinafter defined, and all copies thereof.

6. RESTRICTED ACTIVITIES.

In addition to any similar obligations Advisor may have under a separate agreement, during the Term and for a period of one (1) year thereafter, Advisor will not, directly or indirectly:

(a) solicit or request any employee of or Advisor to Idera to leave the employ of or cease consulting for Idera;

(b) solicit or request any employee of or Advisor to Idera to join the employ of, or begin consulting for, any individual or entity that researches, develops, markets or sells products that compete with those of Idera;

(c) solicit or request any individual or entity that researches, develops, markets or sells products that compete with those of Idera, to employ or retain as an Advisor any employee or Advisor of Idera; or

(d) induce or attempt to induce any supplier or vendor of Idera to terminate or breach any written or oral agreement or understanding with Idera.

7. PROPRIETARY RIGHTS.

(a) Definitions. For the purposes of this Section 7, the terms set forth below shall have the following meanings:

(i) Discoveries. If Advisor makes or assists in making any invention, discovery, innovation, improvements or ideas conceived in connection with the Services hereunder, whether patentable or not (collectively, "Discovery"), Advisor will immediately inform Idera in writing. Advisor agrees to not reduce such Discovery to practice, either actually or constructively, during the term of the Services, except as directed by Idera. In the event that such Discovery is constructively or actively reduced to practice either by Advisor or Idera during the Term of this Agreement, the Discovery will be Idera's property, and title to the Discovery will vest in Idera or in Idera's nominees, successors or assigns. Advisor will assign, and hereby assigns, to Idera all its rights, title and interest in and to any Discovery without any consideration beyond what is provided for by this Agreement. Advisor will execute all documents necessary to protect the interest of Idera in each such Discovery. Advisor will provide assistance as needed in publishing or protecting such Discovery by patent or otherwise in any and all countries, including in any patent office proceeding or litigation involving such Discovery. To the extent any such assistance is required after the termination of this Agreement, the Company agrees to an hourly rate for Advisor's time of $500.

(ii) Copyrights. Any copyrightable work Advisor creates in the performance of the Services hereunder is a "work made for hire", whether published or not (hereinafter "Work Product"). Idera will have all rights to and in such work, and it shall be Idera's property. Advisor will assign, and hereby assigns, to Idera, without further compensation, all of his rights, title and interest in and to any copyrightable Work Product. Advisor agrees to execute any documents of assignment that may be required to vest ownership of the copyright in Idera. Advisor may not publish on any matter arising from the Services without first obtaining written permission from Idera.

(iii) Restrictions on use of Advisor's Name on Publications. Subject to Advisor's obligations to provide assistance as set forth above in Sections 7(a)(i) and (ii), Idera may not use Advisor's name in any publications relating to any matter arising from the Services without first obtaining written permission from Advisor.

(iv) Confidential Information. For the purposes of this Agreement, Confidential Information shall mean and collectively include: all information relating to the business, plans, and/or technology of Idera including, but not limited to technical information including inventions, methods, plans, processes, specifications, characteristics, assays, raw data, scientific preclinical or clinical data, records, databases, formulations, clinical protocols, equipment design, know-how, experience, and trade secrets; developmental, marketing, sales, customer, supplier, consulting relationship information, operating, performance, and cost information; computer programming techniques whether in tangible or intangible form, and all record bearing media containing or disclosing the foregoing information and techniques including, written business

plans, patents and patent applications, grant applications, notes, and memoranda, whether in writing or presented, stored or maintained in or by electronic, magnetic, or other means.

Notwithstanding the foregoing, the term "Confidential Information" shall not include any information that: (a) can be demonstrated to have been in the public domain or was publicly known or available prior to the date of the disclosure to Advisor; (b) can be demonstrated in writing to have been rightfully in the possession of Advisor prior to the disclosure of such information to Advisor by Idera; (c) lawfully becomes part of the public domain or publicly known or available by publication or otherwise, not due to any unauthorized act or omission on the part of Advisor; or (d) is supplied to Advisor by a third party without binder of secrecy, so long as that such third party has no obligation to Idera or any of its affiliated companies to maintain such information in confidence.

