
**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
Washington, DC 20549

Form 10-K/A
(Amendment No. 1)

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

For the fiscal year ended December 31, 2016

or

TRANSITION REPORTS PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934.

For the transition period from _____ to _____

Commission File Number: 001-36281

DICERNA PHARMACEUTICALS, INC.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

20-5993609
(IRS Employer
Identification No.)

87 Cambridgepark Drive Cambridge, MA 02140
(Address of principal executive offices and zip code)

(617) 621-8097
(Registrant's telephone number, including area code)

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

<u>Title of Each Class</u>	<u>Name of Each Exchange on Which Registered</u>
Common Stock, \$0.0001 par value	The NASDAQ Global Select Market

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

None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No

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 if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405) is not contained herein, and will not be contained, to

the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, anon-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 Exchange Act Rule 12b-2) Yes No

Based on the closing price of the registrant's Common Stock on the last business day of the registrant's most recently completed second fiscal quarter, which was June 30, 2016, the aggregate market value of its shares (based on a closing price of \$3.00 per share) held by non-affiliates was approximately \$39.3 million. Shares of the registrant's Common Stock held by each executive officer and director and by each entity or person that owned five percent or more of the registrant's outstanding Common Stock were excluded in that such persons may be deemed to be affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

As of March 31, 2017, there were 20,794,193 shares of common stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

None.

DICERNA PHARMACEUTICALS, INC.
FORM 10-K/A
FOR THE FISCAL YEAR ENDED DECEMBER 31, 2016

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EXPLANATORY NOTE

This Amendment No. 1 on Form 10-K/A (Amendment) amends the Annual Report on Form 10-K for the year ended December 31, 2016 originally filed by Dicerna Pharmaceuticals, Inc. (Company, Dicerna, we or us) with the Securities and Exchange Commission (SEC) on March 30, 2017 (Original Filing). We are filing this Amendment to present the information required by Items 10 through 14 of Part III of the Original Filing, which information was previously omitted from the Original Filing in reliance on General Instruction G(3) to Form 10-K. General Instruction G(3) to Form 10-K permits the information in the above referenced items to be incorporated in the Form 10-K by reference from a definitive proxy statement if such proxy statement is filed by the Company no later than 120 days after our fiscal year end. We are filing this Amendment because we do not expect to file a definitive proxy statement within 120 days of the end of fiscal year ended December 31, 2016 due to the timing of our Annual Meeting of Stockholders. The reference on the cover of the Original Filing to the incorporation by reference to portions of our definitive proxy statement into Part III of the Original Filing is hereby deleted.

In accordance with Rule 12b-15 under the Securities Exchange Act of 1934, as amended, (i) Part III, Items 10 through 14 of the Original Filing are hereby amended and restated in their entirety, and (ii) Part IV, Item 15 of the Original Filing is hereby amended and restated in its entirety with the only changes being the addition of Exhibits 31.3 and 31.4 filed herewith and related footnotes. Except as described above, no other changes have been made to the Original Filing. This Amendment should be read in conjunction with the Original Filing and with our filings with the SEC subsequent to the Original Filing. Except as reflected herein, the Original Filing continues to speak as of the date of the Original Filing, and we have not updated the disclosures contained therein to reflect any events which occurred at a date subsequent to the filing of the Original Filing.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

Board of Directors

Our board of directors currently consists of nine directors. Set forth below is certain information regarding our current directors as of the date hereof.

<u>Name</u>	<u>Position</u>	<u>Age</u>
Douglas M. Fambrough, III, Ph.D.	President, Chief Executive Officer and Director	48
Martin Freed, M.D.	Director	56
Brian K. Halak, Ph.D.	Director	45
Stephen J. Hoffman, M.D., Ph.D.	Director	63
Peter Kolchinsky, Ph.D.	Director	40
Adam M. Koppel, M.D., Ph.D.	Director	47
Dennis H. Langer, M.D., J.D.	Director	65
David M. Madden	Chairman	54
Bruce Peacock	Director	65

Douglas M. Fambrough, III, Ph.D. Douglas M. Fambrough, III, Ph.D. has served as a member of our board of directors since April 2007 and as our president and chief executive officer since May 2010. From 2000 to May 2010, Dr. Fambrough held various positions at Oxford Bioscience Partners, a life science venture capital firm, most recently as a general partner. During his years at Oxford Bioscience Partners, he specialized in financing innovative life science technology companies, including the Company, Sirna Therapeutics, Inc. (acquired by Merck & Co., Inc.), Solexa, Inc. (acquired by Illumina, Inc.), and Xencor, Inc. (NASDAQ: XNCR), and served as a director of each of these companies. Dr. Fambrough has also served as a Trustee of Boston Biomedical Research Institute, a not-for-profit organization. Before joining Oxford Bioscience Partners, he was a genomic scientist at the Whitehead/MIT Center for Genome Research (now known as the Broad Institute). Dr. Fambrough graduated from Cornell University and obtained his Ph.D. in genetics at the University of California, Berkeley.

Martin Freed, M.D. Martin Freed, M.D. has served as a member of our board of directors since June 2016. Dr. Freed has served as an independent consultant to several private pharmaceutical, biotechnology, and healthcare companies, specializing in clinical and general pharmaceutical development and clinical and regulatory strategy since February 2015. He co-founded and served as chief medical officer of Civitas Therapeutics, Inc., from December 2010 to October 2014 (acquired by Acorda Therapeutics, Inc. (Acorda)), and as senior vice president, clinical development of Acorda from October 2014 through January 2015. In addition, Dr. Freed has served as chief medical officer and has provided strategic and operational planning and execution, as well as medical leadership for clinical pharmacology and development strategy and preclinical development for multiple pharmaceutical companies throughout his career. These companies include Avila Therapeutics, Inc., Taligen Therapeutics, Adnexus Therapeutics, Inc. (acquired by Bristol-Myers Squibb), and Vitae Pharmaceuticals, Inc. Dr. Freed spent nearly 14 years at GlaxoSmithKline and its predecessor, SmithKline Beecham Pharmaceuticals or SmithKline Beecham, where he served numerous roles including vice president, clinical development and medical affairs in the metabolism therapeutic area. He has authored over 100 publications or presentations. Dr. Freed has been Board Certified in Internal Medicine, Nephrology and Clinical Pharmacology. He performed his internal medicine residency at Temple University Hospital and nephrology fellowship at Yale-New Haven Hospital. A Fellow of the American College of Physicians, Dr. Freed received his B.S. with Distinction in Biology from the University of Delaware and M.D. from Pennsylvania State University's College of Medicine.

Brian K. Halak, Ph.D. Brian K. Halak, Ph.D. has served as a member of our board of directors since August 2010. Dr. Halak is currently a partner of Domain Associates, LLC, which he joined in 2001. Prior to joining Domain Associates, LLC, Dr. Halak was an associate with Advanced Technology Ventures. Prior to that, Dr. Halak was a consultant at the Wilkerson Group. Dr. Halak currently serves as a member of the boards of directors of Alimera Sciences, Inc. (NASDAQ: ALIM), BioNano Genomics, Inc., Kona Medical, Inc., Zyga Technology, Inc. and WindMIL Therapeutics, Inc. where he is also president and chief executive officer. Dr. Halak also serves as a member of the Advisory Board for the Department of Bioengineering of the University of Pennsylvania, an advisor to Elm Street Ventures, and a director on the board of Life Sciences Pennsylvania. Dr. Halak previously served on the boards of directors of Eddingpharm, Inc., Esprit Pharma, Inc. (until acquired by Allergan, Inc.), GI Dynamics, Inc. (ASX: GID), Tobira Therapeutics, Inc. (NASDAQ: TBRA), and Vanda Pharmaceuticals, Inc. (NASDAQ: VNDA). Dr. Halak received his BSE in bioengineering from the University of Pennsylvania and his Ph.D. in immunology from the Thomas Jefferson University.