Confidential Information may be disclosed to the extent that it is required by any law, regulation, or order of court to be disclosed, and to the extent otherwise provided by Section 7(d) below. Except as otherwise provided by Section 7(d) below, prior to disclosing proprietary or Confidential Information of Idera, Advisor agrees that he will provide Idera with prompt written notice of such request or requirement prior to such disclosure so that Idera may seek a protective order or other appropriate remedy. If such protective order or other remedy is not obtained or Idera grants a written waiver hereunder, the Advisor may furnish only that limited portion of the Confidential Information which the Advisor is legally compelled to disclose or else stand liable for contempt or suffer other material censure or penalty; provided, however, that the Advisor shall use his best efforts to obtain reliable assurance that confidential treatment will be accorded the Confidential Information so disclosed.

(b) Non-Disclosure to Third Parties. Except as may be required by Advisor for the sole purpose of performing the Services, Advisor shall not, at any time now or in the future, directly or indirectly, use, publish, disseminate or otherwise disclose any Confidential Information or Concepts and Ideas to any third party without the prior written consent of Idera, which consent may be denied in each instance and all of the same, together with publication rights, shall belong exclusively to Idera, subject to the restrictions on the use of Advisor's name as set forth in Section 7(a)(iii) of this Agreement.

(c) Idera Property. All documents, diskettes, tapes, procedural manuals, guides, specifications, plans, drawings, designs and similar materials, lists of present, past or prospective customers, customer proposals, invitations to submit proposals, price lists and data relating to the pricing of Idera' products and services, records, notebooks, and all other materials containing Confidential Information or information about Discoveries or Work Product (including all copies and reproductions thereof), that come into Advisor's possession or control by reason of Advisor's performance of the relationship, whether prepared by Advisor or others: (a) are the property of Idera, (b) will not be used by Advisor in any way other than

in connection with the performance of the Services, (c) will not be provided or shown to any third party by Advisor, (d) will not be removed from Idera's or Advisor's premises (except as Advisor's Services require), and (e) at the termination (for whatever reason), of Advisor's relationship with Idera, will be left with, or forthwith returned by Advisor to Idera. No license or conveyance of any ownership rights to the Advisor is granted or implied under this Agreement.

(d) Scope of Disclosure Restrictions. Nothing in this Agreement prohibits Advisor from communicating with government agencies about possible violations of federal, state, or local laws or otherwise providing information to government agencies or participating in government agency investigations or proceedings. Advisor is not required to notify Idera of any such communications; provided, however, that nothing herein authorizes the disclosure of information Advisor obtained through a communication that was subject to the attorney-client privilege. Further, notwithstanding Advisor's confidentiality and nondisclosure obligations, Advisor is hereby advised as follows pursuant to the Defend Trade Secrets Act: "An individual shall not be held criminally or civilly liable under any Federal or State trade secret law for the disclosure of a trade secret that (A) is made (i) in confidence to a Federal, State, or local government official, either directly or indirectly, or to an attorney; and (ii) solely for the purpose of reporting or investigating a suspected violation of law; or (B) is made in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal. An individual who files a lawsuit for retaliation by an employer for reporting a suspected violation of law may disclose the trade secret to the attorney of the individual and use the trade secret information in the court proceeding, if the individual (A) files any document containing the trade secret under seal; and (B) does not disclose the trade secret, except pursuant to court order."

8. EQUITABLE RELIEF.

Advisor agrees that any breach of Sections 6 and 7 above by it would cause irreparable damage to Idera and that, in the event of such breach, Idera shall have, in addition to any and all remedies of law, the right to an injunction, specific performance or other equitable relief to prevent the violation or threatened violation of Advisor's obligations hereunder.

9. WAIVER.

Any waiver by Idera of a breach of any provision of this Agreement shall not operate or be construed as a waiver of any subsequent breach of the same or any other provision hereof. All waivers by Idera shall be in writing.

10. SEVERABILITY; REFORMATION.

In case any one or more of the provisions or parts of a provision contained in this Agreement shall, for any reason, be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provision or part of a provision of this Agreement; and this Agreement shall, to the fullest extent lawful, be reformed and construed as if such invalid or illegal or unenforceable provision, or part of a provision, had never been contained herein, and such provision or part reformed so that it would be valid, legal, and enforceable to the maximum extent possible. Without limiting the foregoing, if any provision (or part of provision) contained in this Agreement shall for any reason be held to be excessively broad as to duration, activity or subject, it shall be construed by limiting and reducing it, so as to be enforceable to the fullest extent compatible with then existing applicable law.

11. ASSIGNMENT.

Idera shall have the right to assign its rights and obligations under this Agreement to a party which assumes Idera' obligations hereunder. Advisor shall not have the right to assign its rights or obligations under this Agreement without the prior written consent of Idera, which consent may be withheld. This Agreement shall be binding upon and inure to the benefit of Advisor's successors, permitted assigns and, in the case where Advisor is an individual, heirs and legal representatives in the event of his/her death or disability.

12. USE OF NAMES.

Advisor shall not use the name of Idera for any purpose without obtaining Idera's prior written approval thereof; provided, however, that nothing herein shall preclude Advisor from identifying on his curricula vitae and to any third parties, including on social media and to the press, that he was a founder of Idera and that he served Idera in various leadership roles since 1990. Subject to the restrictions on the use of Advisor's name as set forth in Section 7(a)(iii) of this Agreement, Idera may use the name of Advisor for activities related to its standard business operations, which may include press releases and other public announcements.

13. HEADINGS.

Headings and subheadings are for convenience only and shall not be deemed to be a part of this Agreement.

14. AMENDMENTS.

This Agreement may be amended or modified, in whole or in part, only by an instrument in writing signed by the Parties.

15. NOTICES.

Any notices or other communications required hereunder shall be in writing and shall be deemed given when delivered in person or when mailed, by certified or registered first class mail, postage prepaid, return receipt requested, addressed to the Parties at their addresses specified in the preamble to this Agreement or to such other addresses of which a Party shall have notified the others in accordance with the provisions of this Section 14.

16. COUNTERPARTS.

This Agreement may be executed in two or more counterparts, each of which shall constitute an original and all of which shall be deemed a single agreement.

17. GOVERNING LAW.

This Agreement shall be construed in accordance with and governed for all purposes by the laws of the Commonwealth of Massachusetts, without giving effect to conflict of laws provisions.

18. SURVIVAL.

The provisions of Sections 6, 7, 8, 9, 10, 15, 17 and 18 of this Agreement shall survive the expiration of the Term or the termination of this Agreement. This Agreement supersedes all prior agreements, written or oral, between Idera and Advisor relating to the subject matter of this Agreement.

[Signature Page To Follow]

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement as of the Effective Date.

Idera Pharmaceuticals, inc.	**Sudhir Agrawal**
By: /s/ Vincent J. Milano	By: /s/ Sudhir Agrawal
Date: April 18, 2017	Date: April 18, 2017

Exhibit A
Sample Invoice/Report

ADVISOR NAME
123 Street Name
Town name, STATE ZIP

Date: _____

Attn: Accounts Payable
Idera Pharmaceuticals, Inc.
167 Sidney Street
Cambridge, MA 02139
Fax: 617-679-5560

Dear Accounts Payable Representative,

In accordance with our Consulting Services Agreement with Idera, dated 24 June 2014, the following summarizes services performed for the monthly invoice period of _____ to _____:

Date(s):	**Description of Activity:**

In accordance with the Consulting Services Agreement, please remit the monthly payment of **$_____** within thirty (30) days.

Regards,

Exhibit B

Idera Pharmaceuticals, Inc. Travel Policy (POLICY NO. 217)

1. TRAVEL & ENTERTAINMENT

PURPOSE: To establish guidelines for Company travel and entertainment and to ensure travel is consistent with Idera's business objectives.

SCOPE: All Idera employees, directors and Advisors ("Employees").

POLICY: Idera will reimburse Employees who travel on approved Company business for all necessary reasonable business expenses. However, in no event will reimbursement exceed actual expenses. Neither luxury, nor sub-standard modes of transportation and accommodations should be used.

PROCEDURE FOR TRAVEL:

Employees are expected to pay for their travel with personal credit cards or cash. Employees are expected to pay their own credit card bill and any late fees or finance charges are the responsibility of the Employee. Any credit card rewards from use of the card belong to the Employee.