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Stephen J. Hoffman, M.D., Ph.D. Stephen J. Hoffman, M.D., Ph.D. has served as a member of our board of directors since November 2007. Dr. Hoffman has been a senior advisor to PDL BioPharma, Inc. since February 2014. Prior to that, he served as a managing director at Skyline Ventures, a venture capital firm, from May 2007 until February 2014. From January 2003 to March 2007, Dr. Hoffman was a general partner at TVM Capital, a venture capital firm. From 1994 to 2002, he served as president, chief executive officer and a member of the board of directors of Allos Therapeutics, Inc., a biopharmaceutical company, where he remained as chairman of the board until it was acquired by Spectrum Pharmaceuticals, Inc. in September 2012. From 1990 to 1994, Dr. Hoffman completed a fellowship in clinical oncology and a residency/fellowship in dermatology, both at the University of Colorado. Dr. Hoffman was the scientific founder of Somatogen Inc., a biotechnology company that was acquired by Baxter International, Inc. in 1998, where he held the position of vice president of science and technology from 1987 until 1990. Dr. Hoffman currently serves on the board of directors of AcelRx Pharmaceuticals, Inc. (NASDAQ: ACRX). Previously, Dr. Hoffman also served on the boards of directors of Genocea Biosciences, Inc. (NASDAQ: GNCA), which he resigned from effective April 11, 2017, and Sirtris Pharmaceuticals, Inc., a pharmaceutical company that was acquired by GlaxoSmithKline (NYSE: GSK) in 2008. Dr. Hoffman holds a Ph.D. in bio-organic chemistry from Northwestern University and an M.D. from the University of Colorado School of Medicine.

Peter Kolchinsky, Ph.D. Peter Kolchinsky, Ph.D. has served as a member of our board of directors since July 2013. Dr. Kolchinsky is a founding partner and portfolio manager at RA Capital, where he has been since September 2004. He is active in both public and private investments across the pharmaceutical, medical devices, diagnostics and life-science tools industries. Dr. Kolchinsky authored the e-book “The Entrepreneur’s Guide to a Biotech Startup”. Dr. Kolchinsky currently also serves as a member of the boards of directors of Lantos Technologies, Inc., Wave Life Sciences, G1 Therapeutics, Antera Therapeutics, Inc., Sojournix, Inc., and Ivantis, Inc. In the past, Dr. Kolchinsky served on the Board of Global Science and Technology for the National Academies of Sciences. He received a Ph.D. in virology from Harvard University and a bachelor’s degree from Cornell University.

Adam M. Koppel, M.D., Ph.D. Adam M. Koppel, M.D., Ph.D. joined our board of directors in April 2017. Dr. Koppel rejoined Bain Capital in 2016 as a managing director of Bain Capital Life Sciences. He had initially joined Bain Capital Public Equity in 2003 where he was a leader within the healthcare sector until mid-2014. During the period mid-2014 to mid-2016, Dr. Koppel worked at Biogen, Inc. (NASDAQ: BIIB) where he served as executive vice president of corporate development and chief strategy officer. Prior to joining Bain Capital Public Equity in 2003, Dr. Koppel was an associate principal at McKinsey & Co in New Jersey where he served a variety of healthcare companies. Dr. Koppel received an M.D. and Ph.D. in neuroscience from the University of Pennsylvania School of Medicine. He also received an M.B.A. from The Wharton School at the University of Pennsylvania, where he was a Palmer Scholar. He graduated magna cum laude from Harvard University with an AB and AM in History and Science. Dr. Koppel currently serves on the board of directors of Trevena, Inc. (NASDAQ: TRVN), PTC Therapeutics, Inc. (NASDAQ: PTCT), and Solid Biosciences, LLC.

Dennis H. Langer, M.D., J.D. Dennis H. Langer, M.D., J.D. has served as a member of our board of directors since November 2007. Dr. Langer previously served as the chairman of the board of directors and chief executive officer of AdvanDx, Inc., from January 2013 to August 2014. Dr. Langer has been a clinical professor in the department of psychiatry at Georgetown University School of Medicine since September 2003. From August 2005 to May 2010, Dr. Langer served as managing partner of Phoenix IP Ventures, LLC. From January 2004 to July 2005, he served as president, North America of Dr. Reddy’s Laboratories, Inc. (NYSE: RDY). From September 1994 until January 2004, Dr. Langer held several positions at GlaxoSmithKline plc (NYSE: GSK) and its predecessor, SmithKline Beecham, culminating with senior vice president of research and development. Dr. Langer currently serves on the board of directors of Myriad Genetics, Inc. (NASDAQ: MYGN) and Pernix Therapeutics Holdings, Inc. (NASDAQ:PTX). Dr. Langer previously served on the boards of directors of Auxilium Pharmaceuticals, Inc. (NASDAQ: AUXL), Cytogen Corporation (NASDAQ:CYTO) (acquired by EUSA Pharma, Inc.), Delcath Systems, Inc. (NASDAQ: DCTH), Myrexis, Inc. (NASDAQ:MYRX), Pharmacopeia, Inc. (NASDAQ:PCOP) (acquired by Ligand Pharmaceuticals Inc.) and Sirna Therapeutics, Inc. (NASDAQ:RNAI) (acquired by Merck & Co., Inc.). Dr. Langer received a J.D. (cum laude) from Harvard Law School, an M.D. from Georgetown University School of Medicine and a B.A. in biology from Columbia University.

David M. Madden. David M. Madden has served as a member and the chairman of our board of directors since June 2009. Mr. Madden is a founder and principal of Narrow River Management, LP, an investment management company with a focus on equity investments in the emerging pharmaceutical industry, where he has been since 2004. Mr. Madden has served as chief executive officer and a member of the board of directors of River Vision Development Corporation since 2011. Mr. Madden previously served as interim president and chief executive officer of Adolor Corporation (NASDAQ: ADLR) from August 2005 to December 2006 and the chairman of its board of directors until it was acquired by Cubist Pharmaceuticals, Inc. (NASDAQ: CBST) in December 2011. Mr. Madden was co-chief executive officer of Royalty Pharma AG, a private

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investment management firm specializing in the acquisition of royalty interests in pharmaceutical products, from October 2000 to 2003, and a member of its board of directors until March 2004. From 1997 to October 2000, he served as a managing member of Pharmaceutical Partners, LLC. From 1992 to 1995, Mr. Madden was president and chief executive officer and a member of the board of directors of Selectide Corporation. Mr. Madden has a B.S. in Electrical Engineering from Union College and an M.B.A. from Columbia University.

Bruce A. Peacock. Bruce A. Peacock has served as a member of our board of directors since September 2014. Mr. Peacock served as the chief financial and business officer of Ophthotech Corporation from August 2013 to September 2014 and served as its chief business officer from September 2010 to August 2013. From April 2008 to February 2011, Mr. Peacock served as president, chief executive officer and co-chairman of the board of directors of Alba Therapeutics where he continues to serve as co-chairman of the board of directors. Additionally, Mr. Peacock has served as a venture partner of SV Life Sciences Advisors, LLC since 2006 and as executive chairman of CARMA Therapeutics LLC since October 2016. Previously, Mr. Peacock served as the chief executive officer and director of The Little Clinic; president, chief executive officer and director of Adolor Corporation (NASDAQ: ADLR) (acquired by Cubist Pharmaceuticals, Inc. (NASDAQ: CBST)); president, chief executive officer and director of Orthovita Inc. (acquired by Stryker Corporation); executive vice president, chief operating officer and director of Cephalon Inc. (acquired by Teva Pharmaceutical Industries Ltd.); and as chief financial officer of Centocor Inc. (acquired by Johnson & Johnson (NYSE: JNJ)). Mr. Peacock currently serves as the co-chairman of the board of directors of Alba Therapeutics Corporation and is a member of the board of directors of Windtree Therapeutics, Inc. (NASDAQ:WINT) (formerly known as Discovery Laboratories, Inc. (NASDAQ: DSCO)), Invisible Sentinel Inc., Ocular Therapeutix (NASDAQ: OCVL), and PanOptica, Inc. Mr. Peacock holds a B.A. from Villanova University and is a certified public accountant.

Executive Officers

The following sets forth information about our executive officers as of the date hereof.

<u>Name</u>	<u>Position</u>	<u>Age</u>
Douglas M. Fambrough, III, Ph.D.	President, Chief Executive Officer and Director	48
Bob D. Brown, Ph.D.	Chief Scientific Officer, Senior Vice President	52
John B. Green	Chief Financial Officer	63
James B. Weissman	Chief Business Officer	55

The following is biographical information as of the date hereof for our executive officers other than Douglas M. Fambrough, III, Ph.D., whose biographical information is included in “Board of Directors” above.

Bob D. Brown, Ph.D. Bob D. Brown, Ph.D. initially served as our senior vice president of research beginning in May 2008 and has served as our chief scientific officer since January 2012. From March 2003 to March 2008, Dr. Brown held various positions at Genta Incorporated, most recently as its vice president of research and technology. Previously, he was a co-founder and vice president of research and development of Oasis Biosciences Inc., which was acquired by Gen-Probe Incorporated. Dr. Brown is an inventor or co-inventor on 16 issued patents and dozens of patent applications covering oligonucleotide and conventional small molecule therapeutic agents, diagnostic tool and oligonucleotide and small molecule drug delivery technologies. Dr. Brown holds a Ph.D. in molecular biology from the University of California, Berkeley, and a B.S. in chemistry and biology from the University of Washington, Seattle.