PROCEDURE FOR REIMBURSEMENT:

1. Upon return from your pre-approved business related travel, Idera requires the Employee to submit an original travel and expense report with the business purpose identified. Travel should be via the lowest cost alternative within reason. All original receipts are requested but receipts for expenses greater than $20 USD are required. Expense reports must be submitted in a timely fashion. Please attach original receipts to your travel and expense report and complete within five (5) business days from your return. Deduct any personal expenses. Any receipts not provided must be noted on the travel and expense report. If business travel was overseas, convert to U.S. dollars and list the exchange rate used.
2. Travel and expense reports must be signed by the Employee and approved by the Employee's manager before forwarding to accounting. Reimbursement will be made via the next scheduled check run, which should be within fifteen (15) days after the accounting department receives an approved travel and expense report.
3. In the event that the Employee owes the Company funds, the funds should accompany the completed travel and expense report. Any amounts due the Company and not paid will be deducted from any future payment requests.
4. Any expense submitted that does not comply with the guidelines of this policy will not be reimbursed, unless accompanied by a valid exception approved by the CFO, President or CEO.

LODGING:

Employees are permitted to reserve hotel rooms for out of town travel. Neither luxury, nor sub-standard accommodations should be used. Employees will only be reimbursed for standard hotel rooms. No upgrades to suites are permitted. Saturday night stays are permitted, but not required, if the stay results in airfare savings in excess of the extra night(s) stay and meals. Where appropriate, Employees are expected to book their accommodations using conference hotels and discounts. It is the Employee's responsibility to cancel reservations not expected to be utilized. The Company will not reimburse no-show fees.

AIRFARE:

Air travel will be via the most direct and economical means. Employees are expected to book their airfare as far in advance as possible – at least seven (7) days in most instances. Use of "Non-Refundable" airfare is recommended. (In most cases, if the travel must change or the trip is canceled all together, the funds can be used as a credit toward future travel, less a service charge imposed by the airline. Employees must include this credit on their next travel and expense report that includes air travel.) Employees may fly business class on international flights where in-flight time exceeds six hours in duration. Benefits from frequent flier memberships are considered to belong to the Employee. The Company does not reimburse any fees or dues associated with such memberships.

PERSONAL TRANSPORTATION/MILEAGE:

Employees with a valid driver's license may submit expenses for the use of their personal car while on business. Employees will be reimbursed the standard IRS rate for every mile driven on behalf of the Company that exceeds their normal commuting mileage, defined as from the Employee home to the Company's facility. Receipts should be submitted for any parking expenses or tolls.

RENTAL CARS:

Compact or midsize cars can be rented when having a car is deemed necessary (i.e., taxi cabs are not prevalent or the distance from the airport or hotel to the destination is excessive). When possible, every effort should be made to return rental cars with the proper fuel level. Receipts should be submitted for gas with the T&E report. Additional liability and physical damage insurance should be waived for cars rented in the United States as the Company's travel insurance policy covers Company travel via rental cars. Employees renting cars should include the Company's name somewhere on the rental agreement. Additional liability and physical damage insurance should be purchased from the rental agency for cars rented outside the United States.

TRAIN FARE:

Train travel will be via the most direct and economical means. Employees are expected to book their train fare as far in advance as possible. Use of "Non-Refundable" train fare is recommended. The Acela express service, where all seats are business class, is permitted for travel between Boston and New York and DC. Employees may use first class train accommodations where on-train time exceeds seven hours in duration. Benefits from frequent traveler memberships are considered to belong to the Employee. The Company does not reimburse any fees or dues associated with such memberships.

TELEPHONE/FACSIMILES/INTERNET SERVICES:

Reasonable expenses incurred while traveling for telephone, fax, internet, and telegraph for Company business communications are reimbursable. Where applicable, Employees should use their Company issued cell phones when traveling and not incur extensive calls through their hotel rooms. Necessary business calls made from the Employee's residence are reimbursable. A copy of the telephone bill and an explanation of the business purpose should be submitted with your travel and expense report.