John B. Green. John B. (“Jack”) Green initially joined us as interim chief financial officer in January 2016 and became our full time chief financial officer in April 2016. Mr. Green was the chief financial officer of Verastem, Inc. from May 2013 until April 2016. Prior to joining Verastem, Inc., from March 2011 until December 2012, Mr. Green was Vice President, Finance of On-Q-ity Inc. and from May 2002 until June 2010, Mr. Green was the Senior Vice President and Chief Financial Officer of GTC Biotherapeutics, Inc. (formerly Genzyme Transgenics Corporation). Mr. Green is a Certified Public Accountant. He holds a master’s degree in business administration from Boston University Graduate School of Management and a bachelor’s degree from College of the Holy Cross.

James B. Weissman. James B. Weissman has served as our chief business officer since January 2012. From January 2006 to January 2012, Mr. Weissman was senior director and then vice president, business development of MannKind Corporation (NASDAQ: MNKD), where he was responsible for leading the company’s activities related to licensing, new products and strategic planning. Prior to MannKind, Mr. Weissman held leadership positions in both business development and marketing at Pfizer Pharmaceuticals, Inc. in Tokyo, most recently as senior director of marketing, responsible for the sales, profit and strategic targets for the company’s specialty products, in a variety of therapeutic areas. Mr. Weissman also served as

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a board member and vice president of the North Jersey Masters Track and Field Club from October 2008 to January 2012 and served as a board member of the Town of Bedford, Massachusetts Trails Committee from July 2012 to December 2015. Mr. Weissman holds a B.S. from Bates College in Maine.

Section 16(a) Beneficial Ownership Reporting Compliance

Section 16(a) of the Exchange Act requires “insiders,” including our executive officers, directors and beneficial owners of more than 10% of our common stock, to file reports of ownership and changes in ownership of our common stock with the SEC and The NASDAQ Stock Market LLC (NASDAQ), and to furnish us with copies of all Section 16(a) forms they file. Based solely on our review of the copies of such forms received by us, or written representations from reporting persons, we believe that our insiders complied with all applicable Section 16(a) filing requirements during 2016.

Code of Ethics

We have adopted a code of business conduct and ethics applicable to all employees, including the principal executive officer, principal financial officer and principal accounting officer or controller, or persons performing similar functions. The code of business conduct and ethics is available on our website at www.dicerna.com. Amendments to, and waivers from, the code of business conduct and ethics that apply to any director, executive officer or persons performing similar functions, and that relate to any element of the code of ethics definition enumerated in Item 406(b) of Regulation S-K will be disclosed at the website address provided above and, to the extent required by applicable regulations, on a Current Report on Form 8-K filed with the SEC.

Stockholder Recommendations and Nominees

The nominating and corporate governance committee will consider for nomination any qualified director candidates recommended by our stockholders. Any stockholder who wishes to recommend a director candidate is directed to submit in writing the candidate’s name, biographical information, relevant qualifications and other information required by our bylaws to our Secretary at our principal executive offices before the deadline set forth in our bylaws. All written submissions received from our stockholders will be reviewed by the nominating and corporate governance committee at the next appropriate meeting. The nominating and corporate governance committee will evaluate any suggested director candidates received from our stockholders in the same manner as recommendations received from management, committee members or members of our board.

Audit Committee

The board of directors has established an audit committee that oversees management’s conduct of our corporate accounting and financial reporting process. The members of the audit committee are Mr. Peacock, Dr. Hoffman and Mr. Madden. Mr. Peacock serves as the chairman of the committee. Our board of directors has determined that each member of the audit committee is “independent” for audit committee purposes as that term is defined in the applicable rules of the SEC and NASDAQ. Our board of directors has designated each of Mr. Peacock and Dr. Hoffman as an “audit committee financial expert” as defined under the applicable rules of the SEC.

Item 11. *Executive Compensation*

Executive Compensation

Overview

Our executive compensation program is based on a pay-for-performance philosophy. We designed our executive compensation program to achieve the following primary objectives:

- provide compensation and benefit levels that will attract, retain, motivate and reward a highly talented executive team;
- create an environment that fosters high performance and strong sense of urgency to bring our novel therapeutic approach to patients;

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- establish a direct link between the Company, individual and team performance and results and our executives' compensation; and
- align the interests and objectives of our executives with those of our stockholders by linking executive equity awards to long-term stockholder value creation.

Compensation for our named executive officers is comprised primarily of the following three main components:

- *Base Salary.* Base salaries are determined on a case-by-case basis for each executive, including consideration of each officer's experience, expertise and performance, as well as market compensation levels for similar positions.
- *Annual Cash Incentive Bonuses.* Annual cash incentive bonuses are contingent upon our achievement of certain operational and financial objectives, which for 2016 primarily related to pre-clinical and clinical development, technology platform, business development and financial position goals, and also depends upon the performance of the individual. Each executive's target bonus amount is expressed as a percentage of the executive's base salary and intended to be commensurate with the executive's position and responsibilities. Target bonuses for our named executive officers ranged from 40 to 60 percent of base salary for the year ended December 31, 2016.
- *Long-term Equity Incentives.* We believe equity awards in the form of options to purchase shares of our common stock provide an incentive for our executives to focus on driving growth in our stock price and long-term value creation and help us to attract and retain key talent. In addition, the granting of options helps ensure that the interests of our executive officers are aligned with those of our stockholders as the options only have value if the value of the Company's stock increases after the date the option is granted. In 2016, we granted options to our named executive officers that would vest based on the executive's continued service to the Company to provide an additional retention incentive.

Our named executive officers are entitled to certain benefits if the executive's employment terminates in certain circumstances or if a change of control occurs. We also may provide our named executive officers with relocation, housing or other benefits in certain circumstances. However, we do not provide any of our named executive officers with a tax gross-up payment on any severance or change of control benefits although we may provide tax reimbursement payments on relocation and other benefits.

Our compensation committee reviews our named executive officers' overall compensation packages on an annual basis or more frequently as it deems appropriate. From time to time, we may retain independent compensation consultants as we consider appropriate to help identify appropriate peer group companies and to obtain and evaluate current executive compensation data. The compensation committee retained an independent compensation consultant in designing our executive compensation program for 2016. The compensation committee has assessed the independence of its independent compensation consultant pursuant to the NASDAQ rules, and the Company concluded that the compensation consultant's work for the compensation committee did not raise any conflict of interest.

2016 Summary Compensation Table

The following table provides a summary of compensation paid to our principal executive officer and each of our two other most highly compensated executive officers who were serving the Company as of December 31, 2016 (collectively, the named executive officers).

Name and principal position	Fiscal year	Base salary (\$)	Bonus (\$)	Stock awards (\$)	Option awards (\$)(1)	Non-equity incentive plan compensation (\$)(2)	All other compensation (\$)(3)	Total (\$)
Douglas M. Fambrough, III, Ph.D. President and Chief Executive Officer	2016	490,000	—	—	1,317,888	179,084	18,142	2,005,115
	2015	490,000	—	—	2,618,710	229,320	16,636	3,354,666
John B. Green(4) Chief Financial Officer	2016	307,636	—	—	965,152	105,000	15,716	1,393,504
	2015	—	—	—	—	—	—	—
Bob D. Brown, Ph.D. Chief Scientific Officer, Senior Vice President	2016	380,000	—	—	732,160	124,568	12,090	1,248,818
	2015	380,000	—	—	872,903	148,200	23,858	1,424,961

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- (1) Pursuant to applicable SEC rules, the amounts reported in the “Option Awards” column reflect the grant date fair value of the option awards granted to our named executive officers during the year, and do not reflect the actual amounts earned. These values have been determined under the principles used to calculate the value of equity awards for purposes of our consolidated financial statements. For a discussion of the assumptions and methodologies used to calculate the amounts referred to above, please see the discussion of option awards contained in Note 8, Common Stock and Stock Option Plan, to our consolidated financial statements for the fiscal year ended December 31, 2016 included in our Original Filing.
- (2) These amounts include payments under our annual incentive bonus plan, which is based on our performance against certain operational and financial goals established by our compensation committee, as well as the performance of the individual. Based on what the compensation committee determined was progress with respect to our pre-clinical and clinical development, technology platform, business development and financial position goals, and based upon individual performance, our named executive officers were awarded bonuses of 54% to 82% of target bonus levels for 2016.
- (3) The amounts reported in this column include matching contributions we made to each executive’s account under our 401(k) plan.
- (4) Mr. Green was not a named executive officer prior to 2016.

Employment Agreements

Douglas M. Fambrough, III, Ph.D.