BUSINESS MEALS AND ENTERTAINMENT:

Meals. Individual meals can be purchased while an Employee is traveling for approved business purposes. Individual meals will be reimbursed at the lower of $30 USD per meal or $50 USD per day.

When in the best interest of the Company, meals may be purchased for clients, affiliates, and others with whom the Company has business dealings. In addition, the government requires detailed record keeping legitimizing the expense. The items to be documented are:

- Individuals present
- Business affiliations
- Location
- Date
- BUSINESS PURPOSE OF MEETING. This can be a short phrase such as "discuss new business", "conduct employee review", or "scientific discussions"

Reimbursements may include gratuities up to a maximum of 20%.

Entertainment. Entertainment expenses are generally not reimbursed by the Company. Entertainment expenses are only reimbursable with management prior approval. Pre-approved entertainment will only be reimbursed where an original receipt is submitted with the T & E report.

NON-REIMBURSABLE EXPENSES, include but are not limited to the following:

- Airline club or other travel memberships
- Airline upgrade coupon booklets
- Airline headsets
- Sundries
- Laundry services (unless a trip is unexpectedly extended)
- Lost airline tickets applications
- Mini-bar services
- In room movies
- Barber/Hair Stylist
- Manicurist
- Masseur/Spa services
- Birthday or other celebration gifts
- Unauthorized donations, contributions
- Car insurance
- Personal items other than emergency services items purchased while traveling because of lost or damaged baggage
- Clothing purchases
- Personal liquor or entertainment when not included in business dinner
- Traffic violations and citations
- Pet care, lawn care and snow removal while traveling
- Theft, loss or damage to personal property
- Cash advances and ATM fees
- Daily newspapers while traveling

ATTACHMENT B

RELEASE

In exchange for the consideration set forth in the Separation Agreement and Release of Claims dated April 18, 2017 between Idera Pharmaceuticals, Inc and Sudhir Agrawal ("Executive"), which Executive acknowledges he would not otherwise be entitled to receive, Executive hereby fully, forever, irrevocably and unconditionally releases, remises and discharges the Company, its affiliates, subsidiaries, parent companies, predecessors, and successors, and all of its and their respective past and present officers, directors, stockholders, investors, partners, members, managers, employees, agents, representatives, plan administrators, attorneys, insurers and fiduciaries (each in their individual and corporate capacities) (collectively, the "Released Parties") from any and all claims, complaints, demands, actions, causes of action, suits, rights, debts, sums of money, costs, accounts, reckonings, covenants, contracts, agreements, promises, doings, omissions, damages, executions, obligations, liabilities, and expenses (including attorneys' fees and costs), of every kind and nature that Executive ever had or now has against any or all of the Released Parties, whether known or unknown, including, but not limited to, any and all claims arising out of or relating to Executive's employment with, and separation from, and/or ownership of securities of, the Company, including, but not limited to, all claims under Title VII of the Civil Rights Act of 1964, 42 U.S.C. § 2000e et seq., the Americans With Disabilities Act of 1990, 42 U.S.C. § 12101 et seq., the Age Discrimination in Employment Act, 29 U.S.C. § 621 et seq., the Genetic Information Nondiscrimination Act of 2008, 42 U.S.C. § 2000ff et seq., the Family and Medical Leave Act, 29 U.S.C. § 2601 et seq., the Worker Adjustment and Retraining Notification Act ("WARN"), 29 U.S.C. § 2101 et seq., the Rehabilitation Act of 1973, 29 U.S.C. § 701 et seq., Executive Order 11246, Executive Order 11141, the Fair Credit Reporting Act, 15 U.S.C. § 1681 et seq., and the Employee Retirement Income Security Act of 1974 ("ERISA"), 29 U.S.C. § 1001 et seq., all as amended; all claims arising out of the Massachusetts Fair Employment Practices Act, Mass. Gen. Laws ch. 151B, § 1 et seq., the Massachusetts Wage Act, Mass. Gen. Laws ch. 149, § 148 et seq. (Massachusetts law regarding payment of wages and overtime), the Massachusetts Civil Rights Act, Mass. Gen. Laws ch. 12, §§ 11H and 11I, the Massachusetts Equal Rights Act, Mass. Gen. Laws. ch. 93, § 102 and Mass. Gen. Laws ch. 214, § 1C, the Massachusetts Labor and Industries Act, Mass. Gen. Laws ch. 149, § 1 et seq., Mass. Gen. Laws ch. 214, § 1B (Massachusetts right of privacy law), the Massachusetts Maternity Leave Act, Mass. Gen. Laws ch. 149, § 105D, and the Massachusetts Small Necessities Leave Act, Mass. Gen. Laws ch. 149, § 52D, all as amended; all common law claims including, but not limited to, actions in defamation, intentional infliction of emotional distress, misrepresentation, fraud, wrongful discharge, and breach of contract (including, without limitation, all claims arising out of or related to the Employment Agreement); all claims to any non-vested ownership interest in the Company, contractual or otherwise; all state and federal whistleblower claims to the maximum extent permitted by law; and any claim or damage arising out of Executive's employment with and/or separation from the Company (including a claim for retaliation) under any common law theory or any federal, state or local statute or ordinance not expressly referenced above; *provided, however, that nothing in this release of claims prevents Executive from filing a charge with, cooperating with, or participating in any investigation or proceeding before, the Equal Employment Opportunity Commission or a state fair employment practices agency (except that Executive acknowledges that he may not recover any monetary benefits in connection with any such charge, investigation,*