In July 2016, we entered into an amended and restated employment agreement with Dr. Fambrough (Fambrough Agreement). Under the Fambrough Agreement, Dr. Fambrough will receive an annual base salary of \$490,000 and will be eligible to participate in the Company’s annual bonus program, with a target opportunity equal to 60% of base salary. Per the Fambrough Agreement, Dr. Fambrough’s employment with us is “at-will,” and his employment is not for a specified term. The Fambrough Agreement also provides for Dr. Fambrough to participate in our benefit programs made available to our senior executives generally.

Under the Fambrough Agreement, if Dr. Fambrough is terminated by us for “cause” (as such term is defined in the Fambrough Agreement), or by him other than for “good reason” (as such term is defined in the Fambrough Agreement), Dr. Fambrough will receive the following severance benefits: (i) 18 months of continued base salary payments; (ii) a pro rata portion of his annual bonus for the year in which the termination occurs, based on actual performance during the entire performance period; (iii) 18 months of Company-reimbursed Consolidated Omnibus Budget Reconciliation Act (COBRA) premiums; and (iv) outstanding and unvested stock options that were scheduled to vest in the 12-month period following his termination of employment will accelerate in full.

In addition, if we terminate Dr. Fambrough other than for cause or if Dr. Fambrough terminates his employment for good reason during the one-year period following a change in control (as defined in the Fambrough Agreement), then Dr. Fambrough will receive the following severance benefits: (i) a lump sum severance payment equal to 1.5, multiplied by the sum of Dr. Fambrough’s annual base salary and target annual bonus; (ii) a pro rata portion of Dr. Fambrough’s target bonus for the year in which the termination occurs; (iii) 18 months of Company-reimbursed COBRA premiums; and (iv) outstanding and unvested stock options will accelerate in full. Under the terms of the Fambrough Agreement, if any payment or other benefit provided to Dr. Fambrough pursuant to the Fambrough Agreement constitutes an “excess parachute payment” within the meaning of Section 280G of the Internal Revenue Code of 1986, as amended (Code), and would be subject to an excise tax imposed by Section 4999 of the Code, then the amounts actually paid to Dr. Fambrough will be reduced to the extent that such a reduction would result in Dr. Fambrough receiving a greater amount than he would have received if the payment had been made in full.

Dr. Fambrough’s right to receive these severance benefits is subject to his providing a release of claims in favor of us. Dr. Fambrough has also entered into an agreement that includes noncompetition and nonsolicitation covenants in favor of us that apply during Dr. Fambrough’s employment with us and for two years thereafter.

Bob D. Brown, Ph.D. and John B. Green

In July 2016, we entered into an amended and restated employment agreement with Dr. Brown and, in November 2016, we entered into an amended and restated employment agreement with Mr. Green (collectively, Employment Agreements) to reflect that their employment with us is “at-will,” and that their employment was not for a specified term. Under the Employment Agreements, Dr. Brown and Mr. Green will receive an annual base salary of \$380,000 and \$350,000,

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respectively, and each will be eligible to participate in the Company's annual bonus program, with a target opportunity equal to 40% of base salary. The Employment Agreements also provide for each executive to participate in our benefit programs made available to our senior executives generally.

Pursuant to the respective Employment Agreements, if we terminate the executive other than for "cause" (as defined in the respective Employment Agreement) or if the executive officer terminates his employment for "good reason" (as defined in the respective Employment Agreement), then the executive will receive the following severance benefits: (i) 12 months of continued base salary payments; (ii) a pro rata portion of his annual bonus for the year in which the termination occurs, based on actual performance during the entire performance period; and (iii) 12 months of Company-reimbursed COBRA premiums.

In addition, if we terminate the executive other than for cause or if the executive terminates his employment for good reason during the one-year period following a change in control (as defined in the Employment Agreements), then the executive officer will receive the following severance benefits: (i) a lump sum severance payment equal to the sum of the executive's annual base salary and target annual bonus; (ii) a pro rata portion of the executive's target bonus for the year in which the termination occurs; and (iii) 12 months of Company-reimbursed COBRA premiums. Except as otherwise provided for in an award agreement, any outstanding equity awards will vest in full upon a change in control of the Company. Under the terms of the Employment Agreements, if any payment or other benefit provided to the executive pursuant to his employment agreement constitutes an "excess parachute payment" within the meaning of Section 280G of the Code, and would be subject to an excise tax imposed by Section 4999 of the Code, then the amounts actually paid to the executive officer will be reduced to the extent that such a reduction would result in the executive officer receiving a greater amount than he would have received if the payment had been made in full.

Each executive's right to receive the aforementioned severance benefits is subject to him providing a release of claims in favor of us. Each of Dr. Brown and Mr. Green also have entered into an agreement that includes noncompetition and nonsolicitation covenants in favor of us that apply during each of these employee's employment with us and for two years thereafter.

Defined Contribution Plan

As part of our overall compensation program, we provide all full-time employees, including our named executive officers, with the opportunity to participate in a defined contribution 401(k) plan. Employees may elect to defer up to 96 percent of their eligible compensation (not to exceed the statutorily prescribed annual limit) in the form of elective deferral contributions to our 401(k) plan. Our 401(k) plan also has a "catch-up contribution" feature for employees aged 50 or older (including those who qualify as "highly compensated" employees) who can defer amounts over the statutory limit that applies to all other employees. We currently provide matching contributions under the plan of up to six percent of an employee's eligible compensation.

Outstanding Equity Awards at December 31, 2016

The following table presents information regarding the outstanding stock options held by each of the named executive officers as of December 31, 2016, including the vesting dates for the portions of these awards that had not vested as of that date. None of the named executive officers held any outstanding restricted stock or other equity awards as of that date.

Name	Grant date	Number of securities underlying unexercised options exercisable (#)	Number of securities underlying unexercised options unexercisable (#)	Equity incentive plan awards: number of securities underlying unexercised unearned options (#)	Option exercise price (\$)	Option expiration date
Douglas M. Fambrough, III, Ph.D.	9/24/2013	246,093	35,157(1)	—	3.42	9/23/2023
	9/24/2013	225,000	—	56,250(6)	3.42	9/23/2023
	4/16/2014	353,924	117,976(2)	—	16.30	4/15/2024
	1/9/2015	112,499	112,501(3)	—	18.50	1/8/2025
	1/8/2016	56,249	168,751(4)	—	9.09	1/8/2026

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John B. Green	4/14/2016	—	265,000 ⁽⁵⁾	—	5.45	4/14/2026
Bob D. Brown, Ph.D.	10/14/2010	267	—	—	3.42	10/13/2020
	9/24/2013	98,437	16,407 ⁽¹⁾	—	3.42	9/23/2023
	9/24/2013	87,500	—	—	3.42	9/23/2023
	4/16/2014	123,787	41,263 ⁽²⁾	—	16.30	4/15/2024
	1/9/2015	37,499	37,501 ⁽³⁾	—	18.50	1/8/2025
	1/8/2016	31,249	93,751 ⁽⁴⁾	—	9.09	1/8/2026

- (1) These options vest in monthly installments, with the first such installment vesting on July 30, 2013 and an additional installment vesting on the last day of each of the 47 months thereafter.
- (2) These options vest in monthly installments, with the first such installment vesting on January 30, 2014 and an additional installment vesting on the last day of each of the 47 months thereafter.
- (3) These options vest in monthly installments, with the first such installment vesting on January 30, 2015 and an additional installment vesting on the last day of each of the 47 months thereafter.
- (4) These options vest in monthly installments, with the first such installment vesting on January 30, 2016 and an additional installment vesting on the last day of each of the 47 months thereafter.
- (5) These options vest as follows: 25% on April 14, 2017, and the remaining 75% in 36 equal monthly installments thereafter.
- (6) These options vest based on the achievement of certain business development goals.

Director Compensation

Overview

Under our non-employee director compensation program, we compensate our non-employee directors with a combination of cash and equity. Each non-employee director is eligible to receive an annual retainer of \$35,000 for serving on the board of directors, and the chairperson of our board of directors is eligible to receive an additional annual retainer of \$25,000. The program also provides that we compensate the members of the board of directors for service on our committees as follows:

- The chairperson of our audit committee will receive an annual cash retainer of \$15,000 for such service, and each of the other members of the audit committee will receive an annual cash retainer of \$5,200;
- The chairperson of our compensation committee will receive an annual cash retainer of \$10,000 for such service, and each of the other members of the compensation committee will receive an annual cash retainer of \$5,200; and
- The chairperson of our nominating and corporate governance committee will receive an annual cash retainer of \$7,000 for such service, and each of the other members of the nominating and corporate governance committee will receive an annual cash retainer of \$5,200.

Under our non-employee director compensation program, each new non-employee director will be granted an option to purchase 25,000 shares of our common stock (or 30,000 shares in the case of a new chairperson of the board of directors) upon his or her appointment to the board of directors, and each non-employee director continuing in office immediately after our annual meeting each year will be granted an option to purchase 15,000 shares of our common stock (or 20,000 shares in the case of the chairperson of the board of directors). Each option granted under our director compensation program has an exercise price equal to the closing price of our common stock on the grant date. The initial grants made to new non-employee directors will vest as to one-third of the grant after one year and as to the remaining two-thirds of the grant in quarterly installments over the two-year period thereafter, subject to the director's continued service through the applicable vesting date. Grants made to continuing non-employee directors following our annual meeting each year vest one year after the grant date, subject to the director's continued service through the applicable vesting date.

Director Compensation Table – Year Ended December 31, 2016

The following table presents information regarding the compensation paid for 2016 to members of our board of directors who are not also employed by us or any of our subsidiaries (our non-employee directors). The compensation paid to Douglas M. Fambrough, III, Ph.D., who is also our chief executive officer, is set forth above in the section titled "Executive Compensation" and the related explanatory tables. Dr. Fambrough was not entitled to receive additional compensation for his service as a director. Dr. Koppel joined our board of directors in April 2017, after the end of the fiscal year.

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Name	Fees earned or paid in cash (\$)	Option awards ⁽¹⁾ (\$)	All other compensation (\$)	Total (\$)
Martin Freed, M.D. ⁽²⁾	20,692	51,655	—	72,347
Brian K. Halak, Ph.D.	45,000	30,993	—	75,993
Stephen J. Hoffman, M.D., Ph.D.	45,400	30,993	—	76,393
Peter Kolchinsky, Ph.D.	42,000	30,993	—	72,993
Dennis H. Langer, M.D., J.D.	40,200	30,993	—	71,193
David M. Madden	70,400	41,324	—	111,724
Bruce Peacock	50,000	30,993	—	80,993

- (1) Pursuant to applicable SEC rules, the amounts reported in the “Option Awards” column of the table above reflect the grant date fair value of the option awards granted to our non-employee directors during 2016. These values have been determined under the principles used to calculate the value of equity awards for purposes of our financial statements. For a discussion of the assumptions and methodologies used to calculate the amounts referred to above, please see the discussion of option awards contained in Note 8, Common Stock and Stock Option Plan, to our consolidated financial statements for the fiscal year ended December 31, 2016 included in our Original Filing. As of December 31, 2016, our non-employee directors had outstanding option awards to acquire shares of our common stock as follows: Dr. Freed, 25,000; Dr. Halak, 70,000; Dr. Hoffman, 70,000; Dr. Kolchinsky, 70,000; Dr. Langer, 77,305; Mr. Madden, 90,000; and Mr. Peacock, 55,000.
- (2) Dr. Freed commenced service on the board of directors on June 14, 2016.

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

Securities Authorized for Issuance under Equity Compensation Plans

The following table provides information about the securities authorized for issuance under our equity compensation plans as of December 31, 2016, which as of that date consisted of our 2007 Employee, Director and Consultant Stock Plan, as amended, 2010 Employee, Director and Consultant Equity Incentive Plan, as amended, Amended and Restated 2014 Performance Incentive Plan, 2014 Employee Stock Purchase Plan and our 2016 Inducement Plan:

Plan category	Number of shares to be issued upon exercise of outstanding options, warrants and rights (a)	Weighted-average exercise price of outstanding options, warrants and rights (b)	Number of shares remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)	Total of shares reflected in columns (a) and (c) (d)
Equity compensation plans approved by stockholders	5,099,449	\$ 10.08	1,572,501 ⁽¹⁾	6,671,950
Equity compensation plans not approved by stockholders	—	—	250,000 ⁽²⁾	250,000
Total	5,099,449	\$ 10.08	1,822,501	6,921,950

- (1) Includes 284,620 and 1,287,881 shares of common stock available for issuance under the Amended and Restated 2014 Performance Incentive Plan and the 2014 Employee Stock Purchase Plan, respectively, as of December 31, 2016.
- (2) Shares of common stock issuable as of December 31, 2016 under the 2016 Inducement Plan, which was adopted by our Board of Directors in March 2016 pursuant to NASDAQ Listing Rule 5635(c)(4).

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Security Ownership of Certain Beneficial Owners and Management

The following table sets forth certain information regarding the ownership of our common stock as of March 31, 2017, by: (i) each nominee for director; (ii) each of our named executive officers; (iii) all of our executive officers and directors as a group; and (iv) all those known by us to be beneficial owners of more than five percent of our common stock.

Beneficial Owner	Beneficial Ownership**	
	Number of Shares	Percent of Total
Fidelity Management & Research Company ⁽¹⁾	2,762,611	13.29%
RA Capital Management, LLC ⁽²⁾	2,428,571	11.68%
Domain Associates, L.L.C. ⁽³⁾	1,786,908	8.58%
Skyline Ventures Partners V, L.P. ⁽⁴⁾	1,742,123	8.37%
RTW Investments, LP ⁽⁵⁾	2,043,216	9.83%
Douglas M. Fambrough, III, Ph.D. ⁽⁶⁾	1,175,418	5.37%
Brian K. Halak, Ph.D. ⁽⁷⁾	1,841,908	8.83%
Stephen J. Hoffman, M.D., Ph.D. ⁽⁸⁾	55,000	*
Peter Kolchinsky, Ph.D. ⁽⁹⁾	2,483,571	11.91%
Dennis H. Langer, M.D., J.D. ⁽¹⁰⁾	177,328	*
David M. Madden ⁽¹¹⁾	190,011	*
Bruce Peacock ⁽¹²⁾	33,746	*
Bob D. Brown, Ph.D. ⁽¹³⁾	445,686	2.10%
John B. Green ⁽¹⁴⁾	78,019	*
James Weissman ⁽¹⁵⁾	293,796	1.39%
All executive officers and directors as a group (12 persons) ⁽¹⁶⁾	6,774,483	29.41%

* Denotes ownership percentage less than one percent.

** This table is based upon information supplied by officers, directors and principal stockholders and Forms 3, Forms 4 and Schedules 13D and 13G filed with the SEC. Unless otherwise indicated in the footnotes to this table, we believe that each of the stockholders named in the table has sole voting and dispositive power with respect to the shares indicated as beneficially owned. Applicable percentages are based on 20,794,193 shares outstanding on March 31, 2017, adjusted as required by rules promulgated by the SEC. Unless otherwise set forth below, the address of each beneficial owner is 87 Cambridgepark Drive, Cambridge, MA 02140.

- (1) Based solely on the Schedule 13G/A No. 3 filed with the SEC on February 13, 2017 by FMR LLC, a Delaware limited liability company, Abigail P. Johnson, and Fidelity Growth Company Fund (Fidelity). FMR LLC, 245 Summer Street, Boston, Massachusetts 02210, is the beneficial owner of 2,762,611 shares of our common stock. FMR LLC has the sole power to direct the voting of 362,222 shares owned by it, and FMR LLC and Abigail P. Johnson, through its or her control of Fidelity, each has sole power to dispose of the 2,762,611 shares of our common stock owned by FMR LLC. Members of the Johnson family, including Abigail P. Johnson, the Vice Chairman, the Chief Executive Officer and the President of FMR LLC, are the predominant owners, directly or through trusts, of Series B voting common shares of FMR LLC, representing 49% of the voting power of FMR LLC. The Johnson family group and all other Series B shareholders have entered into a shareholders' voting agreement under which all Series B voting common shares will be voted in accordance with the majority vote of Series B voting common shares. Accordingly, through their ownership of voting common shares and the execution of the shareholders' voting agreement, members of the Johnson family may be deemed, under the Investment Company Act of 1940, to form a controlling group with respect to FMR LLC. Neither FMR LLC nor Abigail P. Johnson has the sole power to vote or direct the voting of the shares owned directly by the various investment companies registered under the Investment Company Act (Fidelity Funds) advised by Fidelity Management & Research Company (FMR Co), which power resides with the Fidelity Funds' Boards of Trustees. FMR Co carries out the voting of the shares under written guidelines established by the Fidelity Funds' Boards of Trustees. FMR Co is the beneficial owner of 2,762,611 shares of our common stock held by FMR LLC.
- (2) Based solely on the Schedule 13D filed with the SEC on February 5, 2014 by RA Capital Healthcare Fund, L.P. (RA Fund), RA Capital Management, LLC (RA Capital) and Peter Kolchinsky, Ph.D. Consists of 2,428,571 shares of our common stock. RA Fund has the shared voting power and shared dispositive power with respect to 2,256,071 shares of our common stock. RA Capital has the shared voting power and shared dispositive power with respect to 2,428,571 shares of