or proceeding, and Executive further waives any rights or claims to any payment, benefit, attorneys' fees or other remedial relief in connection with any such charge, investigation or proceeding). Further, nothing herein shall prevent Executive from bringing claims to enforce this Agreement, or release (i) any rights Executive may have under the Company's certificate of incorporation, by-laws, insurance and/or any indemnification agreement between him and the Company (and/or otherwise under law) for indemnification and/or defense as an employee, officer or director of the Company for his service to the Company (recognizing that such indemnification and/or defense is not guaranteed by this Agreement and shall be governed by the instrument or law, if any, providing for such indemnification and/or defense), (ii) any rights Executive may have arising from any vested stock options; (iii) any rights Executive may have to vested pension or 401(K) benefits or interests under any ERISA-Covered benefit plan (excluding severance) provided by the Company, or (iv) any rights or claims that cannot be waived by law, including claims for unemployment benefits.

Sudhir Agrawal

By: /s/ Sudhir Agrawal

Date: May 31, 2017

EXHIBIT 31.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER PURSUANT TO EXCHANGE ACT RULES 13a-14 AND 15d-14, AS ADOPTED PURSUANT TO SECTION 302 OF SARBANES-OXLEY ACT OF 2002

I, Vincent J. Milano, certify that:

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

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.

Dated: August 7, 2017

/s/ VINCENT J. MILANO
Vincent J. Milano
Chief Executive Officer

EXHIBIT 31.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER PURSUANT TO EXCHANGE ACT RULES 13a-14 AND 15d-14, AS ADOPTED PURSUANT TO SECTION 302 OF SARBANES-OXLEY ACT OF 2002

I, Louis J. Arcudi, III certify that:

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

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.

Dated: August 7, 2017

/s/ Louis J. Arcudi, III

Louis J. Arcudi, III

Chief Financial Officer

EXHIBIT 32.1

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

In connection with the Quarterly Report on Form 10-Q of Idera Pharmaceuticals, Inc. (the "Company") for the period ended June 30, 2017 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned, Vincent J. Milano, Chief Executive Officer of the Company, hereby certifies, pursuant to 18 U.S.C. Section 1350, that to his knowledge:

(1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

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

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

Dated: August 7, 2017

/s/ VINCENT J. MILANO
Vincent J. Milano
Chief Executive Officer

EXHIBIT 32.2

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

In connection with the Quarterly Report on Form 10-Q of Idera Pharmaceuticals, Inc. (the "Company") for the period ended June 30, 2017 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned, Louis J. Arcudi, III, Chief Financial Officer of the Company, hereby certifies, pursuant to 18 U.S.C. Section 1350, that to his knowledge:

(1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

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

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

Dated: August 7, 2017

/s/ LOUIS J. ARCUDI, III
Louis J. Arcudi, III
Chief Financial Officer