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- our common stock, including (a) 2,256,071 shares of our common stock held by RA Fund, for which RA Capital serves as the sole general partner, and (b) 172,500 shares of our common stock held in a separately managed account, for which RA Capital serves as investment adviser. Dr. Kolchinsky and the managing member of RA Capital have the shared voting power and shared dispositive power with respect to 2,428,571 shares of our common stock, reported for RA Capital, for which Dr. Kolchinsky serves as the manager. Each of RA Fund, RA Capital and Dr. Kolchinsky disclaims beneficial ownership for the shares, except to the extent of its or his pecuniary interest therein. The address of the principal place of business of RA Fund, RA Capital and Peter Kolchinsky, Ph.D. is 20 Park Plaza, Suite 1200, Boston, MA 02116.
- (3) Based solely on the Schedule 13G filed with the SEC on February 5, 2015 by Domain Partners VIII, L.P. Consists of (a) 1,752,707 shares of our common stock held by Domain Partners VIII, L.P. (Domain Partners), (b) 21,041 shares of our common stock issuable upon exercise of a common stock warrant held by Domain Partners, (c) 13,004 shares of our common stock held by DP VIII Associates, L.P. (DP Associates), and (d) 156 shares of our common stock issuable upon exercise of a common stock warrant held by DP Associates. James C. Blair, Brian H. Dovey, Jesse I. Treu, Brian K. Halak, a member of our board of directors, and Nicole Vitullo, the managing members of One Palmer Square Associates VIII, L.L.C., the general partner of Domain Partners and DP Associates, share the power to vote or dispose of the shares held by Domain Partners and DP Associates and therefore each of the foregoing managing members may be deemed to have voting and dispositive power with respect to such shares. Each of the foregoing managing members disclaims beneficial ownership of such shares except to the extent of his or her pecuniary interest therein, if any. The address of the principal place of business of Domain Partners and DP Associates is One Palmer Square, Suite 515, Princeton, NJ 08542.
- (4) Based solely on the Schedule 13D filed with the SEC on February 14, 2014 and the Form 4 filed with the SEC on February 24, 2015 by Skyline Venture Partners V, L.P., a Delaware limited partnership (SVP), Skyline Venture Management V, LLC, a California limited liability company (SVM), John G. Freund, M.D. and Yasunori Kaneko, M.D. SVP holds 1,719,671 shares of our common stock and common stock warrants to purchase 22,452 shares of our common stock. Mr. Hoffman is a former member of SVM that has transitioned to an independent consultant of SVM, SVP or its affiliates with no financial interest, voting or dispositive power over the shares. John G. Freund, M.D. and Yasunori Kaneko, M.D. are Managing Directors of SVM, the general partner of SVP, and may be deemed to share voting and dispositive power over the shares held by SVP. Each of Drs. Freund and Kaneko disclaims beneficial ownership of such shares, except to the extent of his pecuniary interest therein. The address of the principal place of business of SVP, SVM and Drs. Freund, Kaneko and Hoffman is 525 University Avenue, Suite 520, Palo Alto, CA 94301.
- (5) Based solely on the Schedule 13G/A No. 2 filed with the SEC on February 15, 2017 by RTW Investments, LP, a Delaware limited partnership (RTWI), RTW Master Fund, Ltd., a company organized under the laws of the Cayman Islands (RTW Fund), and Roderick Wong. RTWI, RTW Fund and Roderick Wong have shared voting power and share dispositive power with respect to 2,043,216 shares of our common stock. Each may be deemed to beneficially own such shares. The address of the principal place of business of RTWI and Roderick Wong is c/o RTW Investments, LLC, 250 West 55th Street, 16th Floor, Suite A, New York, New York 10019. The address and principal place of RTW Fund is c/o Intertrust Corporate Services (Cayman) Limited, 190 Elgin Avenue, George Town, Grand Cayman KY1-9001, Cayman Islands.
- (6) Consists of (a) 62,641 shares of our common stock and (b) 1,112,777 shares of our common stock issuable upon exercise of stock options exercisable within 60 days of March 31, 2017.
- (7) Consists of shares of our common stock held and issuable upon exercise of warrants held by Domain Partners and DP Associates as described in footnote (3) above, and 55,000 shares of common stock issuable upon exercise of stock options within 60 days of March 31, 2017. Dr. Halak is a managing member of One Palmer Square Associates VIII, L.L.C., the general partner of Domain Partners and DP Associates, and may be deemed to share voting and dispositive power over the shares held by Domain Partners and DP Associates. Dr. Halak disclaims beneficial ownership of such shares held by Domain Partners and DP Associates, except to the extent of his pecuniary interest therein.
- (8) Consists of 55,000 shares of common stock issuable upon exercise of stock options within 60 days of March 31, 2017. Mr. Hoffman is a former member of SVM that has transitioned to an independent consultant of SVM, SVP or its affiliates with no financial interest, voting or dispositive power over the shares.
- (9) Consists of 2,428,571 shares of our common stock beneficially owned by RA Capital as described in footnote (2) above, and 55,000 shares of our common stock issuable upon exercise of options within 60 days of March 31, 2017. Dr. Kolchinsky serves as the managing director of RA Capital, the sole general partner of RA Fund, and may be deemed to beneficially own the shares beneficially owned by RA Capital. Dr. Kolchinsky disclaims beneficial ownership for the shares beneficially owned by RA Capital, except to the extent of his pecuniary interest therein.
- (10) Consists of (a) 71,428 shares of common stock held by Langer Family Holdings, LLLP, (b) 360 shares of common stock issuable upon exercise of stock options exercisable within 60 days of March 31, 2017 held by Langer Family Holdings, LLLP, (c) 43,595 shares of common stock held by Dennis H. Langer, M.D., J.D., and (d) 61,945 shares of common stock issuable upon stock options exercisable within 60 days of March 31, 2017 held by Dennis H. Langer, M.D., J.D. Dennis H. Langer, M.D., J.D. is a manager of Langer Family Investments, LLC, which is the general partner of Langer Family Holdings, LLLP. Dr. Langer disclaims beneficial ownership of the shares and options owned by Langer Family Holdings, LLLP.

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- (11) Consists of 120,011 shares of common stock and 70,000 shares of common stock issuable upon exercise of stock options within 60 days of March 31, 2017.
- (12) Consists of 33,746 shares of common stock issuable upon exercise of options exercisable within 60 days of March 31, 2017.
- (13) Consists of 19,339 shares of common stock and 426,347 shares of common stock issuable upon exercise of options exercisable within 60 days of March 31, 2017.
- (14) Consists of 78,019 shares of common stock issuable upon exercise of options exercisable within 60 days of March 31, 2017.
- (15) Consists of 19,800 shares of common stock and 273,996 shares of common stock issuable upon exercise of options exercisable within 60 days of March 31, 2017.
- (16) Consists of (a) 336,814 shares of common stock held by our directors and four executive officers, (b) 2,222,190 shares of common stock issuable upon exercise of stock options that are exercisable within 60 days of March 31, 2017 held by our directors and four executive officers, and (c) 4,215,479 shares of common stock and shares of common stock issuable upon exercise of warrants that are exercisable within 60 days of March 31, 2017 held by entities affiliated with certain of our directors.

On April 11, 2017, we completed a private placement with seven institutional investors, led by funds advised by Bain Capital Life Sciences L.P., pursuant to which we agreed to issue and sell 700,000 shares of our newly designated Redeemable Convertible Preferred Stock, par value \$0.0001 per share (Redeemable Convertible Preferred), at a purchase price of \$100.00 per share, for total gross proceeds of \$70.0 million (Private Placement). Other participants in the financing include Cormorant Asset Management, Domain Associates, EcoR1 Capital, RA Capital and Skyline Ventures, among others. Based on an initial conversion price of \$3.19 per share of Redeemable Convertible Preferred, the 700,000 shares of Redeemable Convertible Preferred Stock were convertible into approximately 21,943,573 shares of common stock as of the date of the closing of the Private Placement.

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

Policies and Procedures for Related Party Transactions

We have adopted a written related party transactions policy which sets forth the policies and procedures for the review and approval or ratification of related party transactions. The policy covers, with certain exceptions set forth in Item 404 of Regulation S-K promulgated under the Exchange Act, any transaction, arrangement or relationship, or any series of similar transactions, arrangements or relationships, in which we were or are to be a participant, where the amount involved exceeds \$120,000 and a related party had, has or will have a direct or indirect material interest, including indebtedness, guarantees of indebtedness and employment by us of a related party.

A related party transaction reviewed under the policy will be considered approved or ratified if it is authorized by the audit committee of our board of directors or the chairperson of the audit committee in accordance with the standards set forth in the policy after full disclosure of the related party's interests in the transaction. As appropriate for the circumstances, the audit committee or the chairperson of the audit committee, as applicable, shall review and consider:

- the related party's interest in the transaction;
- the approximate dollar value of the amount involved in the related party transaction;
- the approximate dollar value of the amount of the related party's interest in the transaction without regard to the amount of any profit or loss;
- whether the transaction was undertaken in our ordinary course of business;
- whether the transaction with the related party is proposed to be, or was, entered into on terms no less favorable to us than terms that could have been reached with an unrelated third party;
- the purpose and the potential benefits of the related party transaction to us;
- required public disclosure, if any; and
- any other information regarding the related party transaction in the context of the proposed transaction that would be material to investors in light of the circumstances of the particular transaction.

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Fiscal 2016 Related Party Transactions

During the year ended December 31, 2016, there were no transactions or series of similar transactions to which we were a party or will be a party, in which (i) the amounts involved exceeded or will exceed \$120,000 and (ii) any of our directors, executive officers, holders of more than five percent of our capital stock or any member of their immediate family had or will have a direct or indirect material interest, other than compensation arrangements with directors and executive officers, which are described where required in the sections titled “Director Compensation” and “Executive Compensation” in Item 11—“Executive Compensation.”

On April 11, 2017, we completed a private placement with seven institutional investors, led by funds advised by Bain Capital Life Sciences L.P. (Bain Capital), pursuant to which we agreed to issue and sell 700,000 shares of our newly designated Redeemable Convertible Preferred, at a purchase price of \$100.00 per share, for total gross proceeds of \$70.0 million. Other participants in the financing include Domain Associates, RA Capital, Skyline Ventures and RTW Investments, which are holders or more than five percent of our capital stock. Bain Capital, Domain Associates, RA Capital and Skyline Ventures are also entities affiliated with or formerly affiliated with four members of our board of directors as of the date hereof.

Indemnification of Directors and Officers

We have entered into indemnification agreements with each of our directors and executive officers. These agreements, among other things, require us or will require us to indemnify each director (and in certain cases their affiliated venture capital funds) and executive officer to the fullest extent permitted by Delaware law, including indemnification of expenses such as attorneys’ fees, judgments, fines and settlement amounts incurred by the director or executive officer in any action or proceeding, including any action or proceeding by or in right of us, arising out of the person’s services as a director or executive officer.

Independence of the Board of Directors

Under the rules of NASDAQ, independent directors must comprise a majority of a listed company’s board of directors within twelve months from the date of listing. In addition, NASDAQ rules require that, subject to specified exceptions, each member of a listed company’s audit, compensation and nominating and corporate governance committees be independent. Audit committee members must also satisfy additional independence criteria set forth in Rule 10A-3 under the Exchange Act, and in NASDAQ rule 5605(c)(2)(A). Under NASDAQ rules, a director will only qualify as an “independent director” if, in the opinion of that company’s board of directors, that person does not have a relationship that would interfere with the exercise of independent judgment in carrying out the responsibilities of a director. To be considered independent for purposes of Rule 10A-3, a member of an audit committee of a listed company may not, other than in his or her capacity as a member of the audit committee, the board of directors or any other board committee, accept, directly or indirectly, any consulting, advisory or other compensatory fee from the listed company or any of its subsidiaries or be an affiliated person of the listed company or any of its subsidiaries.

Our board of directors has undertaken a review of its composition, the composition of its committees and the independence of each director. Based upon information requested from and provided by each director concerning his background, employment and affiliations, including family relationships, our board of directors has determined that none of Martin Freed, M.D., Brian K. Halak, Ph.D., Stephen J. Hoffman, M.D., Ph.D., Peter Kolchinsky, Ph.D., Adam M. Koppel, M.D., Ph.D., Dennis H. Langer, M.D., J.D., David M. Madden or Bruce Peacock, representing eight of our nine directors, have a relationship that would interfere with the exercise of independent judgment in carrying out the responsibilities of a director and that each of these directors is “independent” as that term is defined under NASDAQ rules. Our board of directors has also determined that Mr. Peacock, Dr. Hoffman and Mr. Madden, members of our audit committee, Dr. Halak, Dr. Hoffman and Dr. Langer, members of our compensation committee, and Dr. Freed, Dr. Kolchinsky and Mr. Madden, members of our nominating and corporate governance committee, satisfy the independence standards for those committees established by applicable SEC and NASDAQ rules. In making these determinations, our board of directors considered the relationships that each non-employee director has with us and all other facts and circumstances our board of directors deemed relevant in determining their independence, including the beneficial ownership of our capital stock by each non-employee director.

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Item 14. Principal Accountant Fees and Services

The following table represents aggregate fees billed to us for fiscal years ended December 31, 2016 and 2015 by Deloitte & Touche LLP, our independent registered public accounting firm.

	Fiscal Year Ended December 31,	
	2016	2015
Audit Fees ⁽¹⁾	\$362,200	\$338,275
Audit-Related Fees ⁽²⁾	—	24,400
Tax Fees ⁽³⁾	—	1,040
All Other Fees ⁽⁴⁾	2,000	—
	<u>\$364,200</u>	<u>\$363,715</u>

- (1) Audit fees for the fiscal year ended December 31, 2016 consist of fees for professional services rendered in connection with the audit of our annual financial statements, review of our quarterly financial statements, assistance with registration statements filed with the SEC and services that are normally provided by our independent registered public accounting firm in connection with statutory and regulatory filings or engagements. Audit fees for the fiscal year ended December 31, 2015 consist of fees for professional services rendered in connection with the audit of our annual financial statements, review of our quarterly financial statements and services that are normally provided by our independent registered public accounting firm in connection with statutory and regulatory filings or engagements.
- (2) Audit-related fees for the fiscal year ended December 31, 2016 consist principally of fees for professional services rendered that are reasonably related to the performance of the audit or review of our financial statements. Audit-related fees for the fiscal year ended December 31, 2015 consist principally of fees for professional services rendered that are reasonably related to the performance of the audit or review of our financial statements and fees related to assistance with registration statements filed with the SEC.
- (3) Tax fees for the fiscal years ended December 31, 2016 and 2015 consist of fees for tax consultation services provided.
- (4) All other fees for the fiscal years ended December 31, 2016 and 2015 consist of fees for all other services that are not reported above.

All fees described above were approved by our board of directors or the audit committee of the board of directors.

Pre-Approval Policies and Procedures

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

The audit committee will review both audit and non-audit services performed by Deloitte & Touche LLP and the fees charged for such services on at least an annual basis. Among other things, the audit committee will review non-audit services proposed to be provided by Deloitte & Touche LLP and pre-approve such services only if they are compatible with maintaining Deloitte & Touche LLP's status as an independent registered public accounting firm. All services provided by Deloitte & Touche LLP in 2016 and 2015 were pre-approved by our board of directors or the audit committee after review of each of the services proposed for approval.

PART IV

Item 15. Exhibits and Financial Statement Schedules

Exhibits.

Exhibits are incorporated herein by reference or are filed with this report as indicated below.

Exhibit Number	Description of Documents
3.1(1)	Amended and Restated Certificate of Incorporation of the Company.
3.2(1)	Amended and Restated Bylaws of the Company.
4.1(2)	Specimen Common Stock Certificate.
4.2(3)	Form of Warrant to Purchase Common Stock.
4.3(3)	Form of Warrant to Purchase Preferred Stock.
4.4(3)	Amended and Restated Registration Rights Agreement dated as of July 30, 2013, by and among the Company and the investors named therein.
10.1(3)	2007 Employee, Director and Consultant Stock Plan, as amended (the 2007 Plan).++
10.2(3)	Form of Restricted Stock Agreement under the 2007 Plan.++
10.3(3)	Form of Incentive Stock Option Agreement under the 2007 Plan.++
10.4(3)	Form of Non-Qualified Stock Option Agreement under the 2007 Plan.++
10.5(3)	2010 Employee, Director and Consultant Equity Incentive Plan, as amended (the 2010 Plan).++
10.6(3)	Form of Stock Option Grant Notice and Stock Option Agreement under the 2010 Plan.++
10.7(3)	Form of Restricted Stock Agreement under the 2010 Plan.++
10.8(2)	2014 Employee Stock Purchase Plan.++
10.9(2)	Form of Indemnification Agreement by and between the Company and each of its directors.++
10.10(3)	Letter agreement dated as of June 2, 2009, by and between the Company and David M. Madden.++
10.11(3)	Letter agreement dated as of February 28, 2011, by and between the Company and Dennis H. Langer M.D., J.D.++
10.12(3)	Transition Agreement dated as of September 8, 2009, as amended by Amendment to Transition Agreement dated as of February 1, 2010 and Second Amendment to the Transition Agreement dated as of July 29, 2013, by and between the Company and James C. Jenson, Ph.D.++
10.13(4)	Research Collaboration and License Agreement dated as of December 21, 2009, as amended by Amendment No. 1 to Research Collaboration and License Agreement dated as of December 2, 2010, by and between the Company and Kyowa Hakko Kirin Co., Ltd.†
10.14(2)	Exclusive License Agreement dated as of September 28, 2007, by and between the Company and City of Hope.†
10.15(2)	Commercial License Agreement dated as of September 2, 2013, by and between the Company and Plant Bioscience Limited.†
10.16(5)	Lease agreement dated as of July 11, 2014, by and between the Company and King 87 CPD LLC
10.17(6)	Letter Agreement dated as of September 12, 2014, by and between the Company and Bruce Peacock.++
10.18(6)	Employment Agreement dated as of November 22, 2014, by and between the Company and Theodore Ashburn, M.D., Ph.D.++
10.19(7)	Underwriting Agreement dated as of May 20, 2015 by and between the Company, Jeffries LLC and Leerink Partners LLC.

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10.20(8)	Amended and Restated 2014 Performance Incentive Plan.++
10.21(9)	Form of Incentive Stock Option Agreement under the Amended and Restated 2014 Performance Incentive Plan.++
10.22(9)	Form of Non-Qualified Stock Option Agreement under the Amended and Restated 2014 Performance Incentive Plan.++
10.23(9)	Separation Agreement dated as of December 15, 2015 by and between the Company and James E. Dentzer.++
10.24(9)	Offer Letter dated as of January 14, 2016 by and between the Company and John “Jack” Green.++
10.25(10)	Dicerna Pharmaceuticals, Inc. 2016 Inducement Plan.++
10.26(10)	Form of Dicerna Pharmaceuticals, Inc. Non-Qualified Inducement Stock Option Agreement.++
10.27(10)	Form of Non-Plan Inducement Stock Option Agreement.++
10.28(11)	Amended and Restated Employment Agreement dated as of July 8, 2016 by and between the Company and Douglas M. Fambrough, III++
10.29(11)	Amended and Restated Employment Agreement dated as of July 8, 2016 by and between the Company and Bob. D. Brown++
10.30(11)	Amended and Restated Employment Agreement dated as of July 6, 2016 by and between the Company and James B. Weissman++
10.31(11)	Amended and Restated Employment Agreement dated as of November 4, 2016 by and between the Company and John B. Green++
21.1(6)	Subsidiaries of the Company.
23.1^	Consent of Independent Registered Accounting Firm.
24^	Power of Attorney (reference is made to the signature page).
31.1^	Certification of the Company’s principal executive officer required by Rule 13a-14(a) or Rule 15d-14(a).
31.2^	Certification of the Company’s principal financial officer required by Rule 13a-14(a) or Rule 15d-14(a).
31.3+	Certification of Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.4+	Certification of Chief Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1*^	Section 1350 Certifications.
101.INS^	XBRL Report Instance Document
101.SCH^	XBRL Taxonomy Extension Schema Document
101.CAL^	XBRL Taxonomy Calculation Linkbase Document
101.LAB^	XBRL Taxonomy Label Linkbase Document
101.PRE^	XBRL Taxonomy Presentation Linkbase Document
101.DEF^	XBRL Taxonomy Extension Definition Linkbase Document

† Confidential treatment with respect to specific portions of this Exhibit has been requested, and such portions are omitted and have been filed separately with the Securities and Exchange Commission.

++ Management contract or compensatory plan or arrangement.

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- * Exhibit 32.1 is being furnished and shall not be deemed to be “filed” for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (Exchange Act), or otherwise subject to the liability of that section, nor shall such exhibit be deemed to be incorporated by reference in any registration statement or other document filed under the Securities Act of 1933, as amended, or the Exchange Act, except as otherwise stated in such filing.
- (1) Incorporated by reference to the indicated exhibit in the Company’s Current Report on Form8-K filed on February 5, 2014.
- (2) Incorporated by reference to the indicated exhibit in the Company’s Amendment No. 3 to Registration Statement on FormS-1 (No. 333-193150) filed on January 28, 2014.
- (3) Incorporated by reference to the indicated exhibit in the Company’s Registration Statement on FormS-1 (No. 333-193150) filed on December 31, 2013.
- (4) Incorporated by reference to the indicated exhibit in the Company’s Amendment No. 5 to Registration Statement on FormS-1 (No. 333-193150) filed on January 29, 2014.
- (5) Incorporated by reference to the indicated exhibit in the Company’s Registrant’s Quarterly Report on Form10-Q filed on November 6, 2014 (File No. 001-36281) for the quarterly period ended September 30, 2014.
- (6) Incorporated by reference to the indicated exhibit in the Company’s Annual Report on Form10-K filed on March 12, 2015 (File No. 001-36281) for the annual period ended December 31, 2014.
- (7) Incorporated by reference to the indicated exhibit in the Company’s Current Report on Form8-K filed on May 22, 2015.
- (8) Incorporated by reference to the indicated exhibit in the Company’s Current Report on Form8-K filed on July 7, 2015.
- (9) Incorporated by reference to the indicated exhibit in the Company’s Annual Report on Form10-K filed on March 10, 2016 (File No. 001-36281) for the annual period ended December 31, 2015.
- (10) Incorporated by reference to the indicated exhibit in the Company’s Registration Statement on FormS-8 filed on March 10, 2016.
- (11) Incorporated by reference to the indicated exhibit in the Company’s Registrant’s Quarterly Report on Form10-Q filed on November 7, 2016 (File No. 001-36281) for the quarterly period ended September 30, 2016.
- ^ Previously filed (or, with respect to Exhibit 32.1, furnished) with the Annual Report on Form10-K for the fiscal year ended December 31, 2016, filed with the SEC on March 30, 2017, which is being amended hereby.
- + Filed herewith.

SIGNATURES

Pursuant to the Securities Exchange Act of 1934, the Registrant has duly caused this Amendment to be signed on its behalf by the undersigned, thereunto duly authorized, in Cambridge, Commonwealth of Massachusetts on April 28, 2017.

DICERNA PHARMACEUTICALS, INC.
Registrant

April 28, 2017

By: /s/ Douglas M. Fambrough, III
Douglas M. Fambrough, III, Ph.D.
Chief Executive Officer and Director
(Principal Executive Officer)

April 28, 2017

By: /s/ John B. Green
John B. Green
Chief Financial Officer
(Principal Financial Officer and Principal Accounting Officer)

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

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Douglas M. Fambrough, III</u> Douglas M. Fambrough, III, Ph.D.	Chief Executive Officer and Director (Principal Executive Officer)	April 28, 2017
<u>/s/ John B. Green</u> John B. Green	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	April 28, 2017
<u>/s/ David M. Madden</u> David M. Madden	Chairman	April 28, 2017
<u>/s/ Martin Freed</u> Martin Freed, M.D.	Director	April 28, 2017
<u>/s/ Brian K. Halak</u> Brian K. Halak, Ph.D.	Director	April 28, 2017
<u>/s/ Stephen J. Hoffman</u> Stephen J. Hoffman, M.D., Ph.D.	Director	April 28, 2017
<u>/s/ Peter Kolchinsky</u> Peter Kolchinsky, Ph.D.	Director	April 28, 2017
<u>/s/ Dennis H. Langer</u> Dennis H. Langer, M.D., J.D.	Director	April 28, 2017
<u>/s/ Bruce Peacock</u> Bruce Peacock	Director	April 28, 2017
<u>/s/ Adam M. Koppel</u> Adam M. Koppel, M.D., Ph.D.	Director	April 28, 2017

CERTIFICATIONS

I, Douglas M. Fambrough, III, Ph.D., certify that:

1. I have reviewed this Amendment No. 1 to the Annual Report on Form 10-K/A of Dicerna Pharmaceuticals, Inc. for the year ended December 31, 2016;
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(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: April 28, 2017

/s/ Douglas M. Fambrough, III
Douglas M. Fambrough, III, Ph.D.
Chief Executive Officer and Director

CERTIFICATIONS

I, John B. Green, CPA, certify that:

1. I have reviewed this Amendment No. 1 to the Annual Report on Form 10-K/A of Dicerna Pharmaceuticals, Inc. for the year ended December 31, 2016;
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(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

April 28, 2017

/s/ John B. Green

John B. Green
Chief Financial Officer